

In Memoriam

Raymond Carhart, who was to be a guest speaker at the A.A.S. annual meeting November 5, died suddenly in Chicago on October 2, 1975. It was he who attended the birth of Audiology, nurtured its adolescence, and by personal example led it into respectable maturity. The Society mourns the passing of this most distinguished audiologist and elder statesman.

Glorig Passes Reins

Ward Named President

Aram Glorig, founder and first president of the American Audiology Society, retired as president of the Society at the

November meeting in San Francisco. He passed the reins of the society to another dynamic president, W. Dixon

Ward.

CORTI'S ORGAN takes this opportunity to honor Aram for his leadership in organizing the American Audiology Society. Almost single-handedly he conceived an organization that would permit all people concerned with human hearing to meet in a common forum. He was impatient with societies that allowed only those of one discipline to have a dialogue with each other on hearing problems, that excluded concerned non-professionals, and that had tunnel vision in the area of hearing function. He served as president and long-time board member of the International Audiology Society where he envisioned bringing the same kind of organization to the United States.

Whatever the American Audiology Society becomes it will owe its future success to the vision and determination of Aram Glorig.

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society

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'Rehabilitation through Research' Theme of Annual A.A.S. Meeting

The 1975 meeting of the American Audiology Society was held in conjunction with the Acoustical Society of America meeting in San Francisco, November 3. Four excellent speakers delivered papers to some 60 attending members on the theme of "Rehabilitation through Research". Owen Black M.D., Pittsburgh Eye and Ear Hospital, "New Instrumentation for Vestibular Studies"; Norma Hopkinson, Ph.D., Pittsburgh Eye and Ear Hospital, "Relevance of Clinical Research to Rehabilitation of Persons with Auditory Disorders"; Robert Houde, Ph.D. and Donald

Johnson, Ph.D., National Technical Institute for the Deaf, (Rochester, New York), "Visual Aids for Speech Training of the Deaf"; and Nelson Y.S. Kiang, Ph.D., Massachusetts Eye and Ear Infirmary, "Electrocochleography". (These papers are discussed further under "Abstracts of Papers".)

The program was arranged by Bruce Graham, who served as chairman for the meeting.

Election of officers followed the program, with the new officers and Board members (See Minutes of the Executive Committee of The American Audi-

ology Society, Pg. 3)

Those who attended the Acoustical Society's meetings were in agreement on the highlight of the meeting. It was a special report of the Committee on the Watergate Tapes. This group of outstanding experts, headed by Richard Bolt, described how they determined that the tape had been deliberately tampered with. For example, they were able to demonstrate definitely that the "18 minute gap" that had recorded speech underneath and the buing tone that was superimposed on it. They also determined that the 18 minute

section had first been erased and then the buzz had been superimposed. The tape they were given was shown to be the

original. The report sounded like a modern-day Sherlock Holmes episode, with cloak and dagger overtones.

Ranney Outlines

Research Grants

J. Buckminster Ranney is Executive Secretary of the Communicative Disorders Review Committee of the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS). He has furnished a description of the various types of grants now available from NINCDS.

The National Institute of Neurological and Communicative Disorders and Stroke provides research grant support for problem areas of significance by means of research project grants, research program projects, clinical research centers and outpatient clinical research units. The Research Project Grant is an award to an institution in the name of an investigator for a discrete, circumscribed research investigation. The Research Program

Project Grant is an award to an institution in the name of a program director for a period of initial support of a team of investigators participating in a broadly based multidisciplinary or multifaceted program of basic research which has significance in the communicative sciences. The Clinical Research Center Grant is an award to an institution in the name of a program director for investigations focused upon a specific disease or a group of diseases or disorders of human communication. The Outpatient Clinical Research Unit Grant is an award to an institution in the name of a principal investigator to assist in the establishment, improvement and support of a stable outpatient research environment in which clinical research studies of ambulatory populations may be conducted.

News About Members

GEORGE E. LYNN (Wayne State University School of Medicine) traveled to Peru this summer to study the temporal bones of mummies of the Inca and Pre-Inca Indians. George has previously reported on the temporal bones of Egyptian mummies, and will make comparisons of the ears of these ancient peoples, as part of a continuing study of ancient human populations. So far he reports finding little evidence of

ear disease among the ancient Peruvians.

STANLEY ZERLIN AND RALPH NAUNTON have an ongoing study of the cochlear microphonic recorded from the human promontory and its relation to hair cell dysfunction. They recently presented a short course on Electrocochleography at the 1975 meeting of the American Speech and Hearing

Association. Stan has been elected an Associate fellow of the American Academy of Ophthalmology and Otolaryngology.

WILLIAM F. RINTLEMANN, formerly Professor and Director of Audiology at Michigan State University was appointed

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an editorial

If you are thinking that the change of name to CORTI'S ORGAN has been made to attract attention and stimulate interest, you are quite right. What better name for the house organ of a society devoted to hearing? We unabashedly preempt it for the AUDIONEWS.

Ye Editor and Ye Associate Editor have great ambitions for this house organ. In future editions we will solicit pre-publication abstracts of outstanding scientific articles; we will encourage brief preliminary reports of on-going research projects that otherwise might not be published for years; and we will attempt to cover up-to-date news of relevant (and irrelevant) activities of our members. To do this we will needle members to provide these items from time to time. Please establish a mental set to report to us the kinds of activities that will be of interest to our members. Help CORTI'S ORGAN hear, y'all!

ACKNOWLEDGMENT

The Editors wish to acknowledge the great contribution of Robert Briskey, who was the first editor and guiding spirit of AUDIONEWS. He faithfully put out the house organ during the first two years of the existence of A.A.S. Due to recent illness he was forced to relinquish the editorship, but we are delighted to learn that he has recovered and is back at work at the Beltone shop. Our sincere appreciation and best wishes go to Bob.

New Tinnitus Group Formed

A new society has been formed to study the causes and prevention of tinnitus. Called the American Tinnitus Association (ATA), it was founded by Charles Unice, a doctor who suffers himself from tinnitus, and by Jack Vernon and David DeWeese of Portland, Oregon. Robert Hochs of Oregon, past president of the National Association of Earmold Laboratories, has also been active in organizing the society.

The association is dependent on funding from ATA memberships. Further information may be obtained from: American Tinnitus Association, Development Office, University of Oregon Health Sciences Center, 3181 S.W. San Jackson Park Road, Portland, Oregon 97201.

Lybarger Reports on Hearing Aid Standards

An ANSI Working Group, S3-48 has been working for a year and a half on a specification standard for hearing aids. A.A.S. member Sam Lybarger is chairman of the committee. The work was undertaken at the request of the Food and Drug Administration, who plan to consider hearing aids as a "medical device".

Lybarger reports that the F.D.A. may adopt most of the provisions of the agreed-upon standard in their own regulatory standard. This would require that manufacturers maintain the performance of a given model hearing aid to within specified tolerances of the characteristics stated by the manufacturer for the model. The ANSI committee proposed standard is approaching completion and will be submitted to S-3 members for final review in the immediate future.

Lybarger has provided an outline of the tests being considered in this proposal standard, along with examples of frequency response curves and tolerance templates. (See accompanying chart and figures).

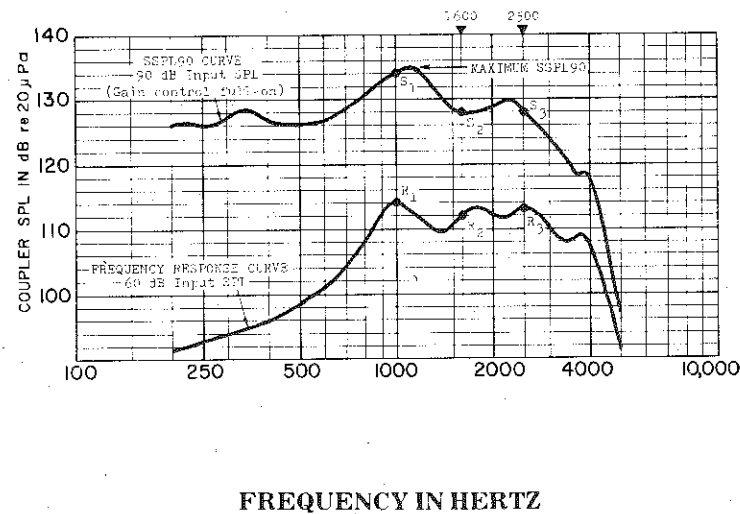
CONDENSED OUTLINE OF TESTS BEING CONSIDERED IN PROPOSED ANSI STANDARD FOR h.a. SPECIFICATION.

Characteristic	Input SPL dB re 20 µPa	Frequency Hz	Gain Control Setting	Presentation	Tolerance Requirements
SSPL90 (Saturation)	90	200-5000	Full on	Curve	Basic test equipment tolerance
Maximum SSPL90	90	Any frequency between 200 & 5000	Full on	Number (dB)	Mfr. to state max. value for model
Average SSPL90	90	1000, 1600 2500	Full on	Number (dB) (3-freq. average)	± 4 dB
Average full-on gain	60 or 50 (State which) 50 for AGC	1000, 1600 2500	Full on	Number (dB) (3-freq. average)	± 5 dB
Reference Test Gain Control Position*	60	1000, 1600 2500	Set gain control back to give output SPL 17 dB less than average SSPL 90, or full on for low gain aids		17 ± 1 dB
Frequency Response	60	200-5000 or to -20 dB below 3-freq. avg.	Reference test position	Curve	Low band ± 4 dB High band ± 6 dB
Total Harmonic Distortion	70	500, 800, 1600	Reference test position	Number (%)	Mfr. to state max. values for model
Equivalent Input Noise Level, L _n	60	1000, 1600 2500 (Avg. to get L _{av})	Reference test position	Number (dB) L _n =L ₂ -(L _{av} -60) **	Mfr. to state max. value for model
Telephone Pickup (Induction coil)	10 mA/m rms magnetic field	1000	Full on	Number (dB)	Within ± 6 dB of mfrs. specified value
Battery Current	70	1000	Reference test	Number (mA)	Not to exceed mfrs. specified maximum for the model
Input-Output Curves (AGC only)	50 to 90	2000	Full on	Curve Input=abscissa Output=ordinate	Match at 70 dB input then to be within +4 dB of specified
Attack and Release times (AGC only)	Abrupt 55 to 80; 80 to 55	2000	Full on	Numbers (ms)	To be within values specified by mfr.

* Reference test gain control position for AGC aids is full on.

** L₂ is the noise reading in the coupler with the input signal turned off.

10-2-75 SFL



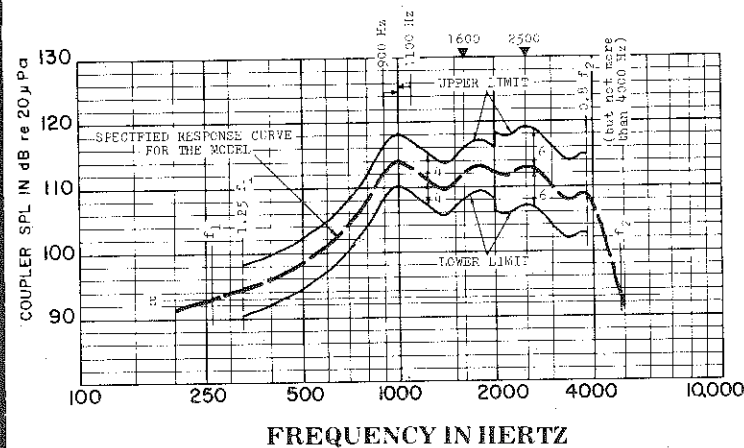
HF-average SSPL90 - $(S_1 + S_2 + S_3) / 3$.

Reference test gain control position is determined by:

$(S_1 + S_2 + S_3) / 3 - (R_1 + R_2 + R_3) / 3 - 17 \text{ dB}$.

EXAMPLE OF SSPL90 AND FREQUENCY RESPONSE CURVES

FIGURE 1



Horizontal line H is 20 dB below the average of the 1000, 1600 and 2500 Hz levels on the specified response curve. In use, the template must be kept square with the graph of the measured curve, but may be adjusted vertically any amount and horizontally up to ± 10% in frequency. Lines on the template at 900 and 1100 Hz show the maximum allowable horizontal movement referred to the 1000 Hz ordinate on the measured curve. After adjustment of the template, the measured curve must lie between the upper and lower limits on the template.

EXAMPLE OF CONSTRUCTION OF TOLERANCE TEMPLATE FOR FREQUENCY RESPONSE CURVE

FIGURE 2

Outstanding Workshops Scheduled for Spring

Two unusually outstanding Workshops will be held this spring, and one this summer, featuring noted International and American authorities. The spring Workshops are back-to-back in March and will present a difficult choice to Otolaryngologists and Audiologists.

SHAMBAUGH FIFTH INTERNATIONAL WORKSHOP

Chicago
February 29-March 5

At this conference "new and current techniques of cochlear and vestibular testing, modern tympanoplastic techniques, methods of treating fluctuant hearing loss, and the medical and surgical management of otospongiosis of the cochlear capsule and stapes footplate will be discussed by world recognized authorities. A faculty of 83 leaders of modern microsurgery of the ear will present their views in scheduled talks and round table discussions. Relaxations with films covering the program topics will conclude each day.

Among the invited speakers will be A.A.S. members Richard J. Bellucci, Ralph Caparosa, D. Thane Cody, J. Brown Farrior, Michael Glasscock, Wiley Harrison, Jack Hough, Howard P. House, William F. House, F.H. Linthicum, Cary Moon, P. Douglas Noffsinger, Jerry Nothorn, W. Hugh Powers, Jack Pulec, Wallace Rubin, Maurice Schiff, John Shea, Mansfield Smith, James Snow and William H. Wilson.

National Advisory Board Named for Kendall Demonstration Elementary School

WASHINGTON, D.C.— A nine-member National Advisory Board has been named to assist the Kendall Demonstration Elementary School in developing and implementing innovative program designs for deaf youngsters.

Appointed by the Gallaudet Board of Directors, the group's purpose is to advise the President of the College, the Dean of Pre-College Programs, and the Director of Kendall School on directions in which KDES, as a federally-funded facility, should move to achieve significant program advances in education of the deaf.

The nine include: Dr. Robert K. Lennan, Dr. Harvey J. Corson, Dr. Luther Robinson, Dr. Keith Turner, Dr. Roy Stelle, Dr. McCay Vernon, Dr. Donald Calvert, Dr. Robin Prescott, and Dr. Richard Kretschmer.

TENTH COLORADO MEDICAL AUDIOLOGY WORKSHOP

Vail, March 6-13

The theme of this conference is the EAR, in all its otologic and audiologic manifestations. Michel Portmann, M.D., of Bordeaux, France, will be the honored guest. Well known otolaryngologists and audiologists will discuss neuro-otology, Sudden Deafness, Middle Ear Surgery, Vestibular Problems, Diagnostic Audiology, Occupational Hearing Programs, Acoustic Impedance Measures, Serous Otitis Media

and Hearing Aids.

Among the invited speakers will be A.A.S. members Charles I. Berlin, Michael E. Glasscock, David M. Lipscomb, Mansfield Smith, Lloyd Storrs, LaVonne Bergstrom, Leo Doerfler, Aram Glorig, William G. Hemenway, Geary McCandless, Ross Roeser and F. Blair Simmons. Dr. Jorgen Holmquist of Sweden will discuss impedance measurements and tubal function.

The featured lectures of this Workshop will be presented for publication in the Journal of the American Audiology Society.

SYMPOSIUM ON CHILDHOOD DEAFNESS Mt. Pleasant, Michigan June 15-18

As indicated in the title, this symposium will center on deafness in children. Presentation areas include etiological factors, pathology of childhood deafness, identification and assessment and management/intervention.

Among the invited speakers will be several A.A.S. members.

Official Minutes

The Executive Committee of American Audiology Society

Date: November 1, 1975
Time: 1:15 p.m.
Place: Jack Tarr Hotel
San Francisco, California

Members in Attendance:

Charles Berlin, Ph.D.
Meyer Fox, M.D.
Aram Glorig, M.D.
Bruce Graham, Ph.D.
Fred Linthicum, M.D.
Sam Lybarger, B.S.
Geary McCandless, Ph.D.
Ralph Naughton, M.D.
Ross J. Roeser, Ph.D.
F. Dixon Ward, Ph.D.

The meeting was called to order by the President, Aram Glorig.

Because there are key persons involved in conducting the business of the Society, conducting the annual meeting, and publishing the Journal; and because it is critical that these key individuals attend the annual Executive Committee Meeting, the following motion was made: "The Society will provide reasonable expenses above other reimbursement, if any, for the President, Secretary/Treasurer, Journal Editor, and Program Chairman to attend the annual meeting of the Society effective January, 1976 depending on availability of funds." (Passed)

In view of his significant contribution to the field of audiology, and his support of the American Audiology Society, a motion was made to create a Raymond Carhart Memorial Lectureship and Award. A subcommittee was appointed to make recommendations for implementation of this lectureship. Chuck Berlin was appointed Chairman, Geary McCandless and Sam Lybarger were appointed members. Aram Glorig indicated that he would contact Mrs. Carhart for her approval.

The results of election were announced by the Secretary/Treasurer. Those persons elected to the Executive Committee are:

Special Event

The XIII International Congress of Audiology will meet in Florence Italy, October 18-21, 1976. Two group flights are being planned, one for one week's stay and the other for two weeks (See announcement enclosed). Interested persons may fill out the accompanying form for further information. Registration materials for the Congress may be obtained by writing to: Fondazione Giovanni Lorenzini, Via Giovanni Lorenzini, 2, 20139 Milan, Italy.

[See Page 4 and 5]

Current Abstracts

(This month we have singled out the September 1975 issue of S/N - Sound and Vibration, which contains articles relevant to Occupational Noise.)

Effects of Noise on Human Performance, by Jay M. Finkelman, Ph.D., City University of New York.

This investigation viewed the individual as a communications channel and evaluated the effect of noise on performance using a delayed digit recall subsidiary task measure derived from information theory. Performance did not deteriorate until channel capacity was exceeded. Prior research may not have detected performance degradation because measurement techniques lacked sensitivity with respect to total information processing load.

In essence, the reported investigation has demonstrated the potential for performance degradation at physiologically safe levels of noise. If the individual is already loaded to the limits of his channel capacity by existing task and environmental demands (not including noise), the capacity that is usurped by the noise, will, in fact, result in performance degradation.

Another criterion for noise regulation is being proposed in this article. It is the information processing cost of noise adaptation and, through extrapolation, the performance degradation resulting from environmental noise under high ambient information processing load conditions.

Contribution of Animal Research to Noise Exposure Criteria, by Donald Henderson, Ph.D. and Roger P. Hamernik, Ph.D., State University of New York, Syracuse.

Two shortcomings of the present noise exposure criteria are illustrated by animal experi-

mentation. First, pure-tone thresholds do not necessarily reflect the status of the sensory cells in the ear; second, combinations of safe impulse and safe continuous noise may produce severe hearing losses and cochlear damage.

Chinchilla recovered normal hearing levels after 30 days following exposure to 50 noise impulses of 158 dB peak equivalent SPL. However, all animals in the group had serious losses of outer hair cells in the middle of the cochlea, i.e. 4-6 mm of the sensory epithelium of the cochlea was devoid of outer hair cells. Another experiment demonstrated that a combination of impulse and continuous noise exposure produced greater damage to hair cells than either noise exposure alone.

Performance of Earphone Enclosures for Threshold Audiometry, by Ross J. Roeser, Ph.D., Janice Seidel, M.A. and Aram Glorig, M.D.

Pure tone Bekesy thresholds were recorded from 12 normal hearing subjects at octave frequencies ranging from 250 Hz through 8 kHz and at 6 kHz. The same TDH-39 driver was mounted in: a standard (MX-41/AR) cushion, an Auraldome (Model AR-100R) and an Audiocup (Amplivox). Thresholds were recorded in quiet and in the presence of broad and narrow band noise presented at 40, 50 and 60 dB SPL. In the quiet condition the use of the Auraldome resulted in thresholds that were less sensitive than either the Nx-41/AR or the Audiocup. Thresholds obtained while using the Auraldome were not appreciably different from thresholds using the Mx-41/AR in the presence of sound-field noise. Thresholds for the Audiocup in noise were discernably better than the Auraldome or MX-41/AR.

Jamie T. Benitez, M.D.
Leo Doerfler, Ph.D.
David Dolowitz, M.D.
Gilbert R. Herer, Ph.D.
Norma T. Hopkinson, Ph.D.
Hiroshi Shimizu, M.D.
Laura Ann Wilbur, Ph.D.

It was suggested that safeguards be implemented in the future to keep an equitable representation of the disciplines involved on the Executive Committee.

Fred Linthicum reported on the membership committee. Four regional membership chairmen were appointed from otolaryngology: Mansfield Smith, M.D., - Western Region, Wiley Harrison, M.D., - Central Region, Joseph Sataloff, M.D., - Eastern Region and Jim Spenser, M.D., - Southern Region. The Regional Chairmen for audiology have not yet been appointed and will be reported at a later date. Sam Lybarger indicated that he would contact members of the hearing aid industry and other disciplines. The sole purpose of the membership committee is to disseminate information regarding the Society and recruit members.

In accordance with last year's minutes, the following motion was made, "The Executive Committee approves the actions of the President of the American Audiology Society in approaching the International Audiology Society requesting that the American Audiology Society be made the recognized representative to the International Audiology Society from the United States. (Motion Passed)

Only two numbers of the Journal were issued in 1975. Membership dues were based on six issues. It was recommended by the Finance Committee that members paying dues in 1975 be given credit for Journals not received. Pending discussion with Williams & Wilkins this pro-

(Cont'd on Page 8)

AMERICAN AUDIOLOGY SOCIETY EUROPEAN STUDY TOUR

Available to Members and Their Immediate Family

OCTOBER, 1976

ALL INCLUSIVE TOUR INCLUDES:

- HIGHLIGHTS POINTS OF PROFESSIONAL INTEREST INCLUDING THE HEARING AID INSTITUTE, LUBECK, GERMANY & THE XIII INTERNATIONAL CONGRESS OF AUDIOLOGY, FLORENCE, ITALY.
- AIR FARE & GROUND ARRANGEMENTS.
- DELUXE HOTELS.
- SUPERIOR CONTINENTAL BREAKFAST INCLUDED EVERY DAY. LUNCHES & DINNERS AS PER FINAL ITINERARY.
- FULL SIGHTSEEING IN COPENHAGEN, MUNICH & ROME.
- ENGLISH SPEAKING FULL-TIME ESCORTS.
- HOSPITALITY DESK IN ALL CITIES.
- TRANSPORTATION VIA DELUXE MOTORCOACH.
- TIPS, TAXES, PORTERAGE INCLUDED.

ITINERARY FOR 16-DAY TOUR

DATE	ACTIVITY	DAY AT	NIGHT AT	MILES
Sat. 10/9	1. depart U.S. for Copenhagen -- flight	plane	plane	
Sun. 10/10	2. arrive Copenhagen -- rest	Copenhagen	Copenhagen	
Mon. 10/11	3. Copenhagen-Danavox presentation & hospitality	Copenhagen	Copenhagen	
Tues. 10/12	4. Copenhagen	Copenhagen	Lubeck	100
Wed. 10/13	5. Lubeck Hearing Aid Institute Presentation	Lubeck	Lubeck/Hamburg	
Thurs. 10/14	6. Hamburg/Lubeck to Nuremberg by train	train	Nuremberg	290
Fri. 10/15	7. Erlangen-Siemens Presentation & Hospitality	Erlangen	Nuremberg	12
Sat. 10/16	8. Nuremberg to Munich on your own	Munich	Munich	100
Sun. 10/17	9. on your own in Munich	Munich	Munich	
Mon. 10/18	10. Munich to Florence by Deluxe Motorcoach	Motorcoach	Florence	290
Tues. 10/19	11. Florence, A.M. - Congress, P.M. - on your own	Florence	Florence	
Wed. 10/20	12. Florence, A.M. - Congress, P.M. - on your own	Florence	Florence	
Thurs. 10/21	13. Florence, A.M. - Congress, P.M. - bus to Rome	Florence	Rome	150
Fri. 10/22	14. Rome - on your own	Rome	Rome	

Sun. 10/24 10. depart ROME for U.S.A.

plane

ITINERARY FOR 9-DAY TOUR

Sat.	10/16	1. depart U.S. for Rome	plane	plane
Sun.	10/17	2. arrive Rome - rest	Rome	Rome
Mon.	10/18	3. Rome to Florence by train	Florence	Florence 150
Tues.	10/19	4. Florence, A.M. - Congress, P.M. - on your own	Florence	Florence
Wed.	10/20	5. Florence, A.M. - Congress, P.M. - on your own	Florence	Florence
Thurs.	10/21	6. Florence, A.M. - Congress, P.M. - Deluxe Motorcoach to Rome	Florence	150
Fri.	10/22	7. Rome - on your own	Rome	Rome
Sat.	10/23	8. Rome - on your own	Rome	Rome
Sun.	10/24	9. depart Rome for U.S.A.	plane	

* PRICE:

TOUR 1 (16 DAYS)

LEAVE FROM:	Los Angeles	Chicago	Dallas	New York
	700.60	581.40	651.00	503.50
	1337.60	1218.40	1288.00	1140.50

TOUR 2 (9 DAYS)

LEAVE FROM:	Los Angeles	Chicago	Dallas	New York
	690.00	572.00	639.00	492.00
	997.00	879.00	946.00	799.00

* Rates are based on a minimum of 40 participants from each departure point and are subject to change, based on current fuel prices. Participation of more than 200 Members on each tour will reduce rates by \$300.00 or more. Applications are on a 1st come 1st serve basis. Reservations received before March 1, 1976 will be guaranteed.

To assure your place on the tour complete the following and remit a refundable deposit of \$100.00 to (make check payable to First Travel Service Escrow Account): American Audiology Society, c/o First Travel Service, 1st National Bank Bldg., One Center Avenue, Brownwood, Texas 76801

Name: _____ Phone: _____

Address: _____ State: (include Zip) _____

Member of American Audiology Society _____ Yes _____ No _____

Immediate Family of Society Member _____ Yes _____ No _____

Send Application Membership Forms _____

Check Enclosed _____

News About Members

(Cont'd From Page 1)

Professor and Chairman of Audiology, Department of Otorhinolaryngology and Human Communication, University of Pennsylvania Medical School, Philadelphia, as of July 1, 1975.

LEO G. DOERFLER (University of Pittsburgh) received the Honors of the Association from the American Speech and Hearing Association on November 23, 1975, at the annual convention in Washington, D.C.

PHILLIP E. ROSENBERG will present the annual Moe Bergman Lecture at Hunter College in New York on December 10th, 1976.

EARL R. HARFORD, formerly of Northwestern University, is now Director of the Bill Wilkerson Hearing and Speech Center and Professor and Chairman of the Division of Hearing and Speech Sciences, Vanderbilt University Medical School.

E. JAMES KREUL has joined the California State University at Chico, California as a professor in the Speech Pathology and Audiology program. This program is scheduled to receive departmental status this fall (1976), with a faculty of six.

JAMES H. DELK is resigning January 1 as Director of Audiological Services for the Audiotone Division of Royal Industries to enter private practice in San Bernardino, California in the dispensing of hearing instruments. He will continue as consulting audiologist for Audiotone.

ARTHUR BOOTHROYD has just returned from a lecture tour in Italy, sponsored by the Amplifon Center for Research and Study. He covered 14 cities, from Turin to Palermo, discussing "The Role of Hearing in Education of the Deaf".

SAM LYBARGER was one of the invited speakers at the VII Danavox Symposium in Denmark, August 27-30. This is a scientific symposium sponsored by the Danavox Foundation and planned by the State Hearing Centers. Sam's papers were on "Comparison of Earmold Characteristics on the 2cc Coupler, the Zwislocki Coupler and Real Ears", and "Sound Leakage from Vented Earmolds". The proceedings of these annual symposia are published and available from the Danavox Foundation.

A new standards writing group has been formally established by the American National Standards Committee on Bioacoustics (S3) to begin working on a standard for acoustic impedance/admittance instruments and measurements. David J. Lilly, Ph.D., has been appointed Chairman of the new standards committee. The committee membership will be composed of persons involved in (1) basic questions and calibration; (2) instrument manufacture; and (3) clinical applications of acoustic impedance measurements. Several members of the A.A.S. will be on the committee.

SANFORD GERBER was promoted to full Professorship of Audiology at the University of California at Santa Barbara in July 1975. He was also elected vice-president of the Society for Ear, Nose and Throat Advances in Children (Sentac) at its November 1975 meeting in Mexico City.

Telex Announces Wireless CROS

Telex Communications, Inc., recently introduced the Tele-CROS Model 400, a wireless CROS hearing aid. This instrument entirely eliminates wiring in the CROS fitting. The microphone signal is transferred to the amplifier-speaker side by high-frequency electro-magnetic couplings, then transferred back to audible frequencies, and thereafter amplified normally.

The wireless feature allows this aid to be fitted as simply as a conventional eyeglass aid while enabling the user to have the advantages of CROS fittings. Fitting the Tele-CROS consists of merely attaching the aid with the proper adapters to the frame and bending the paddles for a comfortable fit behind the ears.

Calendar of Events

JANUARY

12-16:

Military Hearing Conservation Workshop, Aberdeen, Maryland.

26-30:

Postgraduate Course in neuro-otology, Department of Otolaryngology, Hospital General del Centro Medico Nacional and the Mexican Society of Otolaryngology, Mexico City.

30:

Conference on Piagetian Therapy, Children's Hospital, Los Angeles, California.

FEBRUARY

No date:

Conference on Early Intervention Programs for Hearing Impaired Children at University of New Mexico, sponsored by Indian Health Service (Dr. J.L. Stewart, Albuquerque).

19-20:

Second Annual Voice Institute, The Methodist Hospital, Houston, Texas.

28-29-March 1:

Mardi Gras Otolaryngology Symposium, Department of Otolaryngology and Maxillofacial Surgery, Tulane University School of Medicine, New Orleans.

MARCH

Feb. 29-March 5:

The Shambaugh Fifth International Workshop on Middle Ear Microsurgery, Chicago, Illinois.

6-13:

10th Colorado Medical Audiology Workshop, Vail, Colorado.

14-21:

American Decibel and Diopter Society, Annual meeting, San Diego, California.

19-22:

International Hearing Aid Seminar, Hotel Islandia, San Diego, California.

22-25:

Neurotology course, Department of Otolaryngology of the Abraham Lincoln School of Medicine and The University of Illinois Eye and Ear Infirmary. (Enrollment limited to 15.)

25-26:

Annual Meeting, American Otological Society, Palm Beach, Florida.

MARCH

25-27:

Third Course in Clinical Neuro-Otolaryngology, Eye and Ear Hospital of Pittsburgh University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.

APRIL

5-9:

Acoustical Society of America, Washington, D.C.

12-14:

1976 IEEE International Conference on Acoustics, Signal and Signal Processing, Philadelphia, Pennsylvania.

21-24:

Canadian Speech and Hearing Association, Halifax, Nova Scotia.

25-28:

National Spring Meeting sponsored by the West Virginia Academy of Ophthalmology and Otolaryngology, White Sulphur Springs, West Virginia.

MAY

6-8:

American Academy of Private Practice in Speech Pathology and Audiology, Louisville, Kentucky.

12-16:

American Cleft Palate Association, San Francisco, California.

26-29:

International Conference on Cholesteatoma, University of Iowa, Iowa City, Iowa.

27-29:

ASHA Western Regional Conference, Portland, Oregon.

JUNE

13-15:

XIII World Rehabilitation Congress, Tel Aviv, Israel.

15-18:

International Symposium on Childhood Deafness, Central Michigan University, Mt. Pleasant, Michigan.

JULY

12-23:

61st annual course in Head and Neck Anatomy and Clinical Otolaryngology, Indiana University.

(Cont'd on Page 7)

Abstracts of Papers Presented to the A.A.S., Nov. 5

Relevance of Clinical Research to the Rehabilitation of Persons With Auditory Disorders. Norma T. Hopkinson, Ph.D., Pittsburgh, Eye and Ear Hospital.

Rehabilitation is used in the broadest sense of the word to include learning more about the auditory system in order to apply it to persons with auditory disorders. The danger lies in studying the system on an analytic, fragmented basis, and never integrating the two ears on the same head, on a neck, on a torso, etc., so that the system is viewed as a part of a functioning total being.

In clinical investigations of an ear for diagnostic purposes, I think an ear tries to tell about itself and what it contributes to hearing. We are limited in our interpretations only by our knowledge and ingenuity as to how to get the ears to reveal their mystery. Sometimes the finding is fortuitous. For example, when a patient who responded to a conventional pure tone test as if he had a low-frequency loss of sensitivity in one ear became a subject in a forced-choice experiment, he had no loss of sensitivity. The durations of signals and the time between them were highly specified and controlled. Accurate sensitivity levels could be obtained despite a serious central nervous system disease. On the other hand, if we had concerned ourselves only with the accuracy of his levels, we would have known very little about his very rapidly adapting responses. While it is important to have specific control ver signals to learn certain facts about an ear, it is also important to allow the ear some freedom to tell its mystery.

If we are going to worry about two ears and how they interrelate on a head, then we must look at them together as well as separately. Examples of methods for studying the interrelationships were given. Under conditions of amplification with a hearing aid on one ear, but two ears with which to relate to the environment, I am convinced (at the gut-feel level) that the hearing aid user experiences something more akin to alternation and interruption of forward and backward masking than to filtering of speech.

Finally, a few questions for rehabilitation purposes. What does binaural listening under earphones have to do with binaural listening in a controlled sound field, and what does either of these have to do with "bilateral" listening in the park or cafeteria? We add confusion to these questions if a hearing aid is used and if the variable of age is included. How does the person function in a communicating society and who is the judge? The ultimate measure of applied research is what it does for the human's right to a quality life, for

the person's right to be able to contribute to society. The ultimate test of the total person is the nature of his rehabilitation.

Electrocochleography. Nelson J.S. Kiang, Ph.D., Massachusetts Eye and Ear Infirmary.

Electrocochleography has given the clinician a practical device for measuring the responses of the auditory nerve with non-invasive techniques. The theoretical foundations for interpreting the results are being elucidated in basic studies.

New Directions in Sensory Aids Research for Speech Training. Robert A. Houde and Donald D. Johnson, National Technical Institute for the Deaf, Rochester, New York.

The "problem" of speech training for the prelingually deaf is that the quantity of formal individual training required to achieve functional speech is greater than that which can be provided within the resources allocated by society. If we eliminate the possibility of changing the resource allocation, we must look for approaches which will significantly improve the effectiveness of the speech training effort. Past attempts to develop more effective speech training "methods" have not resulted in success. Now new directions are developing in the field of instrumental speech aids which promise more direct assistance to this problem. The new directions arise from the realization that the principal role of instrumentation may be to provide the student with the ability to drill and practice relatively independently, freeing the teacher to concentrate on the unique instructional component of training, thus achieving the required quantity of individual speech training without an increase in teacher effort.

It is to this end that the exciting new advances in speech signal processing and display are being directed. Typical of the new systems which have the ability of providing independent drill are the computer based display of Bolt, Baranek and Newman (1), the Visual Speech Training Aid (VSTA) developed by the Center for Communications Research (CCR) (2), and, more recently, the Speech Spectrographic Display of

CCR, a modern version of the Visible Speech Translator of 30 years ago. These instruments were designed with the simplicity and ease of operation foremost, and now the task of structuring speech training to take advantage of their ability to provide independent drill and practice is being addressed.

Looking further to the future, the recent work on vibrotactile vocoders by Engelman and Rosov (3) and Electrotactile vocoders by Saunders (4) suggest the possibility of "wearable" speech reception aids which will allow speech training to take place in a more natural setting.

- (1) Nickerson et al, "Teaching Speech to the Deaf: Can a Computer Help?" Proc. Nat. Conv. ACM, 1972, pp. 240-250.
- (2) L.C. Stewart, et al, "The Vista: An Approach to the Speech Training Problem," Conf. Record of 1973 Carnahan Conference on Electronic Prosthetics, Lexington, Ky. pp. 10-14.
- (3) Engelman and Rosov, Tactual hearing experiment with deaf and hearing subjects. *Exceptional Children*, 41, 243-253, Jan. 1975.
- (4) Saunders, NINCDS Workshop on Tactile and Visual Aids for the Deaf, Washington, D.C. July 1, 1975. Hearing substitution: A wearable electrotactile vocoder for the deaf.

"Quantitative Analysis of the Romberg Test: 1. Technique and Initial Results." by F. Owen Black, M.D.

A Methodology for the objective characterization of the vestibulo-spinal control system capabilities in the human would add significant information to the clinician's evaluation of patients with vertigo and balance disturbances.

With the aid of the quartz crystal force platform and PDP/11 computer programs x-y plots of a patient's center of mass are relatively easy to obtain. Additional analysis such as position from gravity vertical versus time and rotation of the positional vector versus time can be performed with ease. This determination combined with position versus velocity plots (for damping characteristics) are useful in the diagnosis of musculo-skeletal versus labyrinthine versus oculomotor input and control abnormalities in the human. Data from normal and abnormal subjects were presented to demonstrate the markedly different patterns obtained from each group of subjects.

Calendar of Events

(Cont'd from Page 6)

University School of Medicine,
Indianapolis, Indiana.

OCTOBER

- 5:
Annual Meeting of American Audiology Society, Las Vegas, Nevada.
- 6-10:
1976 - Annual Meeting of O&O, Las Vegas, Nevada.
- 9-24:
16 Day European Study Tour, Denmark, Germany, Italy.
- 16-24:
9 Day European Study Tour, Italy.
- 18-21:
International Audiology Society, Florence, Italy.



Playpersons of the Month

"ECSTASY ONCE A YEAR"

Your Past president Aram Glorig and new president "Dix" Ward on a recent moose-hunting trip in Canada.

Chuck Berlin

Appointed as

1976 Chairman

The 1976 annual meeting of the American Audiology Society will be held in Las Vegas in October, preceding the annual meeting of the American Academy of Ophthalmology and Otolaryngology. Dr. Charles Berlin, Kresge Research Center of the South, New Orleans, La., is the program chairman. Members wishing to suggest items for the program should contact him. This year will be the first presentation of the Carhart Memorial Lecture, and there will be an exciting and informative program.

ACKNOWLEDGEMENT

Member, Irwin Klar, American Electro-medics, helped in the distribution of this promotional issue.

Invitation to Join A.A.S.

The aims of the American Audiology Society are to increase knowledge of human hearing, promote conservation of hearing and foster habilitation and rehabilitation of persons with hearing impairment. The Society disseminates information through this quarterly newsbulletin and through a bi-monthly professional publication, *Journal of the American Audiology Society*, and through the holding of an annual meeting.

The requirements for membership are a demonstrated

professional interest in the field of human hearing and at least a baccalaureate degree from a certified college or university. Two active members must sign the application for membership, and annual dues of \$20.00 must accompany the application.

We invite all eligible persons to apply for membership. The Executive Committee of the Society passes on the application for membership. Merely fill out the form below and send it with your check.

Membership Application Form

Name _____ Date _____

Home Address _____ City _____

State _____ Zip _____ Phone _____

Professional Address _____ City _____

State _____ Zip _____ Phone _____

Education

Institution	Location	Degree/ Year

Sponsoring Members

[1] Name _____
Print or Type Signature

Institution or Company _____

[2] Name _____
Print or Type Signature

Institution or Company _____

This membership application must be supported by signed statements from two active members verifying the qualifications of the applicant and payment of the membership fee [\$20.00] to cover dues for the current year. When complete, return to:

Ross J. Roeser, Ph.D.
Secretary-Treasurer
American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

Minutes

Continued from Page 3

cedure will be adopted.

The meeting next year occur in conjunction with Association for Research Otolaryngology, which m before the annual meeting of American Academy of Ophthalmology and Otolaryngology. Chuck Berlin was appointed Program Chairman.

Mrs. Marion Downs appointed as the Editor-in-Chief of AUDIONEWS.

After considerable discussion the following motion was made reaffirming the position of Executive Committee on issue: "The commercial use of the Society's name in any form is strictly prohibited. Display the Society certificate is construed as commercial use." In addition, an Ethics Committee was formed to monitor any violations. Ralph Norton was made Chairman of committee.

Jerry Northern has indicated to the Executive Committee that with his present commitments he is unable to act as Associate Editor-In-Chief of the Journal. A successor identified and will be contacted to determine whether he will be willing to assume this responsibility.

It was decided that members of the Society can members of standing committees. Non-members can be paid consultants to standing committees.

An election was held for offices of Vice President Assistant Secretary. Geary Candless was appointed as Vice President and Norma T. Hinson was named as Assistant Secretary.

The Editor of the Journal needs close contact with members of the Executive Committee. Therefore, it was decided to appoint the editor of the Journal as an Ex Officio member of the Executive Committee.

The Secretary/Treasurer indicated that the present system of having two signatures on each check sometimes delays important action. It was decided that to avoid any delay this procedure the Secretary/Treasurer be bonded and only the Secretary/Treasurer signature be required on checks.

There being no further business the meeting was adjourned at 4:30 p.m.

Respectfully Submitted

Ross J. Roeser, Ph.D.
Secretary-Treasurer

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society

Published Quarterly

Vol. 1, No. 2

April 1976

What You Always Wanted to Know

About the Council for Accreditation In Occupational Hearing Conservation

Yes, Virginia, there is a Council for Accreditation in Occupational Hearing Conservation, (CAOHC) and it is alive and well in Denver and parts east. Chaired by William Call, Denver otolaryngologist, it has not been sitting on its hands like other agencies concerned with hearing conservation. A brand new important publication has just been issued: "Course Outline for Course Leading to Accreditation as an Occupational Hearing Conservationist." It is available through the Secretary-Treasurer, Mildred Sittner, R.N., 1619 Chestnut Avenue, Haddon Heights, NJ 08035.

Other activities of CAOHC include: 1) an article reflecting "A Symposium for Editors - The ABC's of Industrial Hearing Conservation" appearing in *HEALTH & SAFETY* - July-Aug. 75, featuring Paul Michael, Ph.D., of the CAOHC Board. The article is titled "Down to basics on hearing conservation". 2) An article by Thomas J. Doyle, M.D. of Consolidated Edison, NYC, on CAOHC which appears in *AUDIOLOGY & HEARING EDUCATION* in the Oct.-Nov. 75 issue. Doyle is a Board member. 3) A fine article covering "Hearing Loss; the key to successful therapy", featured in the Novem-

ber 75 issue of *CONSULTANT*. Harold R. Imbus, M.D., of CAOHC was the author. 4) An editorial by Aram Glorig, M.D., in the September 75 issue of *SOUND & VIBRATION*. 5) The certifying of 1750 Conservationists to date, and 385 Faculty.

The entire roster of the CAOHC Board Members is:

AAIN

Lillian M. Bozenhard, R.N., 57 Marbern Drive, Suffield, Connecticut, 06078, 203-668-2525.

Mildred A. Sittner, R.N., Secy.-Treas., Owens-Corning Fiberglass Corp., P.O. Box # 8, Barrington, JN 08007, 609-547-9200 609-547-6243 (home);

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NSC

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Dan Adair, 13960 N.W. Lakeview Drive, Portland, Oregon 97229, 503-645-1372;

ASHA

William Melnick, Ph.D., Vice Chairman, Ohio State University, University Hospital Clinic, 456 Clinic Drive, Columbus, Ohio, 43210, 614-422-4004.

Alan S. Feldman, Ph.D., State University of New York, Upstate Medical Center, 766 Irving Avenue, Syracuse, NY 13210;

AOMA

Aram Glorig, M.D., University of Texas at Dallas, Callier Center for Communications Disorders, 1966 Inwood Road, Dallas, Texas, 75235, 214-638-1100.

Rufus W. Miller, M.D., General Motors Parts Division, 6060 W. Bristol Road, Flint, Michigan 48554, 313-635-5272.

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

Jerger to Give Carhart Lecture

Berlin outlines '76 AAS Program

Chuck Berlin, program chairman for the October 5th AAS meeting in Las Vegas has announced the theme of the program as "Basic or Applied Hearing Science." He also announces that Dr. James Jerger has agreed to give the first Audiology Society Raymond Carhart memorial lecture on the afternoon of October 5th. The morning session will be devoted to papers from the membership. Papers are requested in any areas of basic or applied hearing science and should be sent to Program Chairman, Dr. Charles I. Berlin, Kresge Hearing Research Laboratory of the South, 1100 Florida Avenue, Building 164, New Orleans, Louisiana 70119, in Acoustical Society format. The format for Acoustical Society abstracts can be found in any program of the society. A sample abstract is as follows:

Frederic A. Tyszka
University of Wisconsin,
Stevens Point, Wisconsin, 54481
David P. Goldstein
Purdue University
Lafayette, Indiana
(Received 14 February 1974;
revised 22 April 1974)

J.D. Harris'
New Book
Reviewed on
Page 6

Masking level differences (MLDs) were used as a means of studying the interaural phase and amplitude relationships for a 500-Hz bone-conduction signal from both the mastoid and the forehead vibrator positions. The results of the investigation indicated that with the vibrator on the forehead there is a trend for a 500-Hz bone-conduction signal to be interaurally in phase and interaurally equal in amplitude. With the vibrator on the mastoid there is a trend for the bone-conduction signal to be 180 degrees interaurally out of phase and interaurally equal in amplitude.

An abstract of no more than 200 words must accompany each paper submitted. It should mention the subjects studied and the methods used and it should set forth quantitatively new observations and conclusions. Brief numerical results and their accuracy may be included.

(1) Abstracts must be submitted double- or triple-spaced and one paragraph only.

(2) If at all possible, avoid the use of reference citations within the abstract. If citation is unavoidable, the full citation must appear within the body of the abstract and not as a footnote.

Abstracts are due by June 15.

Progress Report On European Study Tour

Plans for the European Study Tour in October 1976, are progressing well and reservations are coming in with the majority being from the New York area.

Recent efforts on the part of our land agent assure us charter 707 if we do reach chart size (178 participants) and a significant reduction in air fare.

Co-operation among Bill Kriger, our land agent, Stig Carstén of Danavox, Dick Scott of St. men, Henry Meltner of Wid and their respective associates Europe already indicates smooth, unusually well-coordinated tour that should prove to be most enjoyable and enriching.

Any inquiries relative to the tour should be directed to: Frank L. Brister, European Study Tour, American Audiology Society, P.O. Box 359, H.P.U., Brownwood, Texas 76801.

(See Itinerary on Page 8)

The Suspense Story of the Year

OSHA Drags Heels on Noise Standard

The administration seems hesitant to release the official OSHA noise standard that would set in motion the hearing protection programs 13 million workers sorely need. At issue has been the question of whether to adopt OSHA's 1974 proposed standard of 90dBA eight-hour time-weighted average—or to change to an 85 dBA standard now, in five years, or in ten years. These alternatives have been bouncing off the heads of administrators and committee members for some time and will probably continue to bounce around for yet a longer time.

Originally OSHA contracted with Bolt, Beranek and Newman for an economic impact report to determine what would be the cost of industry's compliance with a

90 dBA standard as against an 85 dBA standard. This BBN report estimated \$31 billion for compliance with an 85 dBA rule and \$13 billion for compliance with a 90 dBA rule.

A second impact report was requested from BBN to estimate the cost of industry compliance with an 85 dBA standard after 5 years of the 90 dBA standard. This report gives an \$8 billion estimate of the cost for 85 dBA, assuming that industry has already complied with the 90 dBA rule. This estimate is based on engineering compliance only; \$155 million is added for costs of monitoring the noise.

For audiometric testing the costs are estimated as \$12.00 per worker annually for monitoring 13 million workers (\$155 million

per year), and \$20.00 for complete audiometric testing of 4.3 million workers (\$86 million annually).

The Labor Department's solicitor's office and the OSHA staff have not to date accepted the second report nor approved it for release. Under further consideration is adoption of the 85 dBA limit after 10 years of 90 dBA. Once any report is released a 45-day comment period is scheduled. After that OSHA will issue its final ruling at some as yet undetermined time.

AAS former president Aram Glorig comments on this situation in a recent editorial in *Sound and Vibration*. It is pertinent to reprint this editorial in its entirety:

HURRY UP AND WAIT

Months have passed since the hearings on the proposed OSHA noise regulations were completed. In the meantime, little or nothing is being done to protect the hearing of our labor force. We all know that the democratic process is sometimes slow, but when the imperceptible motion of bureaucracy takes over, decisions come to a screeching halt. While our "so-called scientists" argue about non-existent data and committees persevere in creating unmanageable monsters whose shape and character are dictated by diverse opinions based on unsatisfactory and meaningless data, the spectre of compensation for hearing loss grows larger and

(Continued on Page 2)

CORTIS ORGAN is a quarterly publication of the American Audiology Society, printed in Dallas, Texas.

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Aram Glorig, M.D.
J. Donald Harris, Ph.D.

News About Members

Wayne J. Staab, Ph.D., Director of Education for Telex Communications, Inc., completed a two-month trip around the world in March during which he visited deaf education programs, lectured at universities and National Acoustic Laboratories, and provided for hearing aid specialist education in those countries. Discussion with individuals involved in deaf education programs took place in the countries of Hong Kong, New Zealand, the Philippines and Iran. Lectures were given at the University of Witwatersrand, Johannesburg, South Africa, the National Acoustics Laboratory in Sidney, Australia and at the National Audiology Center in Auckland, New Zealand. In addition, training sessions were conducted for hearing aid specialists in the countries already mentioned as well as in Japan, South Korea, Taiwan, Indonesia, Singapore and India. Discussions with hearing aid manufacturers in some of these countries also took place.

Robert H. Payne of Indianapolis, Indiana - who has been in the private practice of audiology - is the Director of the Audiology, Speech Pathology and Electrostagnography Department of St. Francis Hospital in Indianapolis. He is also Director of Audiology Services, Inc., which provides diagnostic audiology services and other audiologic research services for the medical practice of Otology Associates in Indianapolis. He has a staff of audiologists as associates, and also a speech pathologist on his staff.

Phil Bellefleur announces that the Pennsylvania School for the Deaf has received a grant from a private foundation to develop a Radio-Teletype News Center for deaf people. The project will be conducted as a study to determine the value of transmitting radio frequency carriers to the homes of deaf families. The carrier waves will be reconverted into teletype signals allowing the deaf to receive local, national and international news.

Daniel Beasley has been appointed the Acting Assistant Dean for Graduate Studies and Continuing Education in the College of Communication Arts and Sciences at M.S.U., effective 1-1-76. His normal appointment is Assistant Chairman of the Department of Audiology and Speech Sciences.

At the Orthopedic Hospital and Rehab Center's annual dinner and membership meeting on January 15, 1976, Winifred Shufelt received a recognition award for her work in the Partin Speech and Hearing Center. It was a wood and bronze plaque with the following inscription on it:

ORTHOPEDIC HOSPITAL AND
REHABILITATION CENTER
Mrs. Winifred B. Shufelt
In appreciation for outstanding
service as DIRECTOR and
AUDIOLOGIST of the
PARTIN SPEECH AND
HEARING CENTER

Darrel L. Teter, Ph.D., of Denver, Colorado, will conduct two-day workshops in Electrostagnography in Lansing, Michigan, on April 23rd-24th, in Atlanta, Georgia, during May, and in Minneapolis during June, 1976. The workshops will include complete practicums and will cover principles, techniques and interpretation of Electrostagnography in the testing of dizzy patients. For additional information, contact TRACOUSTICS, INC., P.O. Box 3610, Austin, Texas, 79764, Phone (512) 444-1961.

Irving Shapiro was guest lecturer at the University of California Santa Barbara Speech and Hearing Center Research Seminar, March 1, 1976, discussing "Hearing Aid Evaluations".

Bill Behrends, M.A., C.C.C., is no longer in the Air Force Audiology, but has taken a position as Director of Audiology, Department of Otolaryngology, Medical Center Clinic, Pensacola, Florida. He is establishing a Clinical Diagnostic Audiology Center in The Medical Center Clinic.

Albert P. Seltzer, M.D., Philadelphia, Pa., presented a paper entitled "Electronic Ear Warmer" before the American Academy of Ophthalmology and Otolaryngology in Dallas, Texas, September 23, 1975.

Arthur Boothroyd, Ph.D., is serving as Co-chairman for the program of the 1976 Convention of the Alexander Graham Bell Association, to be held in Boston, June 23 to 26. The theme of the program is "Keys to Independence", with a heavy emphasis on the role played by research and technology in providing those keys.

Jean Stewart, Director of the Hearing & Speech Center of Agvia O. Richardson, M.D., recently participated in a series of workshops on language delayed-learning disabled children sponsored by the Guam Hearing and Speech Center. A workshop was held for the Island's physicians entitled "The Learning Disabled-Hyperactive Child". Various staff members from the Hearing and Speech Center also appeared on the program. Additional workshops were presented to school health counselors, public health nurses, elementary and secondary counselors, to the entire faculty of the elementary school and to all the special education teachers. In addition, an organizational meeting was held for a local chapter of the Association for Children with Learning Disabilities.

Hirosi Shimizu was one of the invited speakers at the International Congress on Education of the Deaf in Tokyo, Japan,

August 25-29, 1975. His paper was on "Medical Assessment of Deafness". He will be on the faculty of the 1976 Frederick T. Hill Seminar in Otolaryngology held in Waterville, Maine, August 1-4, 1976.

B. Hill Britton, Los Angeles, presented four lectures at the Oregon Academy of Ophthalmology and Otolaryngology meeting January 30-31. The subjects were: Carcinoma of the Ear, Glomus Tumors, Sensorineural Hearing Loss, and Neurotologic Evaluation.

Warren Johnson was co-sponsor of a conference on Early Identification and Assessment of Communicative Disorders in Children, February 4-6, 1976.

Effective 12-15-75, Abraham Shulman, M.D. is Acting Head, Division of Otolaryngology, Downstate Medical Center, State University of New York.

Wayne Staab was presented with an award for outstanding achievement in industry research for the United States Senate Hearing Aid Industry Conference 1974-75. A plaque was presented to him at the 1975 NHAS/ HAIC Annual Convention in Chicago in October.

William Hardy received two distinguished awards in 1975: The Whetnall Memorial Medal of the Royal Society of Medicine in London, May 1; and the Honors Award of 1975 by the Alexander Graham Bell Association for the Deaf, November 20, 1975.

The Department of Audiology and Speech Pathology at the University of Tennessee has inaugurated a multidisciplinary Noise Research Laboratory. Initial projects have been designed to inquire into the mechanisms of noise-induced hearing impairment. Included in the disciplines represented by the Laboratory and inter-departmental collaborations are developmental physiology, electrophysiology, audiology, auditory physiology, histology, cytology, electron microscopy and hemopathology. David Lipscomb is in charge.

The Northwestern Pennsylvania Society of Audiology under the direction of Jonathan R. Brown, M.A., Audiologist, is sponsoring its first birthday with a meeting at the Holiday Inn in Clarion, Pa. The Northwestern

Pennsylvania Society of Audiology meets on a quarterly basis and the meeting is essentially for audiologists in the northwestern Pennsylvania area. It is not restricted to audiologists, however, and students are welcome. Interested persons should contact Jonathan R. Brown, M.A., Audiologist, at Ear, Nose, and Throat Associates, 122 Prospect Avenue, Franklin, Pa. 16323. Telephone: (814) 437-6848.

Dr. James MacDonald of the Nisonger Center of Ohio State University at Columbus will present his environmental language and parent training programs at the May Day Conference sponsored by the Department of Speech Pathology and Audiology of Southern Illinois University at Edwardsville; Gail Chermak, Head. The conference is open to the public and will be held on May 7, 1976.

Don Dirks, Center for Health Sciences, University of California, Los Angeles, spoke on "Current Developments in Audiological Diagnosis: New Uses of Impedance and Bone Conduction Thresholds" at the Association Speech and Hearing Association Central Region Mini Conference held at California State University, Fresno.

Jon Fitch announces that Dennis J. Arnst, Ph.D. has joined the staff of California State University, Fresno, Department of Communicative Disorders. He will teach undergraduate and graduate courses in Audiology.

Phil Rosenberg reports that the Audiology Department of Temple University Health Sciences Center is sponsoring a series entitled Audiology Colloquia-Temple (ACT). These colloquia are open to the audiologic and otolaryngologic community of the Delaware Valley.

Dr. Harold Bate, Professor of Audiology at Western Michigan University, will visit New Zealand for three months beginning May 1st as a guest of the National Audiology Centre and the New Zealand League for the Hard of Hearing. Dr. Bate will consult with the National Audiology Centre and various clinics around the country; conduct a refresher course for Tutors of the Hard of Hearing; and conduct a lecture tour on problems and needs of adults with hearing impairment. The Lecture tour will be associated with a national publicity campaign concerning hearing loss among adults, especially the aged.

Editorial...

(Continued From Page 1)

larger. Although the OSHA regulation has no direct bearing on compensation, its influence would be most meaningful in reducing future costs in human resources and dollars.

If the leaders of our fast growing bureaucratic dictatorship will not respond to the need for preserving human resources, what sort of "carrot" can we hold out to them? Is political position really more important than conserving human resources? If bureaucracy, labor and management are devoid of altruism, is it possible that the dollar cost of loss of hearing reflected in compensation awards can be effective in producing a decision? Such costs are nicely exemplified by awards recently made at two naval shipyards. A conservative estimate is five hundred million dollars for our ten naval shipyards if the remaining eight follow the pattern set by the two of them. If this is extrapolated to the entire population, the numbers become astronomical.

If the importance of conserving human resources and the enormity of the actual and potential cost will not convince our decision makers of the importance of the noise regulation, what will?

Aram Glorig, M.D.

Calendar of Events

APRIL

5-6
Inter-Noise, '76, Vth International Conference on Noise Control Engineering, Shoreham-American Hotel, Washington, D.C.

5-9
Acoustical Society of America, Washington, D.C.

8-10
Conference on Medical Otolaryngology, East Lansing, Michigan, Division of Otolaryngology of Michigan State University. Continuing Education Service, The Kellogg Center for Continuing Education, Michigan State University, East Lansing, Michigan, 48824.

12-14
1976 IEEE International Conference of Acoustics, Signal and Signal Processing, Philadelphia, Pennsylvania.

21-24
Canadian Speech and Hearing Association, Halifax, Nova Scotia.

25-28
National Spring Meeting sponsored by the West Virginia Academy of Ophthalmology and Otolaryngology, White Sulphur Springs, West Virginia.

25-26
American Otological Society, Palm Beach, Florida.

Dr. Morton Corn to Speak at

'Summit' Meeting

A conference featuring top echelon people in the national industrial hearing conservation picture is scheduled for April 26-27 in Denver. The meeting is sponsored by the National Services Division of the Colorado Hearing and Speech Center of which H. Tom Buelter is Director. The featured speaker will be Dr. Morton Corn, Assistant Secretary of Labor for Occupational Safety and Health. He will speak on "New Directions in Hearing Conservation".

Other outstanding participants will be Frank Barnako, Chairman of the OSHA Review Committee, and Dr. Floyd Van Atta, formerly Senior Scientist with the Department of Labor. In addition, several international and national experts including AAS President W. Dixon Ward, will discuss hearing conservation concepts from a legal and practical viewpoint. Engineering concepts also will be discussed from the aspects of economic and technical feasibility.

Enrollment is limited to 120 people. The fee is \$150.00. For further information write to: Colorado Hearing and Speech Center, National Services Division, 1450 South Havana, Aurora, Colorado 80012.

27-29

The Triological Society, Palm Beach, Florida.

MAY

6-8
American Academy of Private Practice in Speech Pathology and Audiology, Louisville, Kentucky.

12-16
American Cleft Palate Association, San Francisco, California.

26-29
International Conference on Cholesteatoma, University of Iowa, Iowa City, Iowa.

27-29
ASHA Western Regional Conference, Portland, Oregon.

JUNE

13-15
XIII World Rehabilitation Congress, Tel Aviv, Israel.

15-18
International Symposium in Childhood Deafness: Information from Off-Campus Education, Central Michigan University, Mt. Pleasant, Michigan 48859.

23-26
A.G. Bell Association Annual Meeting, Boston, Massachusetts.

JULY

28-July 2
24th Annual Institute in Occupational Hearing Loss, directed by Joseph Sataloff and Aram Glorig, at The University of Maine at Orono (Bangor) Maine.

28-July 2
13th Annual Industrial Hearing Conservation Institute, directed by Joseph

ARA to Hold High Country Meetings

The Academy of Rehabilitative Audiology will hold its summer meeting on June 28-30, 1976, at the High Country Inn in Winter Park, Colorado. The program will deal primarily with the rehabilitation of the geriatric hearing impaired individual. One session titled "Training Programs and Development of Community Resources in Geriatric Rehabilitative Audiology" will be presented by Joan Erickson, Jan Colton, Dean Garstecki and John O'Neill. Raymond Hull will present a session dealing with "Practical Aspects of Geriatric Rehabilitative Audiology". Another session dealing with "Rehabilitative Audiology with a Non-Institutionalized Geriatric Population" will be presented by Edward Hardick, Ethel Mussen and Ralph Rupp. A session titled "Audiologist or Hearing Clinician: Terminology and Professional Responsibility" will be

Sataloff and Aram Glorig, at the University of Maine at Orono (Bangor,) Maine.

12-23:

61st annual course in Head and Neck Anatomy and Clinical Otolaryngology, Indiana University.

OCTOBER

5
Annual Meeting of American Audiology Society, Las Vegas, Nevada.

6-10
1976 Annual Meeting of O&O, Las Vegas, Nevada.

9-24
16 Day European Study Tour, Denmark, Germany, Italy.

16-24
9 Day European Study Tour, Italy.

18-21
International Audiology Society, Florence, Italy.

NOVEMBER

16-19
Acoustical Society of America, San Diego, California.

20-23
American Speech and Hearing Association, Houston, Texas.

1977

FEBRUARY

20-24
Ear Surgery course, J. Brown Farrior, M.P., Tampa, Florida.

Boys Town Institute for Communications Disorders in Children

Many of our members have been curious about what is going on at the new Boys Town complex. To answer their questions, Noel Matkin has furnished us with a complete description of the Institute.

The Boys Town Institute for Communication Disorders in Children is presently under construction in Omaha, Nebraska. It is being developed with private funds by Father Flanagan's Boys' Home, in conjunction with and adjacent to the new Creighton University Medical Center and is scheduled for completion in 1977. The facility has been designed, with input from a panel of national consultants, to serve boys and girls ranging in age from infancy to 18 years who manifest complex communication disorders.

The major component of the Boys Town Institute (B.T.I.) is a five-floor, 100,000 square foot Clinical Diagnostic and Habilitation Center containing medical clinics; audiology, speech, language and psycho-educational evaluation facilities; human communication research laboratories, as well as an inpatient medical-surgical unit to accommodate children who require surgical correction of deformities that impair their communication skills. A unique feature is an inpatient diagnostic floor which allows parents to stay with their children during periods of evaluation.

The second major component of the B.T.I. complex is the 20,000 square foot Preschool Language and Learning Center which adjoins the clinical building. The Center consists of a model facility in which prescriptive teaching will be carried out. A cluster of four family living units in which children requiring extensive language training will reside under the supervision of trained houseparents is attached to the Preschool Center.

In general, all B.T.I. programs are designed for the communicatively handicapped child who has sufficient intellectual potential to develop into a productive adult citizen. The severely mentally retarded child, as a rule, will not be eligible for acceptance in B.T.I. programs since exemplary programs have been developed for such children throughout this country.

The human communication research laboratories of the Boys Town Institute will conduct extensive clinical and basic research projects. New habilitation methods, clinical technology, and research data will be disseminated by the Institute for use by practicing physicians and clinicians, hospitals, clinics and schools for the ultimate benefit of all communicatively handicapped children.

An advocacy program, utilizing a problem-oriented approach, will be organized to

monitor services for each child while at the Institute and when he returns to his home. Each child advocate will be designated from the team of specialists serving the youngster. The child's advocate will also assume the responsibility of serving as a community liaison for continued follow up. Throughout the evaluation, a comprehensive program of education, guidance, and counseling for parents will be planned.

Boys Town recognizes the quality care and treatment for communicatively handicapped child can be prohibitively expensive, even for families of moderate means. While third party claims will be submitted, where appropriate, parents will not be required to pay for the unreimbursed cost of care and treatment provided to their child. However, a statement of the monetary value of the services provided to the child will be prepared and submitted to the family for their consideration.

The Institute is governed by the twenty-one member Board of Directors of Father Flanagan's Boys' Home. In addition, there is a National Advisory Committee to the Boys Town Institute consisting of sixteen members headed by the Chief National Consultant, Dr. John E. Bordley, and Professor Emeritus of Laryngology and Otolaryngology at Johns Hopkins University School of Medicine.

At present, seven professional staff are involved in the interclinical programs and the development of the Institute. They are:

Patrick E. Brookhouser, M.D., Otorhinolaryngologist, Executive Director;

Noel D. Matkin, Ph.D., Audiologist, Director Preschool Language and Learning Center;

Don W. Worthington, Ph.D., Audiologist, Director, Audiology and Speech Pathology;

Edward L. LaCrosse, Ed.D., Special Educator, Coordinator Extramural Projects and Resource Development;

Eric Javel, Ph.D., Auditor, Physiologist, Director, Auditor Physiology;

Arlene M. Matkin, M.A., Speech Pathologist, Coordinator Family Services;

Marion McMillan, A.B., Information Specialist, Director, Library and Information Center.

When fully operational in 1977 the projected staff will be approximately 150 individuals who will represent all of the identified disciplines needed to provide comprehensive care and treatment as well as to initiate innovative research studies.

For further information write to: The Boys Town Institute for Communications Disorders in Children, 8401 West Dodge Road, Suite 133, Omaha, Nebraska 68114.

Keeping Up with Otologic Medical Group

It isn't easy, but we're following our many members in the Otologic Medical Group of L.A. and the EAR Research Institute in their multitudinous activities. Recently two papers were presented at the Western Section meeting, "Ossicular Transplants: Histologic Findings in Animals and Man", by Fred H. Linthicum, Jr., and "Facial Palsy from Temporal Bone Fracture: Management and Results", by Jack L. Pulec.

The entire group is going down to Palm Springs to give a one day seminar on otology to all of the generalists and pediatricians of that area to update them as to what is available in the areas of not only surgical correction of ear problems but auditory rehabilitation. Eddie Johnson will be a participant. The aim is to put on similar seminars throughout the area so that primary physicians will know just what is available in the areas of diagnostic techniques both for hearing and otologic problems and vertigo and what is the current treatment of choice for the various problems. Emphasis will be on what they can take care of: acute otitis media, wax in the ear canal, etc., and what should be referred on to the otolaryngologist.

Three courses are being offered by the Institute during the rest of 1976:

May 16-28: Temporal Bone Dissection Course;

Aug. 1-13: Temporal Bone Dissection Course;

Oct. 10-22: Temporal Bone Dissection Course.

These courses are limited to 20, and are already filled.

Editors Win Merit Awards

On February 19th, Majorie Skafte, editor of HEARING INSTRUMENTS, and Kathryn Frame, associate editor, were presented with a Certificate of Merit in the Jesse H. Neal Editorial Achievement Awards.

These awards are presented annually by the American Business Press, Inc., the association of specialized business publications. The award was presented to Ms. Skafte and Ms. Frame for their work in publishing the special April 1975 issue on "Progress in Hearing Health Care: The American Indian."

Assisting them in the preparation of this special issue was AAS member Dr. Jerry L. Northern, who coordinated the work in gathering the articles that were utilized in presenting the special report. Others who contributed to this special series were George DeBlanc, M.D., Raymond T. Wood III, M.D., Karen Bedwell, M.S., and Pat Blomstrom, M.A., Geary Lewis, Ph.D., Charles A. McCandless, Ph.D., Charles Lewis, M.A., Joseph Stewart, Ph.D., and Malcom D. Graham, M.D.

INDUSTRIAL HEARING CONSERVATION COURSES

April 4-6
Environmental Hearing & Vision Conv. Ltd.; 6600 Joy Road, E. Syracuse, N.Y. 13057; 315-437-8439.

April 10
1 Day Approved Refresher Course, Kutztown State College, Kutztown, Pa. 19530; 215-683-3511, Ext. 354.

MAY
May 13, 14, 15
Robert L. Russell, Ph.D., Audiometric Tech Training Course, c/o Assoc. Ind. of Oklahoma; Suite 217, 6161 N. May Ave., Oklahoma City, Ok. 73112; 405-842-4427; Courses also in July, 15, 16, 17; Sept., 9, 10, 11; Nov. 18, 19, 20.

May 20, 21, 22
Richard R. Grabouske, Dr.; Basic Training Program for Audiometric Tech. Kutztown State College, Kutztown, Penna. 19530.

May 19, 20, 21
Industrial Audiometry Course cosponsored Ohio

State University & OAIN. Contact E.R. Neto, Ph.D., 456 Clinic Drive, Columbus, Ohio, 43210; 614-422-4004; Fall course Nov. 3, 4, 5.

May 18-20
Edward Hardick, Ph.D.; Audiometric Tech Training Course for Nurses, Wayne State Univ., 261 Mack Blvd., Detroit, Michigan, 48201; Repeat course, Sept. 21-23.

JUNE
June 28-July 1
HCNC, J. Sataloff, MD, University of Maine at Orono, Bangor, Maine.
Contact Sumwalt - HCNC-Phila. 215-735-7487.

SEPTEMBER
Date not set
Chas. Lebo, MD.-Judith Paton, MA. Pacific Medical Center, P.O. Box 7999, San Francisco, Ca., 94120, 415-563-4321.
UPON REQUEST
Thomas W. Norris, Ph.D. University of Nebraska, Med. Center, Omaha, Neb. 68105.

New Location Announced for Colby College Courses

The University of Maine at Orono (Bangor), Maine, announces that the 24th Annual Institute in Occupational Hearing Loss and the 13th Annual Industrial Hearing Conservation Institute, previously held at Colby College and directed by Doctors Joseph Sataloff and Aram Glorig, will be held on June 28 to July 2, 1976 at the University of Maine.

The facilities of the University of Maine provide improved accommodations and comfort for participants.

The Institute on Occupational Hearing Loss is designed for industrial physicians, safety engineers, hygienists, otolaryngologists, health management executives and administrative personnel. Designed to permit certification in audiometric proficiency, it awards 27 credits in PRA Category 1 of AMA for physicians. It covers the total field of conservation of hearing programs, medico-legal and compensation aspects, and OSHA developments. Lectures and laboratories are combined with practical field trips to couple theory and implementation. Tuition \$252.50, Room and Board \$25.00 per day.

The Industrial Hearing Conservation Institute is concerned with responsibilities of industrial

Incidental Information

According to the government's first annual report to Congress and the President on the state of the nation's health, the second most commonly reported chronic condition is hearing loss. The first is arthritis.

nurses and those actively interested in hearing testing performance and record keeping. Participants are eligible for certification by the Council for Accreditation in Occupational Hearing Conservation and for 2.6 CEU's by the Maine State Nurses Association. Tuition is \$235.00 and Room and Board is \$25.00 per day.

For descriptive brochure and application, write or phone: UMO Coordinator, 1721 Pine Street, Philadelphia, PA. 19103, (215) 735-0205.

ADVERTISEMENT

We are a European manufacturer of audiometers, impedance meters, auditory trainers, silent booths and ERA systems. Our products represent a highly competitive and comprehensive line of instruments applicable to the otological institutions, to the speech and hearing centers, as well as to the industrial market.

For our new sales company in the U.S., we are seeking a 30-35 year old experienced audiological technician, with excellent sales capabilities, to hire on full-time basis to direct our U.S. sales.

We offer the possibility of acquiring sales with the back-up of a name already well-known throughout the world, of a product range of advanced technology and prestige, and a highly interesting working position with both rewarding career and income possibilities, in a fast developing market.

Reply to: Law offices: Abrahams and Koenig, 51 Madison Avenue, New York, N.Y. 10010.

The Interrogatory

Q. Do you find that positional ENG testing is valuable in localizing a lesion?

Wallace Rubin, M.D., New Orleans, La.: No.

F. Owen Black, M.D., Eye and Ear Hospital of Pittsburgh, University of Pittsburgh: The function of the vestibulo-ocular system is basically to position the eyes at the approximate point in the skull which would allow re-orientation of the moving head to its environment in response to rotation relative to the environment. A nystagmus will therefore result in both normal and abnormal conditions. For example, if the head is rotated too rapidly or through too great an amplitude for the eye to maintain fixation on an object in the environment, a nystagmus or periodic correction of the eyes relative to the head will result. The general answer to your question "is positional nystagmus always abnormal?" is therefore, obviously, no. If, however, certain recording conditions are honored (including positioning of the patient) then a positional nystagmus recorded under these circumstances, in my opinion, is always abnormal. The reason for this is that the purpose of the vestibular system in the absence of vision is to yield information regarding the position of the head relative to gravity vertical. A nystagmus recorded under these circumstances of visual deprivation and with avoidance of over-stimulation of the vestibular labyrinth, indicates that the vestibulo-ocular reflexes are receiving information which indicates that the head is undergoing rotation. This obviously is not a normal situation.

In summary, a positional and positioning nystagmus may or may not be abnormal depending upon the recording conditions and the parameters of assumption of the movement under which the position is assumed.

Hugh Barber, M.D., Department of Otolaryngology, Sunnybrook Medical Center, Toronto, Ontario: It's necessary to specify test conditions. Positional nystagmus of Hallpike's benign paroxysmal type, whether recorded with eyes open or closed (ENG), is due in about 95% of cases to inner ear lesion of the side towards which, when undermost, the nystagmus is directed. Linear (horizontal, oblique, vertical) nystagmus that is recorded with eyes open and in primary position, that continues to beat vertically as long as the head position is maintained, usually with little associated vertigo, is good evidence of CNS (infratentorial) localization except for positional alcohol nystagmus. This is true of both direction-fixed and direction-changing types.

When positional nystagmus is recorded with eyes closed and effective alerting, the situation is more complex. Quite a bit of nystagmus is normal under these circumstances (see Barber and Wright, Adv. Oto-Rhino-Laryng. 19:276, 1973, S. Karger, Basel). When the "amount" of nystag-

mus is clearly pathological, direction fixed nystagmus is mainly (not exclusively) due to a peripheral cause, direction changing mainly (not exclusively) CNS cause, direction changing in a single position probably confined to CNS localization.

Alfred C. Coates, M.D., Texas Medical Center, Houston, Texas: When recorded behind closed lids, "pure" positional nystagmus (elicited by moving the patient SLOWLY into the test positions) can often be a valuable indicator of pathology, but neither the nature of the positional nystagmus (i.e. whether direction changing or direction fixed) nor the direction of the positional nystagmus has any mobilizing significance. However, paroxysmal nystagmus which is elicited by the relatively violent "Dix-Hallpike maneuver" and which is not the same thing as positional nystagmus does have localizing value. If the paroxysmal nystagmus is fatiguable, transient, accompanied by dizziness, it is usually peripheral and the downward ear is usually the involved ear.

Rehab Course to be Given at ASHA Regional

AAS member John R. Harris will present at the Western Regional Conference of ASHA in Portland, May 28th, a short course on "practical approaches used in Conducting Adult Aural Rehabilitation Groups." Since this convention is designed to be tutorial, he will be discussing the materials, techniques, and principles used in conducting an adult aural rehabilitation program utilizing college students as co-therapists. Another title for the presentation could well be "Things and methods hard of hearing adults taught me that were beneficial to them in assisting their adjustment to the hearing loss and the improvement of their communication awareness". As the rehabilitative audiologist for the HEARING SOCIETY, he became very aware of the necessity for additional assistance after the hearing aid evaluation has been completed, or for people who are not ready for a hearing aid but are having communicative difficulties.

While the improvement in hearing aids has provided more exacting scientifically designed pieces of equipment, he believes our fields have failed to look at the impact of the everyday quality of life the hard-of-hearing person endures. Many of the severe problems we discover could have been successfully handled in a group if the person would have been referred five, ten, or fifteen years earlier when hearing loss was first detected. With earlier referrals, many of the negative habits and barriers to productive communication could be eliminated, saving the person literally years of frustrations and emotional stress.

Communication from Members

—Perception is Subjective—

Not too long ago I authored an article in a popular trade magazine entitled "Hearing Conservation—A Call for Action". This article was not based upon a tested hypothesis nor was it otherwise scientifically contrived. It was, instead, an introspection concerning a perceived problem. It was a subjective disclosure of some observed situations dealing with a debasing, debilitating malady. It was the written result of a consciousness sharpened by experience, learning and concern. It was an attempt to communicate.

Today, as I think about the twelve years that have passed since my baptism into the scientific community, I find that my manner has mellowed, that my need to assimilate and divulge "facts" has lessened. I am more interested, now, in the synergistic process that involves man working with man toward a mutual benefit. I am less in awe of the "scientific" accomplishments of man if there is not also a resulting humanistic accomplishment. I have become turned off by the "objectivity" perpetuated by the news media and the academic community.

I am keenly aware of the need for feedback if communication is to take place. But even without feedback, the necessity for authenticity is no less important.

I understand better now what is meant by a service oriented society, and the "artificial scarcity" created by a consumptive oriented society.

Taking care of those in need

Editorial

The title of this issue might well be: "Two Editors in Search of a Format". We are obviously experimenting with a variety of topics and departments in an effort to find a content and style that will fill a need and please our members. To do this we ask advice and suggestions of the membership. Would you like to see more professional news, more research reports? Or would you prefer that the paper remain informal, irreverent and chatty? Perhaps a combination of the two approaches?

Of one thing we are certain—we will not take any sides in any controversy. There have been suggestions that we respond in some way to a recent article in a H/A journal pitting Audiologists against Otolaryngologists. We will not enter this brouhaha. Our purpose is to demonstrate that all disciplines concerned with hearing have a common stake, and that cooperation, not criticism, will best benefit those whom we serve. We will gladly publish items showing how all can work together with advantage—and there are many such examples in this present issue. We believe that men and women of Good Will comprise this organization, and that our goal is worth-while.

Continue to send in your items and suggestions. Your response has been fantastic, and we are indebted to all of you for your support.

must involve an awareness, a perception. There must be a sense of community, a sense of involvement that goes beyond the scientific jargon of the "professional".

So, in writing this, I urge for recognition of man's potential in the cybernetic era, a more meaningful utilization of man's possessed power. I urge an acknowledgement of the real needs of man and the pursuit of a remedy to take care of these needs. I urge a retreat from a stereotyping, dehumanizing judgement of others to a searching, listening, evaluative approach. I urge a participation by all in the development of understanding, and a utilization of energy for the betterment of mankind rather than the bewilderment of mankind.

I urge the development of a dialogue between groups so as to reduce the polarization formed by the unknown. This dialogue must be concerned with man's individuality and his capacity for change, keeping in mind that human beings have different needs at different times and that their growth does not follow neat, tidy intellectual lines.

In the professional world we are encumbered so much with the facts of an issue, the "objective" view of life. This is sterility at its worst, and communication at its poorest.

Gerald R. Bearce, Capt. MSC
ENT Clinic, Okinawa

Many Audiologists are unaware of the audiological facilities available at the Cleveland State University Speech, Language and Hearing Clinic, and we hope to change this. The City of Cleveland has had for many years several agencies which provide audiological services to hearing impaired persons including the Cleveland Clinic, the Cleveland Hearing and Speech Center (Case Western Reserve University) and the VA Hospital. Presently, CSU is the youngest of the audiological facilities in the city.

The CSU Speech, Language and Hearing Clinic opened in September, 1969. It is staffed by the faculty of the Dept. of Speech and Hearing and all audiological services and student training are provided under direct supervision. There are presently four audiologists on the faculty. Beverly A. Goldstein, M.A., the current Coordinator of Audiology and Assistant Professor has strong interests in the areas of deafness, rehabilitation, and hearing aids. David A. Metz, Ph.D. is the current Chairman of the Department and an Associate Professor and has been with the program at CSU since 1967. His major areas of emphasis are Industrial Audiology and Noise. L. Clarke Cox, Ph.D. is an Assistant Professor and his major emphasis areas include experimental audiology and central auditory testing. Cynthia J. Levi, M.A. is serving as a half-time clinical audiologist at CSU and as staff audiologist at St. Luke's Hospital. Cindy's main area of emphasis is medical audiology. Undergraduate and Master's level students are able to receive a well-rounded academic and

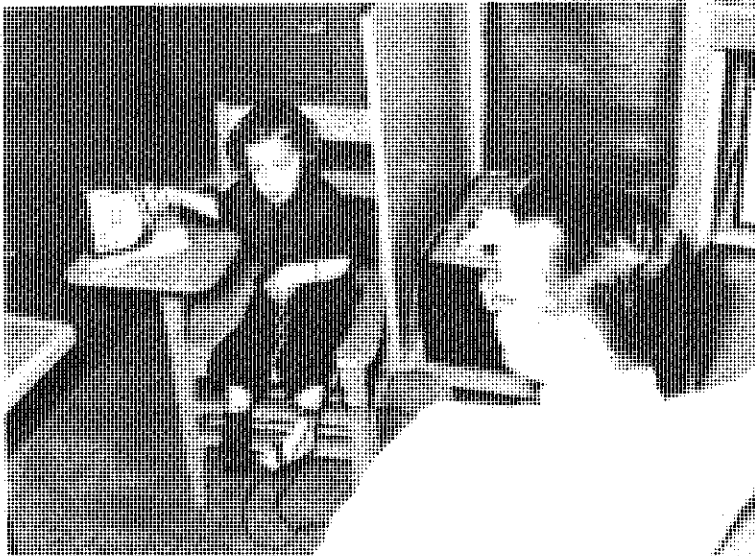
clinical education in Audiology at CSU through strong faculty guidance. Both the Audiology and Speech Pathology programs are accredited by ETB.

Since the CSU Clinic has opened, great strides have been made to develop the program into an excellent student training experience. There are presently 20 externships sights affiliated with our program, 10 of which are in Audiology. Our clinic also provides extensive speech, language and hearing screenings (including impedance audiometry) which allow for experiences with school age children and with the children and adults attending classes through the Cuyahoga County Board of Mental Retardation. The clinic itself receives referrals from many sources and students have considerable contact in hearing aid selections with adults as well as with children from the three hearing impaired programs of Greater Cleveland. Aural (re)habilitation therapy is available in the clinic with school age children, CSU hearing impaired students, and other adults as well as at two of the hearing impaired programs in the city.

The equipment and facilities available for training CSU students is quite new and diversified. There are three sound suites with two full range diagnostic audiometers. The clinic also owns many impedance audiometers, portable screening audiometers, and a "master hearing aid." There is also appropriate equipment to teach students to check the calibration of air, bone, and speech circuits of the clinic audiometers and to perform electro-acoustic analyses on clients' hearing aids as well as monitor the stock of clinic hearing aids. All eight therapy rooms have two-way observation mirrors and several of the rooms are hooked into a closed circuit video tape system.

Faculty and student rapport is an important aspect of the program at CSU. In addition to the audiology faculty, there are three Ph.D. Speech Pathologists and three full-time and two part-time supervisors in the speech and language clinic. Just about all of us hold CCC. We hope that you might visit us if you are in the Cleveland area and that if ever appropriate, recommend our program to others.

—Beverly A. Goldstein, M.A.



NAME THIS FAMOUS AUDIOLOGIST.

(Answer on Page 7)

Gross Heads Advisory Board

Better Hearing Institute Surgeons

The Better Hearing Institute of Washington, D.C., has approved Dr. Charles Gross as its Advisory Board Chairman and Dr. Gale Gardner as Associate Chairman. Tony Zale, former middleweight boxing champion of the world, is also a new Advisory Board member. Better Hearing Institute (BHI) is a non-profit public service organization of the hearing aid industry. Its purposes are to inform and educate people about hearing loss and to encourage those who suspect a problem to seek help.

AAS member Charles Gross has interested himself in hearing-aid related activities in his home state of Tennessee. He has been on the Advisory Council for the Tennessee Board of Hearing Aid Dispensers, vice-president of Hearing Instruments Institute and Medical Advisory Committee member of the National Hearing Aid Society.

Among BHI's public service offerings are:

"You and Your Hearing", a slide-cassette presentation for the general public. It focuses on the magnitude of hearing loss,

the types of hearing handicaps, the causes, warning signs, prevention and available hearing help. 12½ min. Order from BHI, 1430 K St. N.W., Ste. 800, Washington, D.C. 20005. Cost: \$45.00.

"They Overcame Hearing Loss", booklet featuring the personal success stories of 12 famous hard-of-hearing Americans who refused to let hearing loss stand in their way.

"Sounds or Silence? We Chose Hearing Help" - a new booklet available March 1.

"You Should Hear What You're Missing", a TV series featuring Art Carney, Gov. George Wallace, actress Nanette Fabray, comedian Norm Crosby, and singer Johnnie Ray.

"Teenage Memories", a new public service TV spot emphasizing the value of hearing and hearing help for teenagers.

BHI's Board is composed of: Joseph Lucke, Pres.; John Kojis, Vice-Pres.; Bob Lee, secy.; and members Larry Alkire, Don Galloway and Tom Arnold. Joseph Rizzo is Executive Director of the Institute.

Course for Hearing Aid Dispensers Offered

A program in audioprosthology is being offered thru the University of Texas at El Paso, Center for Continuing Education and Department of Drama & Speech, Division of Speech, Hearing and Language Disorders. It is under the direction of H.N. Williams, Chairman, Department of Drama & Speech.

The program consists of 12 continuing education courses for which upper division credit hours in the area of Speech, Hearing and Language Disorders will be given upon regular enrollment in the University. Individual courses may be pursued at the convenience of the enrollee, and awarded by the University as individual credits; however, a certificate of competence in Audioprosthology will be awarded only upon the applicant's completing the total 12 courses,

including 100 clinic clock hours of supervised practice.

Each course requires 16 clock hours of lecture and/or laboratory time, except one which requires 100 hours of supervised practice. All participating faculty will meet one of the following criteria: 1) certificate of competency in field involved, 2) licensed physician, engineer, hearing aid dealer, or attorney, or 3) recognized expert or lecturer in field involved.

Other news from El Paso includes:

The ASHA student groups of New Mexico State University and University of Texas at El Paso sponsored a workshop on "Language Problems of the Pre-Academic Child" on February 20 and 21st, at the University of Texas at El Paso. Guest participants included Dr. Tina Bangs of Houston, Texas, Mr. and Mrs. Steven Farmer of Las Cruces, Dr. LoPiccolo of El Paso, and Mrs. Irma Luna and Miss Norma Talamantes of the Ysleta

(Continued on Page 6)

Vernon Appointed As Associate

Editor of JAAS

Due to his many other commitments Jerry Northern resigned as the Associate Editor of the Journal of the American Audiology Society. Jack Vernon, Director, Kresge Hearing Research Lab, University of Oregon Health Science Center, Portland, Oregon, has been appointed to replace Jerry.

Book Reviews

"Industrial Noise Control Manual" - contains fundamental information to aid the user in understanding, measuring and controlling noise. It is written for persons having little or no knowledge in solving noise control problems. NEW Publ. NIOSH-75-183. Available from: 5600 Fishers Lane, Rockville, Md. 20852.

"A Litany of Sounds," by J. Donald Harris, 1975, The Amphora Press, Box N, Groton, Conn. 06340. \$7.50 postpaid.

Rarely does one have the privilege of reviewing the purely literary output of a fellow professional. It is thus a pleasure to commend to your inner listening this delightful prose offering of one of the greats in the field. There have been, and are, giants in the field who have demonstrated their deep comradeship with classical literature and arts, and who have shown in their speaking and writing an abiding love of the English language. Such men were Barry Anson and Georg von Bekesy—such a man now is Dr. Victor Goodhill. To their ranks must be added J.D. Harris, long known as a pianist of stature, a classical scholar, an appreciative naturalist, and a philosopher of the sciences as well as of the arts. Like the others, he presents the solid credentials of a Renaissance man.

How appropriate that this little book should concern itself with the sounds that have impinged on J.D. Harris' tympanum during a lifetime of sensitive and discriminating listening! In a series of short essays, he shares remembrances from his early youth in rural New England, from his lifetime absorption with music, and from his perceptions of nature, people and problems of the deaf. One listens with him to the sonorous honks of the Canada goose, the shrieking African dialect of guinea hen, the whickering of farm horses, the softly breathed berceuse of a grandchild in his arms, the deep breathing of a full-breasted woman sleeping on his shoulder, the birdsong of bobolink, redwing, meadowlark and Kildeer, and a winter silence pregnant with spring (I quote directly from his descriptions, of course).

Humor relieves the nostalgia at just the right times, and indeed seems to underlie every episode or description. "I had a professor once who told me that one of his most satisfying moments was when in the afternoon once or twice a week he could play golf. He would settle his spikes firmly in the grass at the first tee, waggle his derriere a time or two, then lay into the ball with all his might. He said that that loud thwack of a well-hit ball exhilarated him above the depression left in him most of the week from dealing with deans and dunderheads, implying that into this latter category I neatly fitted."

In "Sounds I Would Hear" J.D. celebrates the sounds he would like to hear, undistorted. He conjures the hearing aid industry "not to underestimate what some people would pay for a true rendition of these things, without any

consideration of size, battery drain and cosmetic appeal".

Particularly touching to me are the realities he portrays of a bucolic earlier New England. These are things that I as a Westerner have only known from reading. He evokes remembered Christmases that recreate a warmth we all feel in our own remembered Christmases, far from the jaded seasons we presently endure. The charm of these passages draws up well to the style and content of Dylan Thomas.

In addition, for us in the field of hearing, there is an admonition neither to pity nor to scorn the deaf and hard-of-hearing: "The richness of character, the compassion which many hypacusics of your and my acquaintance possess—it is a hard question whether you would wish to trade their rounded and many-faceted and wholly admirable personalities for a history of normalcy in all physical aspects—the chances are that our hypacusic friends without their hours and it may be years of relative aloneness and real heartbreak, would have developed like you and me, creatures of passing acquaintances rather than of deep friendships, sib to every butterfly of fashion, prey to every huckster, and addicts of gin, Geritol and TV. It is worth noting that the Theatre of the Deaf is replete with those who can mime the human condition without words, having plumbed the depths of that condition without words but with the inchoate aches and longings to which we all are heir, but to which most of use are insensitive through the veneer of our facile and stereotyped verbalization."

I thank J.D. Harris for sharing his humanity and his literary talent with us. And I heartily recommend this book to any one of you who would like for one exquisite moment to remember the sounds of his youth and the days of his life.

—Marion Downs

"Transportation Noise Bibliography", for individuals investigating the impact of transportation noise. Published by the U.S. Dept. of Transportation. Available from R.V. Giangrande, Technology Sharing Program Office, Transportation Systems Center, Kendall Square, Cambridge, Mass. 02142.

"Your Baby's Hearing—A Booklet for Mothers." A simply written and illustrated booklet telling mothers what to look for in their baby's auditory responses. Stresses consulting the physician if these responses are not seen at various ages. Includes simple language stimulation instructions. Published by Audiology Section, Department of Otolaryngology, University of Colorado Medical Center, Denver, 80220. Free examination copy. \$100.00 per 1,000.

"Never Too Young" by Virginia

Stern, 1976, Lexington School for the Deaf, 30th Avenue and 75th Street, Queens, NY, 11370. \$4.95.

A baby, even with a profound hearing loss, is never too young to listen.

This is the theme of a new book, "Never Too Young", published by the Lexington School for the Deaf for families, teachers, doctors, audiologists and others who live and work with hearing-impaired infants and young children.

Parents of hearing-impaired children should be more aware of all types of sounds, in order to help their children to learn to listen and also to learn to speak. As in all families, parents must plan enjoyable and instructive activities which help children to develop.

Written by Virginia Stern of the Lexington School, the \$4.95, 110-page book features 48 vivid photos by Robert Kaplan which show five common home situations experienced by all families (bathing a baby, washing clothes, cooking in the kitchen, traveling in a car, going out for a snack). The purpose is to demonstrate how any family can use these daily situations to help a child develop listening and language skills.

"Never Too Young" is the first professionally oriented training book for parents of hearing-impaired children. All of the children and parents shown in the photos have been enrolled in the Lexington School Infant Center.

As Mrs. Stern states in the forward of the book:

"In every home there are activities that occur over and over again, each day of the week: eating, washing, dressing, shopping, traveling. Although it would seem to be relatively simple for parents of a hearing-impaired infant to encourage listening and to talk naturally in these everyday situations, may parents become tongue-tied at home. Perhaps because they know that the earliest years are the crucial years in their child's development, they want to help so much and are afraid they do not know quite what to do, what to say."

Course for Dispensers....

(Continued From Page 5)

Independent School District.

The Hearing Conservation programs provided or monitored by the University of Texas at El Paso Speech, Hearing and Language Center expanded to include the El Paso Electric Company. The center now services the El Paso Gas Line Co., Northwestern Gas Line, Phelps Dodge, and the Electric Co.

The University of Texas at El Paso Speech, Hearing and Language Center will hold a special training session in Sound Level Measurement and Hearing Conservation for 10 Algerian Safety Engineers, May 24-27, 1976.

Impedance Audiometry Is Still Where The Action Is

Impedance audiometry continues to be everyone's favorite topic, even after it has received several years of extensive coverage in the literature and in numerous course presentations. The reason seems to be that the versatility of the impedance bridge is constantly being extended in a variety of research and clinical studies.

To the original tympanometry and acoustic reflex tests have been added new and ingenious observations. A Physical Volume Test identifies a non-intact tympanic membrane through the recording of an unusually large volume measurement. It thus becomes a means to demonstrate a nonobservable perforation behind an exaggerated anterior overhand or beneath an adherent crust obstruction of ventilating tubes or within a blind retraction pocket.

New interpretations are being made of the acoustic reflex. A unique exception to the bilateral absence of acoustic reflexes will show unilateral presence, rather than bilateral absence. When the probe is in the conductive loss ear, contraction of the stapedial muscle will increase the impedance of the ossicular chain and decrease the compliance of the tympanic membrane. The unilateral presence of stapedial reflexes in ossicular discontinuity is pathognomonic of fractured stapedial crura.

As reported by Jerger, researchers at Northwestern University and Baylor College of Medicine combined efforts to evaluate acoustic reflex findings in 30 patients with VIIIth nerve disorders. Acoustic reflexes were absent at all test frequencies in 19 patients, present but elevated or with decay in four patients, and normally present in seven patients. Sheehy and Schlosser found similar acoustic reflex results in 56 cases of acoustic tumors. These researchers conclude that the acoustic reflex measurements are the single most powerful audiological test in the diagnosis of VIIIth nerve tumors.

The most intriguing fact, evidenced from these Baylor-Northwestern data, is that the acoustic reflex is absent 30% of the time in patients with NORMAL HEARING who have

VIIIth nerve lesions. likelihood of absent reflexes rises to 70% with a moderate hearing loss. The absence of acoustic reflex, in light of or near-normal hearing, must be considered a significant finding until the presence of an acoustic tumor is ruled out. Conclusions in these studies that acoustic reflex findings are more sensitive to the retraction pathology than Bekesy speech discrimination tone decay test results, shape of the performance function for phonetically balanced monosyllables.

As a result of such advances in interpretation, training courses that have been offered by the Impedance audiometers manufacturers have been filled up, after five saturating the country with courses.

The Gen. Rad Co., Grason Stadler, and the American Electromedics Corporation have been responsible for high schools in impedance audiometry.

Gen Rad has featured Feldman as its instructor. American Electromedics features Jerry Northern and Jerger. The 1976 schedules of these companies follow:

GEN RAD	
April 8-9	-
May 5-6	- Washington
May 19-20	- Kansas
June 15-16	-
June 18-19	-
July 14-15	-
Sept. 15-16	-
Nov. 8-9	- San Francisco
Dec. 8-9	-

For further information to: Gen Rad, Environmental Division, Main Street, P.O. Bolton, Mass., 01740, Dept.

AMERICAN ELECTROMEDICS

April 22-23	- W. Palm Beach
May 13-14	-
June 3-4	- Philadelphia
June 24-25	- India
Sept. 2-3	- New York
Oct. 28-29	-
Nov. 4-5	- New York
Dec. 9-10	- San Francisco

For further information to: American Electromedics Corporation, 145 Palisade Dobbs Ferry, New York,

Facts from the Feds

NINCDS COUNCIL

Dr. Merle Lawrence, Director, Kresge Hearing Research Institute, University of Michigan, Ann Arbor, Michigan, has been appointed to the National Advisory Neurological and Communicative Disorders and Stroke Council of the National Institute of Neurological and Communicative Disorders and Stroke. Other members of the Council with special concern for communication disorders are Dr. James B. Snow, University of Pennsylvania; Dr. G. Paul Moore, University of Florida;

and Dr. George A. Sisson, Western University.

NINCDS TEACHER-INVESTIGATOR AWARD PROGRAM

National Institute of Neurological and Communicative Disorders and Stroke Teacher-investigator awards are made to the recruitment and preparation of future teacher-investigators of the highest caliber for ear, nose and throat, clinical research and of the neurological and communicative disorders, e.g.

(Continued on Page 8)

Current Abstracts

Watrous, B.S.; McConnell, F.; Sifton, A.B.; and Fleet, W.F., "Auditory responses of infants" JSHD 40:30, 357-366.

The authors have developed from a masters' thesis of the senior author a paradigm of auditory response maturation during the period of life from 3 to 12 months. A pilot study of sixty infants resulted in the specific study protocol with response behaviors categorized in hypothetical order: 1) reflexive behaviors (involuntary, immediate); 2) early attending behaviors (voluntary, subtle); 3) attending behaviors (change in facial expression, searching but not localizing); and 4) localizing (immediate or delayed, by eyes, head or body, or a horizontal or vertical plane.)

The experimental study utilized 40 infants from a rubella follow-up project who were regarded as normal after undergoing pediatric examinations and testing with the Denver Developmental Screening Test. Three infants were 3 to 5 months of age, eighteen were 6 to 8 months of age, and nineteen were 9 to 12 months of age. Twenty-seven of the forty babies were male.

Test signals consisting of noise-makers and an adult male voice were presented singly to each ear in sound field at levels of approximately 50-78dB. Responses were recorded (positive, questionable, or NR) by two observers in the appropriate response behavior category. Percentages of actual to possible responses were derived and compared between age groups for the several categories.

Findings suggested a developmental pattern of auditory response with initial reflexive responses largely disappearing before 3 months of age and giving way to changes in activity level as a response to sound. These in turn reduced at around six months in favor of listening and searching behaviors, both precursors to localizing which the authors found to emerge at eight months of age. Localization was first horizontal and by 10-12 months occurred on a vertical plane.

The study has nicely systematized the observation of behavior upon which most audiologists depend in judging the hearing sensitivity of infants. With our increased attention to follow-up of high risk newborns, this kind of information should prove valuable for early identification and management of hearing impaired infants.

A major weakness of the study was the dearth of babies in the 3-5 month group, which leads the reader to invoke some caution about the generalized results. The authors recognized this shortcoming; it is regrettable they did not wait to publish until a well-balanced data base was available.

One also questions the wisdom of choosing rubella babies for a normative study of this sort despite the authors' efforts to insure the subjects were "normal". Reports of bizarre behaviors of these babies are legion, and their selection detracts from the other-

wise careful, credible report. It may be that they are representative of normal babies; like a scarlet letter, however, their designation is hard to overcome.

The presumed improvement of sensation level with maturation has implications for a study of this sort. I wonder, for example, whether the response behaviors of the 9-12 month old babies might have been more similar to the younger babies if test signals at comparable sensation levels (rather than intensity levels) had been used. A parallel study experimenting with signals of decreasing intensity as the babies mature would be of interest.

While it isn't realistic to cite every contribution to the earlier thinking about infant testing, I am saddened to note again the oversight of one whose observations stimulated much of our current thought. Kevin Murphy's work in infant testing (1962), particularly with respect to the development of localization behaviors, should certainly be credited.

"Auditory response of infants" has offered a workable method and some tentative guidelines for clinicians who evaluate the auditory responsiveness of children. It is one more step in defining the "auditory competence" Eisenberg would have us address (1970). The data from more babies and normal babies are needed to establish norms with which the clinician can be comfortable.

Carol Ehrlich, Ph.D.

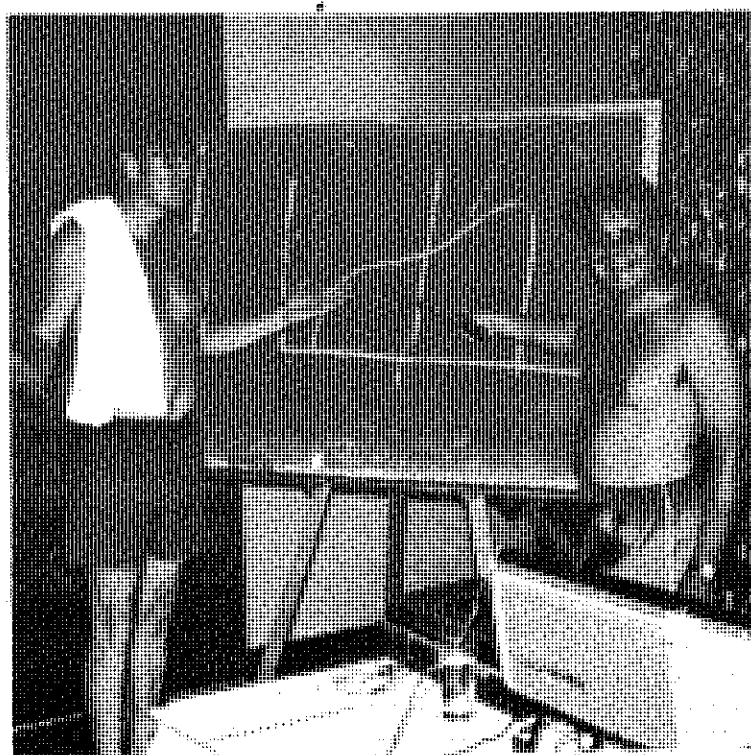
Sprinkle, P.M. and Veltri, R.W.: Recurrent Tonsillitis: A New Concept. The Laryngoscope, Volume LXXXVI, pp. 58-63, Jan., 1976.

This article is an update of original data which further confirms previous reports by the authors to the effect that adenotonsillectomy is a reasonable tool in our armamentarium for the conversion of abnormal oropharyngeal and nasopharyngeal microflora to a more nearly normal state. The data presented suggests to the authors that recurrent adenotonsillitis is a bacterial-viral illness, the viruses in these children being EpsteinBarr and adenovirus. The bacteria involved are those which are found in the abnormal oropharyngeal and nasopharyngeal microflora of children with recurrent adenotonsillitis, i.e. Streptococcus pyogenes, Staphylococcus aureus, Hemophilus influenzae, Pneumococcus species, and the aerobes and anaerobes. The recurrences of adenotonsillitis contribute to the role of EBV and adenovirus in the tonsils and adenoids and their activation secondarily from a primary infection with another pathogenic virus or bacterium from an exogenous source.

This excellent and timely paper, along with previous publications of the authors, brings real solace to those of us in clinical practice who must decide whether tonsils belong "in or out." We know very well from experience that removal of tonsils and adenoids that are subject to re-

current infection, associated with obstruction to the oral and nasal airway, with cervical adenopathy and, too, frequently, with recurrent serous otitis media and its complications, is a very beneficial procedure. This reviewer would also direct attention to the need for the almost routine, x-ray study of the maxillary sinuses in these patients with recurrent adenotonsillitis, particularly when associated with serous otitis media, as virtually all of these patients will show some degree of maxillary sinusitis varying from mucosal thickening to complete opacification. The usual ten day course of the appropriate antibiotic will not clear up the sinusitis, through the adenotonsillitis will resolve, only to flare up again in a matter of a week or two. Such recurrences prove exasperating to parents and pediatricians. Antibiotics must be prescribed in these instances in adult doses usually and for at least twenty-one days.

—James T. Spencer, M.D.



Playpersons of the Month

"THE WAY IT SHOULD ALWAYS BE"

JIM CURRAN of Qualitone and Bob Briskey of Beltone present a lecture on ecdysiasm.

Tactile Speech Displays

For The Deaf

A group, including personnel from Massachusetts Institute of Technology's Rehabilitation Engineering Laboratory and Research Laboratory of Electronics, the Harvard Graduate School of Education and Harvard Medical School (Children's Hospital Medical Center), are pursuing several lines of work aimed at placing tactile devices on deaf persons. Their goal is to design and develop tactile aids that can be worn routinely by deaf persons, including infants, and that will provide a sufficiently rich display to allow reception of intelligible speech. The group, headed by M.C. Schultz of

Nanette Fabray Honored by BHI

Actress Nanette Fabray, star of theater, musical comedy, television, and motion pictures, has received the 1976 Better Hearing Institute "Better Hearing Achievement Award" in appreciation of her "outstanding public

service and education efforts on behalf of the hearing impaired." Announcement of the award was made today by Dr. Charles Gross, ear surgeon and BHI Advisory Board chairman.

Redskin Halfback Larry Brown Encourages Hearing Impaired in New BHI TV Announcement

Larry Brown, Washington Redskin halfback and pro football's Most Valuable Player in 1972, offers hope and inspiration to millions of hearing-impaired Americans in a new television public service announcement just produced by the Better Hearing Institute.

Release of the announcement will be timed to coincide with Better Hearing Month, a public information campaign conducted-

each May by BHI and other hearing organizations. The spot was made possible by a grant from the Battery Products Division, Union Carbide Corporation.

Mr. Brown, who successfully overcame his own hearing handicap, appears in a 30-second announcement that dramatizes the scope of hearing loss and the importance of hearing and hearing help.

"It was Vince Lombardi, the great football coach, who first discovered my hearing impairment," Brown said. "Lombardi noticed that I moved well on plays from one side of the line but that I was slow in moving out from the other side. He asked if I had a hearing problem, I admitted that I did, and he convinced me to have it corrected. Now, because of a built-in hearing aid in my football helmet, I can hear all the calls from both sides.

"Good hearing is essential to being a good football player," Brown added. "It is also essential to enjoying life and to living it to the fullest."

Joseph Lucke

Receives Award

Joseph C. Lucke, 30-year veteran of the hearing field and president of the Better Hearing Institute, has been presented the BHI President's Award by the Institute's Board of Directors for his "outstanding service as president of the Better Hearing Institute, May 1, 1975 to April 30, 1976." The award was presented by Ralph Campagna, first BHI President, at the Institute's recent board meeting in Chicago.

Among other developments at the Chicago board meeting was the election of new BHI officers and board members. Officers include: President Joseph Lucke, former president of NHAS; Vice President John Kojis, president and general manager of Maico Hearing Instruments; Secretary Donald Galloway, Beltone hearing aid specialist; and Treasurer Larry Alkire, public affairs director for Beltone Electronics Corporation. Other board members: Thomas Arnold, founder of Arnold Hearing Aid Company; Ralph Campagna, president of the Hearing Aid Industry Conference and of RCI, Inc.; and Barclay Smith, market manager for the Battery Products Division, Union Carbide Corporation.

The board explored new directions and planned new programs for the next BHI fiscal year beginning May 1, 1976.

ANSWER: Earl Harford, in the cellar of the old Bill Wilkerson Center, 1954. The child is Hal Williams' son, now 4 years out of the Marines.

(See Picture on Page 5)

On Going Research

HEARING LOSS IN SEARCH OF A CAUSE

We have recently reviewed the "risk factors" associated with the first 16 infants with confirmed severe hearing losses who were detected by the Crib-o-gram nursery screening technique. (1) These are shown in the enclosed table. Cases 3, 5, 6, 8, 11, 12, 13 and 16 were from the well baby nursery, and the others from the ICU nursery. The medical records on these kids are quite complete and include multiple viral and CMV titers on anyone who was at risk by history or by clinical impression. There are some interesting, if not completely startling, facts here.

The table shows that in many instances we had more than one risk factor to cope with in finding a cause. In two we found nothing suspicious. Bilirubin levels ranged from 10 to 21 mg%, and two were below 12 mg%. This very strongly suggests that the risk level for hearing loss secondary to hyperbilirubenemia be reduced downward drastically from the 20 mg% criterion. Seven babies were given potentially ototoxic antibiotics, all of whom had normal kidney function. However, we have no reason to believe these drugs were a cause for hearing loss. We have followed a large group of such antibiotic-treated neonates and have not found any suspicious hearing losses. The fact that these children were placed on antibiotics (mainly for respiratory or prophylactic indications) may suggest that infection itself might have been involved in some of the hearing losses.

Some of these children had three years of medical records at the time of this review. Trips through these older children's records yielded a not too surprising number of clinic visit notes in which the "causes" for the hearing losses had become obscured and occasionally changed to a diagnosis at complete odds with the facts.

By: F. Blair Simmons, M.D.

Frederica R. Jones, R.N.
(1) Simmons, F.B. and Russ, F.N., Automated Newborn Hearing Screening, The Crib-o-gram, "Archives of Otolaryngology," 100:1-7, July, 1974.

Jaime Benitez, Kenneth Bouchard, and Yong Choe (Division of Otoneurology, William Beaumont Hospital, Royal Oak, Michigan) have an ongoing study on the effects of partial lesions of the vestibular nerve upon the vestibular function of cats. This research is sponsored by a grant from N.I.H. So far, animals with lesions of about 50% of nerve fibers of the superior division of the vestibular nerve show a thermal vestibulometry "fatigue curve" similar to the one reported by Litton and McCabe in humans with acoustic neuroma. Jaime will participate in a temporal bone course in Paleopathology at the Department of Anthropology, the University of Tennessee in Knoxville, April 12-13.

The Ear Research Institute has had in operation for the past year a scanning electron microscope and has just acquired a transmission electron microscope. We feel that this will be a particularly productive laboratory in that, to our knowledge, we have the largest access to fresh human material in the country if not the world due to the vast amount of neuro-otologic surgery that is done here. Malcolm Graham is in charge of the laboratory and assisting him is one of our newer members, Dr. Antonio De La Cruz.

—Fred H. Linthicum, Jr.

**AMINOXYACETIC ACID
PROTECTS AGAINST
NOISE-INDUCED COCHLEAR
HAIR CELL LOSS**

Aminooxyacetic acid protects against noise-induced cochlear hair cell loss. R.P. Bobbin, M.S. Guth, and A.B. Mines, Kresge Hearing Research Laboratory of the South, Louisiana State University Medical Center, Department of Otorhinolaryngology, 1100 Florida Avenue, Building 164, New Orleans, Louisiana, 70119.

Aminooxyacetic acid (AOAA) has been shown to reversibly reduce the endocochlear potential (Bobbin, R.P. and Gendra, M.I. *Ann. Otol. Rhinol. Laryngol.*, 84:192 (1975)]. In this study

guinea pigs were pretreated with AOAA (20 mg/kg, s.c.) or saline 50 minutes prior to exposure to a 30-minute, 4 kHz, 126dB SPL tone. The animals were sacrificed 21 days after exposure and hair cell counts conducted by means of the

surface preparation. Animals pretreated with AOAA prior to intense tone exposure demonstrated a significant reduction in the number of destroyed hair cells. We speculate that the endocochlear potential plays a role in

noise-induced hair cell d
tion.

Supported by National Institutes of Health, USPHS Nos. NH-11647-01 and NS-10

Facts from the Feds . . .

(Continued From Page 6)

ology, neuro-surgery, neuromuscular disease, neuropathology, sensory physiology, otopathology, otolaryngology, audiology, and speech pathology. This award, made to an institution, provides a superior candidate with an opportunity for five years of special study and/or experience tailored to his individual needs. The award bridges the gap between the postdoctoral period of clinical study and a secure academic appointment.

Candidates must be citizens or noncitizen nationals of the United States and they must be nominated for the proposed program by a domestic non-Federal public or private nonprofit institution. Candidates should have completed, at the time of receiving the award, at least three, but usually not more than six years of post-doctoral training and/or experience, exclusive of required military service. The most competitive candidate is

one who has either just completed or is in the final year of residency training or is just completing three years of doctoral training and experience.

Dates for the receipt of applications are February 1, 1987, and October 1. For further information, contact: Raymond W. Myers, Ph.D., Assistant Director for Manpower Programs, National Institute of Mental Health, Division of Manpower Activities, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, MD 20892. Phone: (301) 496-9236.

AMERICAN AUDIOLOGY SOCIETY EUROPEAN STUDY TOUR 1976

and XIII INTERNATIONAL CONGRESS OF AUDIOLOGY

ALL INCLUSIVE TOUR INCLUDES:

- HIGHLIGHTS & POINTS OF PROFESSIONAL INTEREST INCLUDING THE HEARING AID INSTITUTE LUBECK, GERMANY & THE XIII INTERNATIONAL CONGRESS OF AUDIOLOGY, FLORENCE, ITALY
- AIR FARE & GROUND ARRANGEMENTS.
- DELUXE HOTEL.
- SUPERIOR CONTINENTAL BREAKFAST INCLUDED EVERY DAY. LUNCHES & DINNERS AS PER FINAL ITINERARY.
- FULL SIGHTSEEING IN COPENHAGEN, MUNICH & ROME.
- ENGLISH SPEAKING FULL-TIME ESCORTS.
- HOSPITALITY DESK IN ALL CITIES PROVIDING ASSISTANCE ON RESTAURANTS, SIGHTSEEING AND GENERAL INFORMATION.
- TRANSPORTATION VIA DELUXE MOTORCOACH, FIRST CLASS TRAIN.
- TIPS. TAXES. PORTERAGE INCLUDED

ITINERARY FOR 16-DAY TOUR

DATE	ACTIVITY	DAY AT	NIGHT AT	MILES
Sat. 10/9	1. depart U.S. for Copenhagen — flight	plane	plane	
Sun. 10/10	2. arrive Copenhagen — rest	Copenhagen	Copenhagen	
Mon. 10/11	3. Copenhagen Widex Danavox presentation & hospitality	Copenhagen	Copenhagen	
Tues. 10/12	4. Copenhagen Widex Danavox presentation & hospitality	Copenhagen	Copenhagen	
Wed. 10/13	5. Lubeck Hearing Aid Institute Presentation	travel	Hamburg	250
Thurs. 10/14	6. Hamburg/Lubeck to Nuremberg by train	train	Nuremberg	290
Fri. 10/15	7. Erlangen-Siemens Presentation & Hospitality	Erlangen	Nuremberg	120
Sat. 10/16	8. Nuremberg to Munich	Munich	Munich	100
Sun. 10/17	9. Munich sightseeing & leisure	Munich	Munich	
Mon. 10/18	10. Munich to Florence by Deluxe Motorcoach	Motorcoach	Florence	290
Tues. 10/19	11. Florence, A.M. — Congress, P.M. — leisure	Florence	Florence	
Wed. 10/20	12. Florence, A.M. — Congress, P.M. — leisure	Florence	Florence	
Thurs. 10/21	13. Florence, A.M. — Congress, P.M. — bus to Rome	Florence	Rome	150
Fri. 10/22	14. Rome — sightseeing & leisure	Rome	Rome	
Sat. 10/23	15. Rome — at your leisure	Rome	Rome	
Sun. 10/24	16. depart Rome for U.S.A.	plane	Home	

ITINERARY FOR 9-DAY TOUR

Sat.	10/16	1.	depart U.S. for Rome	plane	plane	
Sun.	10/17	2.	arrive Rome — rest & leisure	Rome	Rome	
Mon.	10/18	3.	Rome to Florence by train or motorcoach	Florence	Florence	150
Tues.	10/19	4.	Florence, A.M. — Congress, P.M. — leisure	Florence	Florence	
Wed.	10/20	5.	Florence, A.M. — Congress, P.M. — leisure	Florence	Florence	
Thurs.	10/21	6.	Florence, A.M. — Congress, P.M. — Deluxe Motorcoach to Rome	Florence	Rome	150
Fri.	10/22	7.	Rome — sightseeing & leisure	Rome	Rome	
Sat.	10/23	8.	Rome — at your leisure	Rome	Rome	
Sun.	10/24	9.	depart Rome for U.S.A.	plane	Home	

* PRICE:

TOUR 1 (16 DAYS)-

LEAVE FROM:	Los Angeles	Chicago	Dallas	New York	
	700.60	581.40	651.00	503.50	Air Only Only
	1337.60	1218.40	1288.00	1140.50	All Inclusive

TOUR 2 (9 DAYS)

LEAVE FROM:	Los Angeles	Chicago	Dallas	New York	
	690.00	572.00	639.00	492.00	Air Only nly
	998.00	879.00	946.00	799.00	All Inclusive

* Rates are based on a minimum of 40 participants from each departure point and are subject to change, based on current fuel prices. Participation of more than 200 members on each tour will substantially reduce rates. Applications will be accepted on 1st come-1st serve basis.

To assure your place on the tour complete the following and remit a refundable deposit of \$100.00 to (make check payable to First Travel Service Escrow Account): American Audiology Society, c/o First Travel Service, 1st National Bank Bldg., One Center Avenue, Brownwood, Texas 76801

Name: _____ Phone: _____
Address: _____ State: _____ Zip: _____

Member of American Audiology Society	_____ Yes	_____ No
Immediate Family of Society Member	_____ Yes	_____ No
Send Application Membership Forms	_____	
Check Enclosed	_____	

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*Otitis Media in the
Intensive Care Nursery.
See On-Going Research*

ON PAGE 5

Abbreviated Membership Directory

ON PAGES 9, 10 & 11

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society

Vol. 1, No. 3

July 1976

AAS Program Outlined

The annual meeting of the American Audiology Society will be held in The Las Vegas Convention Center, which is a part of The Las Vegas Hilton. The annual AAS meeting will precede the annual meeting of The American Academy of Ophthalmology and Otolaryngology, and will run consecutively with the Association for Research in Otolaryngology.

Those attending the meeting should make their own reservations for lodging. A list of nearby hotels include:

Ceasars Palace	735-6797
Desert Inn	735-1122
Frontier Hotel	734-0110
Hacienda Hotel	739-8911
Las Vegas Hilton	732-5111
MGM Grand Hotel	739-4111
Riviera Hotel	734-5110
Sands Hotel	735-9111
Stardust Hotel	732-6111
Tropicana Hotel	739-2222

Dr. Chuck Berlin has done an outstanding job this year and our program will be the most comprehensive ever. Dr. James Jerger will begin the formal program and will present the first Carhart Memorial Lecture. Contributed papers will follow Dr. Jerger's lecture and a short business meeting will close the day. A summary of the meeting can be found on page 12. Admission is \$5.00 for members, \$8.00 for non-members.

Rasmussen Receives Award

This year's award of the Belton Institute for Hearing Research was presented to Dr. Grant Rasmussen of the University of Minnesota. Each year the Institute gives a one thousand dollar award and citation to an outstanding researcher in the field of Hearing. Dr. Rasmussen was honored at a dinner in Bethesda, Maryland on May 11, 1976 attended by many friends and associates.

The citation for Dr. Rasmussen read: "A respected contributor to our knowledge of auditory neuroanatomy throughout his entire professional life, Grant Rasmussen has truly impressed his mark on this field of scientific research. His doctoral thesis, which established him as an independent, accurate observer and suggested the concept of centrifugal control systems in the brain, was but the beginning of a long and fruitful career. Rasmussen's Bundle will be remembered long after many superficially more exciting discoveries have been forgotten. The recent explosion of interest in the sensory coding at the cochlear nucleus and other brainstem nuclei is due in no small part to Dr. Rasmussen's careful anatomical observations, including unpublished results which he has always unselfishly shared. Many subsequent physiological researchers have received valuable personal assistance from him, and have themselves published noteworthy studies. Numbers of his students have maintained active interest in the auditory system and are now making their own contributions."

The Board of Trustees of the Institute awarding the honor are: S.F. Posen, Chairman, Joseph E. Hind, Jr., Ph.D.; John R. Lindsay, M.D. and S. Richard Silverman, Ph.D.

[Continued on Page 2]

The President's Message

W. DIXON WARD
President, American Audiology Society

It was a bit disconcerting to find myself the second president of our Society for two reasons. In the first place, I have always disliked those who seek power, and am even suspicious of those on whom it is forced. Secondly, I am neither an otolaryngologist, a hearing aid dealer, nor an "audiologist" in the restricted American sense (someone who has a degree in audiology). However, like the rest of our members, I do have a keen interest in the hearing process. Furthermore, the post of president, happily, does not involve much real power (may it always remain thus), and perhaps the fact that my interest in selling hearing aids is nil will permit me to view with some degree of objectivity the present conflict among those in control of certain national organizations who, in the name of "public interest", seek government-guaranteed monopolies.

The process that eventuates in state-mandated monopolies usually begins innocently enough, as a professional organization tries to protect the consumer against fraud. Through the use of certification procedures, the organization attempts to guarantee the competence of all its members who have a service or product to sell, be it a medical diagnosis, an audiometric examination, or the fitting of a hearing aid. If everything went as it should, such a system would be all that would be needed to protect the consumer adequately. Were certification procedures sufficient to weed out the incompetent and the dishonest, the public would soon learn that accreditation by a particular organization was a sufficient condition (though not a necessary one) to guarantee a basic standard of service. The citizen, then, would be prudent to determine that his physician was suitably accredited by a well-known medical organization, his otolaryngologist by one of more specialized range, and so on. On the other hand, if he did not so determine credentials, or deliberately chose to seek service from someone who was not accredited, such choices should be his to make. The legitimate role of government could then be invoked: to ensure that laws existed that would permit the prosecution of those who claimed accreditation by a certain group but did not in fact have it. Under these conditions, most persons who could meet the accreditation requirements would find it advantageous to join the organization; although it would not be illegal for a witch doctor to claim to be a healer, for example, but finding customers, without certification, would be a problem.

If an accrediting organization got too big (and hence, it appears, inevitably too ponderous and too expensive), then a group of dissidents would be free to resign, establish a new organization, and begin their own accreditation. It might take a while for the reputation of the new group to become established, but in the long run the action could be expected to pay off for its members. It would obviously be to the advantage of the consumer of the group's services, since competition would eliminate price-fixing.

So much for what could happen in a free society. Unfortunately, open competition seems to be an activity that many people like to see others engage in, but not themselves. Instead, they seek "security" in the form of monopoly—if not only for themselves, at least for their in-group. Such individuals find willing accomplices in politicians, who are always glad to gain control of anything. The state willingly sets in concrete the requirements for certification, either raising by an order of magnitude the fee for the examination in order to pay for the new bureaucracy that is now "needed", or else designating the instigating organization as the sole examiner; in any event, they establish precisely what certification entitles one to do and, by implication, what the uncertified cannot do. Of course, this is justified in the public eye in terms of "protecting the citizen against charlatans"; however, a close examination shows that all he is being protected against by the paternalistic state is his own stupidity, a protection that libertarians like myself would rather do without.

My suggestion, then, is that if, as I believe to be the case, the members of our Society are more freedom-oriented than the individuals who remain in the organizations from which we fled or are fleeing, we should devote as much time as we can spare to the abolition of government controls in all aspects of our business of measuring, protecting, and improving hearing, rather than remaining aloof completely from the conflict between rival certifying agencies. It would be a serious mistake to merely chuckle as we

[Continued on Page 2]

Corti's Organ Salutes Wm. Hardy

On the occasion of his receiving the Honors Award of the Volta Bureau on November 20, 1975, it is appropriate to review the long and illustrious career of this great contributor to the field of Audiology.

No stuffy pedant, he. For several years, 1932-35, he participated in the then burgeoning radio theatricals, both as a writer and producer. The young among you probably never heard of "Omar, the Wizard of Persia" who was Bill Hardy's brain child. This and other radio dramas were his babies—long before he became the godfather to many thousands of real babies who owe their improved communications to him. A publication in 1936, "Radio and the American Language" is a memento of this early interest.

Dr. Hardy was born in Cleveland, Ohio, then migrated at a tender age to South Chicago which then (1911) was habitable. Shortly thereafter (1914) he moved his family to Westchester County, New York where he managed his way through high school in Yonkers. Emerging from this at fifteen, he went to Packard Commercial

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Editorial

Questions are often asked us about the Society and its makeup. We thought we would take this opportunity to answer those questions most frequently asked.

The purpose of the Society is specifically stated in the Statutes, and is iterated on each membership certificate: "...to increase knowledge of human hearing, promote conservation of hearing, and foster habilitation and rehabilitation of the hearing impaired." The Society was purposely formed as a non-competitive group, and is not in competition with any existing organization. The Society will NOT become involved in political issues; will NOT become involved in union type activities, such as licensure; and will NOT in any way provide professional certification for its members. Membership specifically implies an interest in the purposes and goals stated above and that is all. It is recognized that minimal membership requirements are low. This is so that individuals who have demonstrated an interest in human hearing who cannot participate in existing organizations may join.

As of June 1st the Society had 780 members. Of this number 46 hold bachelors degrees, 354 hold masters degrees, and 380 hold a doctorate degree. Finally, and most important, there is no truth to the rumor that Corti's Organ is hard of hearing and irreverent; it can hear and does listen. We thank everyone who is making it a success. RJR/ MPD

Corti's Organ Salutes

[Continued From Page 1]

School in New York, learned typing and shorthand, and for a short time worked for the Tidewater Oil Company.

Thereafter came Brown University and a healthy career in tennis, the Glee Club (undertaken as the No. 1 brass-baritone), and a goodly amount of bridge. His undergraduate majors were Political Science, History and English Literature. Came then a year as a graduate instructor in English and Linguistics. Even then, universities were expensive and, there being no genuine employment in 1932, he began to fiddle around with radio writing and production.

This began at WINS with a variety of literary undertakings, and was continued the following year with an assignment as the unseen writer of "Your Unseen Friend," which was a daily presentation of one of the "power personalities" then popular in those days. There followed a jaunt to Chicago with a variety of other assignments including, "Omar the Wizard of Persia," which was a real money maker. There were various further things undertaken at WMAQ including some participation in the "Nickelodian Theatre" and a wide variety of single shots for Irene Rich, who was one of the current stars of the day. So it went until the academic job market opened once more and he was able to get back to more sensible employment in one of the best teacher's colleges in the East, New York State College for Teachers, Albany.

Dr. Hardy received his Ph.D. from Cornell University with majors in Rhetoric, Speech Science and Linguistics. His doctoral dissertation was on "Modern Semantic Theories," presaging the swell of interest in General Semantics of the 1950's. In 1944 he became one of those historic few who developed Audiologic services in the armed forces. At the U.S. Naval Hospital in Philadelphia he directed the aural rehabilitation and speech service which was among the pioneers in establishing modern-day concepts of audiologic services in the armed forces.

Other pioneering efforts took place in the field of early detection, diagnosis and management of the deaf and hard-of-hearing child. At the John Hopkins Medical Institution he became the director of the Hearing and Speech Center in 1947, and served there until his retirement in 1975. He continues actively as a consultant to the Graduate Program at the John Hopkins University.

It is difficult to describe the varied activities and contributions of this incredibly able man, but perhaps the flavor of his energies can be described in just a few of his recorded activities:

1948: Consultant in Audiology and Speech, Maryland Departments of Health and Education.

1955: Chairman, Study Section on the Hearing Impaired Child, World Health Organization. Instructor, American Academy of Ophthalmology and Otolaryngology; Editor, in Audiology, "Cerebral Palsy Review"; Associate Editor, "Journal of Speech and Hearing Disorders".

1968-70: President Elect-Alexander Graham Bell Association for the Deaf.

1968-73: Council Member, National Advisory Council, National Institute of Neurologic Diseases and Stroke.

1970: Consultant, Committee on International Exchange of Persons (Senior Fulbright-Hays Program).

Honors: Dunn Scholar, Brown University, 1930; Gaston Prize, Brown University, 1931; Sphinx Club (honorary scholastic) Brown University, 1931; Phi Kappa Phi (honorary scholastic, graduate) Cornell University, 1943; Sigma Xi; (the first to be awarded) Annual Achievement Award by the Maryland Public Health Association, Inc. (1970); Member, Wisdom Hall of Fame, 1970. Honor Award, (1974) American Speech and Hearing Association; Honor Award, (1975) Alexander Graham Bell Association for the Deaf.

As a finale, Dr. Hardy's current activities and scientific endeavors include:

Development of Hearing in the first year of life (with J.B.L. Hardy and H. Shimizu: N.I.N.D.B. "Collaborative Project on Cerebral Palsy and Related Neurological Disorders").

Screening young children for hearing, language and speech development (with M.P. Hardy, J.E. Bordley, and J.B.L. Hardy: "Collaborative Project").

Study of auditory input factors relative to deviation in language-learning in preschool-age children (with M.P. Hardy, H.L. Haskins, et. al. N.I.N.D.B. Research Grant B-3887).

Comparison among electrodermal, electroencephalographic, myographic, and vascular responses to acoustic stimuli in animal and man (with H. Shimizu).

Collaborative Project in the development of children and the effects of certain diseases on hearing in man (with J.E. Bordley and Y. Kapur, Christian Medical College, Vellore, India: N.I.N.D.B. Research Grant).

"Communication Problems and Psychologic Functioning in Children with Congenital Rubella" with J. Hardy, D.W. Welcher, J.E. Bordley.

Corti's Organ is happy to salute this leader in the audiology profession.

Cholesteatoma Conference Sparks Interests

The recent First International Conference on Cholesteatoma, sponsored by the University of Iowa, was attended by leading otologists and basic scientists from all over the world. The conference was the brainchild of Jacob Sade of Tel Aviv, Israel, currently a visiting professor of otolaryngology at the University of Iowa. Guest of Honor was George Shambaugh, Jr.

The first two days of the conference were given over to the basic scientists, starting off with a panel which attempted the difficult task of defining adequately what cholesteatoma is, a term which itself is really a misnomer. The etiology of cholesteatoma, including the migration, congenital and metaplastic theories were then discussed by a panel consisting of Maxwell Abramson, Eugene Derlaki, and Jakob Sade. Although no final conclusions were reached, apparently each theory can be substantiated in given cases.

Geographic, socio-economic, and racial factors in cholesteatoma were presented by a number of speakers. Coman and McCaffery reported an incidence of as high as 50% chronic otitis media in Australia aborigines, yet 0.08% incidence of cholesteatoma. On the other hand Tschopp reported 12% incidence of C.O.M. in Eskimos with somewhat less incidence of cholesteatoma in 1961. However, by 1970 incidence of C.O.M. had dropped to 2%.

Smyth reports an extremely high, apparently 50%, incidence of bilateral cholesteatoma in northern Ireland.

The last two days of the conference were devoted to the various surgical methods of treating cholesteatoma. The various discussions were sharply divided advocating intact canal wall procedures vs. Bondi's open techniques. Cody reported an incidence of 35% recurrent cholesteatoma with an additional 20% "pre-cholesteatoma" in wall-up technique. Only 6% recurrence was found in open and 19% open techniques followed by obliteration.

On the other hand Jansen reported only 2.3% recurrent cholesteatoma in his large series of wall-up procedures. Palva reports recurrent cholesteatoma in his series of open procedures followed by obliteration.

Smyth, Wright, Austen and Sade all agreed that intact canal wall procedures for cholesteatoma should all be re-explored 1-2 years because of the significant risk of recurrent and/or residual disease.

It was apparent at the conclusion of the conference that from both the basic science and the clinical side more questions have been asked than were answered and the need for a 2nd International Cholesteatoma Conference was re-treated.

—Susan Clift, M.D.

NAHSA Meet Cancelled

For the first time, the National Association for Hearing and Speech Action cancelled its customary annual conference, which was to be held in Columbus in June. NAHSA faces a reorganization in its executive staff due to the resignation of Tom Coleman, executive director for the past 10 years. President J. Hank Smith announced that the cancellation of the meeting was necessary in view of the financial burden of searching for a new executive director. Associate director Ben Drew has been named acting director.

In his 10 years with NAHSA Tom Coleman completely re-

versed the downhill slump of the former American Hearing Society. After renaming the society, he accomplished a number of outstanding innovations which carried the association into broad fields of public education and improved business management.

In addition to Coleman, E. Porter also resigned from the organization. Mr. Porter was director of education and training for the past 12 years. A long time consultant to the Vocational Rehabilitation Administration, Mr. Porter will become associated with the Professional Rehabilitation Workers with the Adult Deaf.

The President's Message

(Continued From Page 1)

watch one group struggle with another over who should be granted dictatorial powers in the form of monopoly by the state. In the libertarian view, the only legitimate function of the state is to protect us from our fellows, not to protect us from ourselves nor to initiate programs of "liberal" do-goodery, and if we are not more militant about resisting government encroachment on our lives, the freedom we still have will become ever lessened.

As William Allen White said many years ago, "Liberty is the one thing you cannot have unless you grant it to others." If we press for controls of what others may not do, we will assuredly find ourselves hoist on our own petard. And it would serve us right. So let's not let it happen: let us instead work for abolition of all government controls of personal service activities except laws against fraud and misrepresentation. Just 200 years ago this month, our forebears began a struggle to rid our country of the shackles of an oppressive government. They almost succeeded; maybe we can.

Oticon Cited for International Achievement

The Oticon Foundation was recently awarded the "International Technical Trophy" for industrial excellence at elaborate ceremonies in Paris, France. The International Trophy is awarded by the International Institute for Promotion and Prestige which is associated with the United Nations Educational, Scientific and Cultural Organization (UNESCO). With this honor Oticon joins numerous other outstanding contributors of scientific achievement, outstanding techniques, new technology and other important contributions. Previous award recipients whose achievements have been recognized with the International Trophy include the US National Aeronautics Space Administration (N.A.S.A.), on the occasion of the moon landing, the Academy of Sciences of the U.S.S.R. on their 250th anniversary, Zambia

Industrial and Mining Corporation (ZIMCO) and the Oceanographic Museum of Monaco.

In an impressive ceremony held at UNESCO Building in Paris, and attended by the Danish Ambassador to France, a Minister of the French government, Mr. Bent J. Simonsen, Director of the world-wide Oticon Foundation and Companies accepted the "International Trophy" from Madame Gisele Rutman, Executive Vice President of the I.I.P.P. Also in attendance at the awards ceremony was a group of American press personnel on tour with Oticon Corporation (USA).

Mr. Simonsen, in his acceptance speech, cited the growth of the Oticon Foundation through the years. "When in 1904 the founder of our organization - today spread over the entire world - brought home with him a hearing aid from London for his hearing impaired wife, he had no means of knowing that he had laid the cornerstone of an expansive enterprise. From this one hearing aid grew an organization which is today honoured by the "International Institute for Promotion and Prestige".

"Social progress since the second world war in a great number of countries in the western hemisphere has meant the public bodies have realized the importance of giving financial support to the rehabilitation of the hearing impaired population, because a hearing impairment is a handicap which is often considered a more serious handicap than the loss of vision. The Danish hearing aid industry blossomed during the years after 1950, and William Demant, son of the founder of our organization, foresaw that, in this situation, it was very necessary to consolidate the future work to be done for the hearing impaired all over the world. With this objective in mind, the Oticon Foundation was brought to life in 1956. As owner of all the shares in Oticon enterprises, the Foundation has secured the financial possibilities to carry out the human and social work laid down in the statutes of the Foundation."

"Approximately 5% of the world population has a need for hearing support which may be met by fitting a hearing aid - and this need is far from being met. In Denmark, a country considered to have a very high social standard, we have covered approximately 60% of the demand. For reason of comparison I can add that this percentage is 23 in the Federal Republic of Germany, 22 in Belgium, 10 here in France, and 9 in Italy. Only in recent years has a greater understanding of the special problems of the hearing impaired begun to emerge in a number of countries. Thus there seems to be more work to do in the future, also for the Oticon Foundation."



Mr. Bent J. Simonsen, Member of the board of the Oticon Foundation and C.E.O. of the Oticon group of companies world wide accepting the award "Le Trophee de la Technique" for Oticon's outstanding work in research and development for the benefit of the world's hearing impaired population. French Minister Leo Hamon is on Mr. Simonsen's right; Madame Gisele Rutman of the Institut International de Promotion et de Prestige [the international institution giving the award] stands in front of the French tri-color flag.

BBN Conducts Impact Study

In addition to their OSHA study of the inflationary impacts of various noise regulations, (see April Corti's Organ), Bolt, Beranek and Newman has been commissioned by NIOSH to do another far-reaching study. BBN will assess occupational exposure to impact and impulsive noise in American industry.

The first step in such a study will be to identify the sources of impulse noise in a variety of industrial settings. BBN is requesting that anyone knowing such sources should contact BBN in Cambridge, Massachusetts.

Former A.A.S. president Aram Glorig made this comment on the study, "It is high time that impulsive noise and its effect on human hearing was studied thoroughly. Most of our information so far is from gunfire, and that isn't very definitive. One of the problems is that impulse noise varies from time to time. Even gunfire measures out at different levels at different times."

"Another problem," Glorig stated, "is that any study of impulsive noise initially requires ground rules describing what impulse noise is. In the past, no one has bothered to describe what it is. A description in terms of duration and peak level is the crucial point in such a study. Until such parameters are agreed upon, no study can be productive."

NOTICE TO MEMBERS

Please send us your news items or contributions for the October edition of Corti's Organ. Deadline is September 1.

News About Members and Others

Hiroshi Shimizu, M.D. has been appointed the Director of the Hearing and Speech Clinic in the Department of Otolaryngology at John Hopkins School of Medicine.

At the Los Angeles Otologic Medical Group a luncheon was recently held for two secretaries, Agnes Ward and Ruth Greulich, to celebrate the completion of the processing of the 250th pair of temporal bones. The host at the luncheon was Dr. George Kelleman, Director Emeritus of the Eccles Temporal Bone Laboratory. All of these bones have complete clinical records. It is hoped that evaluation of them in the Larrabee Laboratory will shed more light on the causes of sensorineural loss. A current project is to determine how many patients might be suitable candidates for the cochlear implant, i.e., how many neurons remaining in spite of the loss of the organ of Corti. So far it appears that about two thirds of the patients have at least sixty percent or more of the neurons remaining in the osseous spiral lamina and a normal ganglion cell count.

Dr. Malcolm Graham, Director of The Electron Microscope Laboratory at the Ear Research Institute hopes to achieve his Ph.D. at the University of California at Los Angeles in Electron Microscopy in the not too distant future.

A project to be started at the Ear Research Institute by Dr. John House is the use of biofeedback to try and control tinnitus.

Daryle Waldron reports that the Audiology-Speech Pathology Service at The Medical University of South Carolina, Charleston, has moved into its new quarters in the recently completed clinical services building. The service is staffed by three audiologists and one speech pathologist, all of whom hold the ASHA certification.

Gil Herer, Children's Hearing and Speech Center, Children's Hospital, National Medical Center, Washington, has been elected President-Elect for 1977-78 of the Maryland Speech and Hearing Association.

Harris Pomerantz, University

of South Florida College of Medicine, Tampa, is conducting a field trial of Blair Simmons' (Stanford University) Crib-O-Gram at Tampa General Hospital, and with neonatologist John Curran and otolaryngologist James Endicott of University of South Florida, has developed a High Risk Registry for congenital deafness, in cooperation with Communications Awareness Project, a local voluntary agency directed by Barbara Stefany.

"On the first of January, 1976, the Department of Otolaryngology at Queen's University, Kingston, Canada, opened its human Communication Research Unit on the campus of the Hotel Dieu Hospital. The Head of the Department is Malcomb Williams, F.R.C.S., (C); and the Unit Director, who is also an associate professor in the Department of Otolaryngology, is John O. Darbyshire, M.A., Ph.D.

The main function of the new unit is to carry out an epidemiological and demographic study of speech and hearing needs in south eastern Ontario, with particular regard to children and to senior citizens. Research is also being undertaken, under the direction of Z. Jacobson, M.A., Ph.D., into visible speech for children. Other research projects which are about to start will investigate social factors in families with young hearing impaired children, and the feasibility of establishing vocabulary norms for young Canadian children, both anglophone and francophone.

In view of the relatively unique nature of the new unit, contact with interested professionals both in the United States and elsewhere would always be welcome. Communications should, in the first instance, be sent to Dr. Darbyshire, at the Jeanne Mance Residence, Hotel Dieu Hospital, Canada.

Dr. Robert Frisina, Director of NTID, was recently in Hawaii to do a survey of the programs for the hearing impaired in Hawaii. The Departments of Education, Health, Social Services and Housing, Senior Citizen Programs, Parks and Recreation, etc. were all surveyed to come up with sug-

gestions and recommendations to improve and make more available services to the community.

An Information and Referral Center for the hearing impaired has been opened in Honolulu. This hopefully will act as a clearing house and get services to the public. The Center is operated by the Hawaii Council for the Hearing Impaired, a private non-profit agency. Evalyn Inn, audiologist, is president of the organization.

David W. Holmes, formerly Director of Audiology and Aural Habilitation at the New York State School for the Deaf at Rome recently accepted a position at the University of North Carolina, Institute of Speech and Hearing Sciences, Chapel Hill, North Carolina 27514. Plans are underway for the development of an Educational Audiology Program which will certify graduates by ASHA and by the Council on Education of the Deaf. Additional plans include a Deaf Infant/Parent Program at Chapel Hill.

Robert C. Cody, Director of the Speech and Hearing Clinic, West Virginia University Medical Center, spoke on "Impedance Audiometry in School Hearing Screening Programs" at the annual state convention of the West Virginia Speech and Hearing Association in Charleston. To emphasize his enthusiasm for combining impedance measurements with pure tone audiometry ("tympano-audiometric screening"), through the course of his presentation he stripped away his jacket, tie, and shirt to reveal a now infamous T-shirt inscribed with the phrase, "Stick it in your ear!" (courtesy of the American Electromedics Corporation). Having given a historical resume of school hearing screening from the days of the descending numbers phonograph test to the present innovation of including impedance measurements, he clearly indicated that "...We've come a long way, baby!"

Frank Kleffner, has accepted the position of Director of the Institute of Logopedics. He will begin his new job September 1.

THE INTERROGATORY

Question: In what circumstances do you feel it is advisable to recommend binaural hearing aid use?

Kenneth W. Berger, Ph.D.
Kent State University, Kent, Ohio

There is abundant evidence that binaural hearing is superior to monaural hearing in normal hearing individuals. Unfortunately, the evidence on binaural aided hearing, pro or con, is not so clear in cases of combinations of impaired ears. Presumed advantages of binaural over monaural amplification are: better sensitivity to sound, better speech discrimination in noise, and better localization of sound. Since the expected improvement in sensitivity under binaural amplification is minimal and not usually an important factor, and since improved speech discrimination has been elusive of proof, one judgement for recommending binaural hearing aids I make is on the basis of localization of sound. In some cases binaural aids improve localization, while in other cases localization ability is reduced.

We are beginning to attempt to quantify those hearing losses which are expected to permit localization under binaural amplification. Binaural hearing aids are recommended if the thresholds of the two ears differ by no more than 15 dB at any of the speech frequencies and are roughly parallel, if the dynamic range of each ear is about the same, and if at the same sensation level speech discrimination scores under phones differ by no more than 8%. Conductive losses with a larger difference in threshold contour or degree may benefit from binaural fitting.

Whether the person can readily afford two aids or can ill afford a second aid should not be considered a factor in determining binaural needs. Nevertheless, from a practical standpoint in the latter case the problem must be dealt with.

Mrs. Doreen Pollack, CCC-Sp A
Director, Speech and Hearing Services
Porter Memorial Hospital
Denver, Colorado

Although it is possible for man to function monaurally, the normal auditory system involves the reception of acoustic information from two ears within both hemispheres of the brain, both contralaterally and homolaterally. The advantages of binaural hearing have been well documented, and include overall ease of listening in group situations, improved speech discrimination especially in the presence of background noise, increased distance hearing, and the ability to localize the source of sound without a directional forced-head position.

If one of the goals of rehabilitation for the hearing impaired is to gain an optimal auditory function, it seems logical to try to duplicate the advantages of dichotic representation possessed by the normal hearing. For older people, one naturally has to weigh the advantages against

cost, ease of handling and other individual needs.

For young children, I believe true binaural fitting should be the fitting of choice unless it can be proved WITHOUT A DOUBT that there is a total loss in one ear, or other medical contra-indications. We have been fitting two separate aids for twenty years and have repeatedly demonstrated better speech and improved discrimination scores using standard tests WITHOUT LIP READING. For example:

	Pure Tone Average 500-2K	Aided SRT	Aided Discrimination HL Using WIPI
Right Ear	102 dB	35 dB	48% at 65 dB
Left Ear	105 dB	32 dB	48% at 65 dB
Binaural		30 dB	76% at 65 dB

Nevertheless, two major areas of controversy seem ever with us: (1) Does binaural fitting of asymmetric ears cause distortion? (We have no data to substantiate this.) (2) Should one ear be used at a time because of the danger of noise induced loss? We have followed cases for periods of up to 21 years who show no progressive loss but improved speech and listening skills, and we have seen cases of progressive loss, usually in one ear only.

E. Robert Libby, President
Associated Auditory Instruments
Upper Darby, Pa.

When the decision has been made that a hearing impaired individual with a bilateral hearing loss is a candidate for a hearing aid, we should automatically think of maximum compensation in the form of binaural amplification. In most other disabilities we tend to compensate as fully as possible. It is evident that not every candidate may need, afford, benefit or adjust to binaural amplification. It is also evident that an active school teacher has greater auditory needs than a 90-year-old geriatric, however, the evidence strongly supports starting with the binaural premise. The basic consideration should be can the client obtain greater benefit from the monaural or binaural situation. The benefits might be quite subtle and may be noted only in certain limited situations. Clinically the binaural advantage may be found in some clients and not in others; certainly without any real predictability. Shall we recommend binaural only for those where we found a clinical binaural advantage? Are we depriving many clients because of the inadequacies or our testing procedures? The final decision must rest with the subjective reactions of the individual.

The complexity and uniqueness of each client's auditory experience is such that the prediction of successful binaural use must be evaluated on an individual basis. My own experience strongly suggests that a hearing impaired individual with a bilateral loss deserves consideration for binaural candidacy, to be recommended on a trial basis with intensive after care counseling and orientation. The clinical evaluation is more a one time procedure while the binaural

The question arises—which ear would you choose? Residual hearing which is not used is of no advantage.

Residual hearing should be tested regularly, and the use of hearing aids monitored by an audiologist. The benefits of binaural hearing are measurable only after a period of intensive and well directed stimulation. I recommend the July, 1975 issue of Hearing INstruments which was devoted to binaural hearing and fitting.

adaptive mechanism is a process which can take many months before the binaural advantage is perceived.

With our rather remarkable technological advances in hearing aid design, greater knowledge of ear mold acoustics, utilization of reflex threshold measurements and central auditory processing procedures, there is more appreciation in the professional community for binaural hearing advantages. The future indeed shows promise for binaural amplification.

Darrel L. Teter, Ph.D.
Private Practice
Littleton, Colorado

1) When the aids are to be worn at ear level. It is not advisable to fit binaural aids when they are going to be body instruments, worn with three to four inches of separation between their microphones. When the aids are worn at ear level, the individual then, can benefit from the aids, and true binaural hearing and localization is obtained.

2) I would fit binaural hearing aids when the pure tone measurements for each ear are within 20 dB of each other, through the speech frequencies. This keeps one from fitting ears with great discrepancies, which will lead to a loss of the true binaural hearing experience.

3) I would fit binaurally with ear level instruments when the discrimination scores in each ear are reasonable symmetrical. I believe that they should be within 20% of each other, and preferably closer.

Joel M. Mynders
Philadelphia, Pa.

The art of fitting and selecting amplification has advanced steadily over the past forty years. With the advent of ear level type instruments, the fitting possibilities were increased to include binaural fittings. This type of fitting has been an area of controversy between hearing aid specialists and audiologists. The hearing aid specialists professional opinion of binaural fittings is based upon two factors. The first is the logic of using the two existing auditory pathways available for the best results from

amplification. The second is the positive attitude reported by clients who have been fitted with binaural hearing instruments. The content of these reactions is greater listening comfort in wearing a hearing aid when in the binaural configuration versus the monaural configuration. The reasons for this comfort are that when wearing two aids, the volume controls with two aids worn are set at a lower level, thus increasing the signal to noise ratio in many listening situations. Also the clients report that they are able to locate the source of sounds more effectively. It is also hypothesized by this fitter that the noise cancellation phenomenon of the Cortex functions more efficiently when the acoustic signals are binaurally amplified.

In our firm we fit somewhere between eleven to fifteen percent of our clients binaurally. The reasons for these figures are: 1) the criteria we utilize for binaural candidacy, 2) the imperfect methods that exist for demonstrating quantifiable binaural benefit, 3) the existing professional attitudes toward binaural fittings and finally 4) financial considerations of the client. However, the future of binaural fittings should be an upward incidence curve. The very same factors that have caused our low incidence of binaural fittings could change universally in the following manner. The criteria for binaural candidacy will expand to include many more clients. The audiologic methodology, using new discrimination tests will enable fitters to demonstrate binaural benefit with greater reliability. The attitudes of the professionals involved will endorse binaural fittings possibilities. Finally the dispensers will present a changed system of costs that will reflect an unbundled cost for services for binaural candidates. More specifically, this means that the fitters' services with a binaural fitting are not doubled, therefore the costs will reflect this and thus many more clients will accept the binaural recommendations from their fitter.

The controversy over binaural fittings should subside since it can profoundly affect the client's ultimate success with amplification as one type of treatment of hearing loss. The call for research on this type of fitting procedure should focus specifically in the area of effective tests for aided binaural function. The future of increased selective binaural usage by fitters will benefit many of the hearing impaired.

Linda Weir, M.A., C.C.C.,
University of Texas at Dallas
Callier Center for
Communication Disorders,
Dallas, Texas

Binaural hearing aids should be viewed as the ideal or preferred method of amplification and each individual should be evaluated with this possible recommendation in mind. By the same token, however, some cases should not be viewed as potential candidates and the audiologist should base the choice for binaural vs. monaural recom-

mendation on demonstrated preference of one or the other arrangement.

Binaural aids appear particularly advisable in cases of bilaterally symmetrical losses with similar speech discrimination abilities and loudness tolerance levels for both ears. When ear level aids can be utilized in a binaural situation, this should be viewed as favorable over the use of two body aids. In assessing the potential benefit one can derive from binaural aids, I look to find similar aided responses for warbled pure tones, SRT, and whenever possible, discrimination scores at a 50dB HTL presentation level for both ears independently prior to introducing the binaural arrangement. If it is not possible to produce similar aided results for both ears after adequate evaluation, I then question the actual benefit that one would gain from the use of binaural over the use of monaural fittings.

With very young hearing impaired children possessing essentially no language skills, the initial use of amplification should be viewed as an evaluation period. I, therefore, hesitate to proceed with the recommendation of binaural aids in the very beginning and disagree with the practice of routinely fitting binaural for the initial experience with amplification. Initial audiologic information for these babies cannot provide insight into discrimination abilities, unless sufficient language is present to use in obtaining indications of both ears' abilities to discriminate speech. For this reason, I generally opt for a period of several months of adjustment to the aid, alternating its use between ears on a weekly basis. Thus, information regarding both ears can be obtained through observations by the parents, teacher, and audiologist regarding the child's responses coupled with the aided audiograms for both ears—to be used in making recommendations regarding binaural aids. If these observations indicate the child is receiving equal benefit from the aid in both ears independently, the introduction of binaural amplification can then be made with more assurance. Routine re-evaluation of the recommendation should proceed as the child develops, with in mind that initial hearing aid usage is an on-going trial period in very young children.

Michael C. Pollack, Ph.D.
Pomona Valley Ear, Nose and
Throat Medical Group, Inc.
Pomona, Ca.

While much of the research with binaural hearing aids has failed to demonstrate significant clinically discernable advantages when compared to monaural amplification, users frequently report these advantages. The main advantage seems to be in an improved figure-ground relationship. It has been my experience that many users find it easier to separate primary

[Continued on Page 5]

The Interrogatory

[Continued from Page 4]

speech signals from background noise with binaural rather than monaural amplification. Koenig refers to this as the "squelch effect."

I have not as yet discovered a foolproof method of determining whether an individual should use one or two aids. Since successful binaural use seems to be a very individual phenomenon, I believe that decisions for binaural recommendations must be based on the specific needs of the patient. What are the demands placed on his hearing? Is the person frequently confronted with situations that demand functional binaural hearing, such as business conferences, academic or social settings? If so, then binaural amplification should be considered, at least on a trial basis. I believe that binaural fittings are especially important for children in terms of the facilitation of educational and psychological growth. I rarely recommend two aids for geriatric patients. I find it difficult to justify the additional expense against the relatively slight gain in auditory functioning if the hearing demands are not significant. Naturally, this is not an inflexible policy, but is dependent upon the individual's realistic needs.

I ordinarily fit the binaural aids one at a time, giving the person a chance to adequately adjust to one, then two instruments. It has been my experience that binaural fittings are successful more often with this procedure than with immediate fitting of both instruments. In this way the patient can experientially evaluate the possible advantages of two aids; this, after all, is the most critical test.

Ear Surgery In 3-D

J. Brown Farrior is sponsoring a course on Mastoidectomy, Tympanoplasty and Stapedectomy in Tampa, Florida on February 20-24, 1977. The goal of this course is to show as much surgical pathology and surgical technique as can possibly be covered in three days. It will begin with lesions of the external auditory canal and proceed with tympanoplasties, mastoidectomies, tympanomastoidectomy revisions and causes of failure and then consider special techniques, as the removal of glomus tumors. The concluding lectures will be on stapedectomy techniques and causes of a failure.

Visiting firemen will act as discussants and panelists to present divergent opinions as to the indications and variations of the technique employed.

The course stresses the necessity for total knowledge of the temporal bone anatomy, pathology and surgical technique. The course will be illustrated by scientific exhibits which will open on Sunday. Three dimensional photography will be utilized to portray in depth the variable surgical anatomy and surgical pathology of the temporal bone.

WRITE: SOUTHERN FOUNDATION, c/o J. Brown Farrior, M.D., 509 Bay Street at Bayshore Blvd., Tampa, Florida 33606.

BY STEVEN BERMAN, M.D.
AND
THOMAS J. BALKANY, M.D.
Univ. of Colo. Medical Center

The occurrence of acute bacterial otitis media in young infants under three months of age has been documented in the neonatal intensive care unit and the outpatient population. Autopsy studies on perinatal deaths have also demonstrated that purulent otitis media is a common finding. (4-5)

The ability to accurately diagnose acute bacterial otitis media with the hand-held pneumatic otoscope in the neonatal period has important clinical implications. Undiagnosed bacterial otitis media can become a focus for the development of more serious infections, such as sepsis or meningitis. (1-2,7) The symptomatology associated with bacterial otitis media in infants under six weeks of age also resembles these other infections. Symptoms associated with unrecognized bacterial otitis media can lead to a septic workup with the institution of antibiotic therapy, usually involving both ampicillin and an aminoglycoside. These antibiotics are usually discontinued at 48-72 hours if the cultures are reported as negative. This can result in inadequate treatment of the bacterial otitis media and cause a chronic partially treated otitis to develop.

It is important to determine the causative organism by tympanocentesis because the bacteriology of otitis media in this age group differs from older children. In contrast to older children with otitis media in whom ear aspirates yield predominantly streptococcus pneumoniae, hemophilus influenzae, and streptococcus pyogenes Group A (7-9), infants less than six weeks of age have been reported to have a high incidence of gram negative enteric infections and staphylococcal infections. (1-2) Despite these considerations, otoscopy is often overlooked in the intensive care nursery setting. The barriers to an adequate examination include: (1) narrow external auditory canals of a premature infant which are often occluded with vernicious debris; (2) a reluctance to disturb a sick infant often in an isolette who is intubated; receiving assisted ventilation; (3) the normal appearance of the tympanic membrane in a premature differs from that seen in an older child.

A cooperative study has been undertaken by members of the University of Colorado Medical Center's departments of Pediatrics and Otolaryngology to determine the prevalence of bacterial and nonbacterial otitis media in the neonatal intensive care nursery. The clinical presentation and bacteriology of otitis media in the neonatal nursery was also compared with that of otitis media in infants of the same age living at home. As part of this study, we have tried to determine the accuracy of bedside hand-held otoscopy. A member of the Pediatric Department with a special interest and experience in otoscopy examined 100 ears using a Propper hand-held oto-

scope with pneumatic attachment. The same ears were then evaluated in a double-blind system by an otolaryngology resident using a Zeiss binocular operating microscope.

Findings were identical in over 90% of the cases.

The results to date support the evidence that bacterial otitis media occurs commonly in the neonatal intensive care nursery. An association was noted between prolonged nasotracheal intubation and the presence of bacterial otitis media. The clinical presentation of bacterial otitis media in both the nursery and non-nursery infants under three months of age resembles the clinical presentation of other serious infections. There were several patients with otitis who also had either sepsis or meningitis.

Distinctively different flora were found to be responsible for suppurative otitis media in infants under three months old who were in the intensive care nursery and those at home. Outpatients with acute otitis media were found to have predominantly *Diplococcus pneumoniae*, *Haemophilus influenzae*, and staphylococcus species, while inpatients had staphylococcus and enteric gram negative organisms.

These preliminary data indicate that otoscopy should be done routinely on any neonate or infant with a clinical presentation compatible with sepsis. When otitis is diagnosed in an infant less than three months of age, a septic workup should be performed, which should include a tympanocentesis in addition to blood cultures, a spinal tap, and suprapubic urine. We feel that hand-held otoscopy can be a powerful diagnostic tool in the hands of a pediatric resident with adequate training in its use.

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Memorial to Carhart Planned

A grant of \$1000 to Northwestern University for auditory research in memory of Ray Carhart has been made by the Beltone Institute for Hearing Research. Mr. L.M. Posen, president of BIHR, announced the grant, which has been accepted by Dean Roy Wood of the School of Speech at Northwestern.

Dr. David Rutherford, Chairman of Communicative Disorders will meet with the Trustees on June 7 for presentation of the grant. A plaque honoring Ray Carhart's contribution to BIHR will also be presented at that time. Dr. Lois Elliot, new Head of the Program in Audiology and Education of the Hearing Impaired, will also be present.

For many years Ray Carhart worked with the BIHR and it is in honor of his work the Institute the award is made.

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The Center for Speech, Hearing, and Learning Disabilities at Hackensack Hospital, Hackensack, New Jersey, is conducting a two-year study on the ototoxic effect of tobramycin in the treatment of cystic fibrosis patients with pneumonia or other lower respiratory tract infections. This study is being conducted under a grant from the Eli Lilly Pharmaceutical Corp., and in conjunction with the Infectious Disease Division of the Hospital.

Approximately 20 patients, ranging in age from 1 to 30 years, will be studied. The patients will be tested prior to drug therapy, between the third and last day of therapy, and 1 to 3 weeks following termination of therapy. Hematologic, renal, and liver changes following drug therapy are being monitored by the Infectious Disease Division.

—Mae J. Balaban, Ed.D.

Vicon Purchases Plant Facilities

Chauncey Hewitt, President of The Vicon Instrument Company announced the acquisition of the complete plant facilities by the new owners of Vicon.

"In January 1975, it was announced that four well-known people in the hearing aid industry...James Nunley, Ron Morgan, Marvin Pigg and myself...had purchased Vicon. One short year later, almost to the day, we are pleased to announce that the new owners have also acquired the complete property and plant facilities from Baldwin Industries of Houston, Texas," announced Mr. Hewitt.

"In line with our future growth, it appears to be a good business decision to own the complete facilities which will enable us to grow more rapidly and modify the facilities to our future needs," commented Jim Nunley, Vice President of Vicon.

The plant, which was built to Vicon specifications seven years ago, is one of the most modern self-contained facilities in the industry today. Located at the foot of Pikes Peak in Colorado Springs, it was designed to include many facilities not normally found in hearing aid manufacturing. The plant includes complete "clean-room" facilities for the manufacture of hybrid integrated circuitry, a complete machine shop for tool and die

making as well as injection molding and rubber molding facilities. Its unique 1,000 sq. ft. sound treated anechoic chamber is one-of-a-kind in the industry and provides excellent facilities for sophisticated design and engineering capacities.

"We are not only pleased with this acquisition but proud enough to want to 'show it off,'" said Mr. Hewitt. "I would like to throw out an offer to anyone in the industry...if you find yourself in Colorado Springs, stop in and have lunch with us and we'll provide a complete tour of 'our new facilities.'"

And Then There Are Ear Plugs

Dr. Morton Corn announced on the June 18 NBC "Today" Show that there are now more figures from the BBN study on the economic impact of the 90 and 85 dBA noise standards. It would cost industry \$10.5 billion to comply with a 90 dBA standard, and once that has been done it would take \$8 billion more to reduce to an 85 dBA standard.

But listen to this: there is also a "low-cost option" that would cost \$43 million per year—little ol' ear plugs, no less. And we thought all along that ear plugs were mandatory regardless of what standard was adopted. Certainly they are mandatory for the work areas that exceed 90 dB, or whatever standard is ultimately chosen. It's nice to know how much they cost.

The BBN report cost the government \$150,000.00 Dr. Corn stated.

Tennis Anyone?

There will be an informal tennis tournament Oct. 6 and 7 at Las Vegas in conjunction with the O&O meeting. Men's singles and doubles, mixed doubles and women's singles and doubles will be played, and trophies awarded. If interested, write M. Downs for information.

ARTICLE and BOOK REVIEWS

"Early Identification of Hearing Loss." Editor, George T. Mencher, 1976, S-Karger, Basel, [Switzerland], Arnold-Bocklin-Strasse 25. \$19.00.

This book contains the proceedings of an international conference aimed at bringing together current thought on early detection of deafness. The conference was hosted by Dr. George Mencher in Halifax, Nova Scotia, under a grant from a philanthropic branch of the Benevolent and Protective Order of Elks of Canada. The participants represented the countries of Italy, Israel, Poland, Sweden, Canada and the United States.

There are great advantages in a privately funded conference such as this one. It permits an interchange of viewpoints and expertise that would take years of publications and private communications to accomplish. It gives a lead of several years to the dissemination of information on the latest methodologies and opinions. The private support permits expeditious handling and scheduling. And there seems to be at such meetings an informal camaraderie that leads to openness.

The book begins with the recommendations of the conference. Their scope is world-wide and comprehensive. All countries are abjured to provide programs for neonatal and older infant screening. The implementation of an efficient High Risk Register is the first priority. A behavioral screening test specifying arousal from sleep is allowed as a supplement to the Risk Register. Health Care systems are asked to provide for hearing testing later in infancy, in order to identify both ear disease and hearing loss. Hearing, speech and language should be evaluated at two years of age. The conference asks the World Health Organization and other Health Agencies to offer inter-disciplinary training courses on the methods to accomplish the stated goals.

The papers which follow are by people who have devoted much of their lives to the study of hearing loss and its identification. To mention a few, George R. Fraser, the dean of geneticists in hearing loss presents a classic discussion of genetics. He appeals for careful identification at birth as a possible beginning for efforts of preventing those genetic hearing losses which seem to develop after birth.

Objective measures of testing hearing are discussed by A.J. Derbyshire (Acoustically Evoked Potentials); S.E. Gerber (Auditory Cardiovascular Response); R.F. Naunton (Electrocochleography); and R.W. Keith (Impedance Measures).

Our horizons are considerably broadened by the reports from different countries on what kinds of programs have been developed under their particular circumstances. In Israel, where almost all infants and children are given health care in the state's public health clinics, it has been possible to demonstrate effective universal screening beginning at 5 months. Mrs. Lilly Tell and Dr. M. Feimesser describe their well-designed study that is a

model of investigative reporting of this type. Also from Israel is a report on automated screening by Dr. Altmann of Haifa. In Sweden and Poland it is also possible to reach most of the infants and children in the public health clinics. Dr. Borkowska-Gaertig of Warsaw describes screening beginning at 8-12 months, and Dr. Stensland-Junker of Stockholm presents her Communication screening project for 7-month old children. Dr. Rossi of Milan gives the only report of an exclusively observed behavioral testing project on newborns and recommends the continued use of this technique. Programs on this continent are described by McCulloch of Nebraska, Alexander and Zink of Canada, Simmons of Stanford, and Downs of Denver.

Dr. Bess of Central Michigan University describes a survey of pediatricians' attitudes toward newborn screening; most were willing to support at least a High Risk program. Other pertinent papers are presented by Dr. Phillip Peltzman, Dr. Cancel de Irizarry, and by Dr. Aram Glorig with Gary Curtis. This last paper describes a workable plan for developing a state-wide identification program, based on a legislative proposal in Texas.

Not since the Toronto conference of 1962—also a privately endowed meeting—have so many people from different countries been brought together for mutual dialogue. The proceedings should be read by all who would like to get a world perspective on this specific health delivery problem. There is a warm and compassionate feeling in these papers and in the recommendations made by the participants. For anyone who cares about early identification there is good reading and widened perspectives in this book.

—Marion Downs

IF A CHIMP CAN LEARN SIGN LANGUAGE

by Rachel Mayberry
School of Human Communication
Disorders, McGill University
Montreal, Quebec, Canada

After one of those simply awful titles that seem to be "in vogue" these days, the reader is treated to a relatively good account of the various sign systems currently being used in the United States. The author analyzes American Sign Language (ASL), Seeing Essential English (SEE-1), Signed Exact English (SEE-2) Signed English, and the Linguistics of Visual English. A disappointingly small amount of time was given to fingerspelling, apparently because of the author's expressed belief that fingerspelling is merely "writing in the air", an evaluation this author takes issue with, but will not go into this review.

The second section of the article concerns itself with the actual use of sign language systems in working with nonverbal individuals, for whom attempts to establish oral language have failed. This was a somewhat disappointing section that could have been made stronger had the author presented some examples

of individuals who had experienced a measure of success in developing some language. However, the article should stimulate many clinicians to explore these interesting alternate systems currently in use with the deaf.

Reviewed by:
Philip A. Bellefleur, Ph.D.
Headmaster

The Pennsylvania School for the Deaf
From the April 1976 issue of
The American Speech and Hearing
Association Journal.

"Mainstreaming: Format or Quality?"

Richard G. Brill, Ed.D.
California School for the Deaf
Audiology and Hearing
Education, Vol. 2, No. 3, 1976

One cannot pick up a magazine today, whether it be a professional journal or Cosmopolitan, without reading that mainstreaming it here, and indeed, that it is a solution to the problems of the handicapped. Least restrictive environment and due process were terms that, until recently, had meaning only to attorneys.

Today, these and other vocabulary are central to the happenings in education. Dr. Brill's discussion of mainstreaming is one of but two articles I have read in the past year and a half that offers serious questions about our carte blanche application of this concept to all types and degrees of handicapping conditions.

Superintendent Brill's article begins with the history of mainstreaming, dating back to the classic "Mills versus the Board of Education" in Washington, and "The Pennsylvania Association for Retarded Citizens versus the Commonwealth of Pennsylvania." It points out how concepts developed, not as a result of our own thinking and planning in education, but as a result of court actions brought against schools by parent groups. (Although today, you would think, to listen to educators, that education was the plaintiff INSTEAD of the defendant in these suits. Editor)

A particularly important aspect of this article is the statistical data on the incidence of deafness. It is material that has always been readily available, but which in recent years, has been overlooked or outright ignored by both educators and the courts. Dr. Brill makes a strong case for realistic program planning for the deaf in the centralized school environment. In another section of the article, Brill makes the point that hearing handicapped children are not best served in the least restrictive environment, but best served in a situation with fully trained teachers, who are appropriately supervised by master teachers, and where additional services are available. In the case of deaf youngsters, this is most often in the residential school.

I cannot recommend this article too strongly to those colleagues who are responsible for

placement decisions on hearing handicapped children.

Reviewed by:

Philip A. Bellefleur, Ph.D.
Headmaster

Penna. School for the Deaf
From the April/ May 1976
issue of Audiology & Hearing
Education.

"Cochlear Implants;
Development of an Idea",
Ear Research Institute and
Walt Disney Hearing
Rehabilitation Research Center
House, W.F., ed.,

The goal of this work is clearly stated at its outset; "This monograph details the events and results of fifteen years of work with the cochlear implant at the Ear Research Institute." The authors achieve this goal admirably. First, they chronicle the development of cochlear and eighth nerve stimulation from early reports to present day. They review their own experiences leading to the present use of a single wire electrode and induction coil. Case selection, pre-implant testing and interview, post-implant studies, and rehabilitation procedures are then presented. At the ERI these steps are taken by a team consisting of an otologist, a speech pathologist, an audiologist, an engineer, two psychologists, and a psychological assistant. Chapter IV outlines their initial efforts to "track the subjects psychological function through time." Last, the monograph defines future objectives of the cochlear implant project.

This monograph, without overstating the fact, portrays the dedication and intensity with which the Ear Research Institute has undertaken this project. In light of this devotion to their goal and the controversy which revolves around the entire subject, it would seem natural if the authors used this monograph as a platform to defend their position or to answer criticism. They refrain from doing so. Rather, they stick closely to their original goal of relating their experiences with implants. As a result, the reader is provided an informative and readable article. They precisely document their results and set down some realistic objectives for the future.

This monograph is recommended for anyone interested in the subject of cochlear implants.

Donald W. Goin, M.D.

"The Call Girls"
by Arthur Koestler,
Dell Publishing Co.,
1 Day Hammerskjold Plaza,
N.Y.C. 10017
\$1.75 [paper-back]

Sorry, boys, this provocative title is completely misleading. The Call Girls of the title are all of us who move from conference to conference, symposium to symposium—at the drop of a telephone ring. As one of the participants at the book's symposium says "I am an academic Call Girl. We are all Call Girls...

It becomes a habit, maybe addiction. You get a long-distance telephone call from some professional busybody at some foundation or university..."

The place is Switzerland. The meeting is on "Approaches to Survival"—a conference of leading scientists who are charged with composing an "Einstein letter" to the President. The purpose is to solve the world's problems of over-population, diminishing resources, and recurrent wars. Like all of us, the participants know each other from frequent similar meetings in the past and look forward to meeting more in the future. There are the usual distinctive types that are familiar to us: The Call Girl Laureate who has received all the honors that institutions, governments and universities can bestow on him and is insufferably outspoken; the "enfant terrible" who is an exhibitionist but a brilliant scientist; the Nobel prize winner who is a Lolita-chaser; the impassioned visionary who thinks he can save the world; the "bright but bitchy" woman scientist who calls the men's wives "dowdy, poisonous, and always tired,"—and many more.

What is fun about this book is the satire on meetings of this kind: "They liked to cram forty to fifty papers into a five-day conference, which put the participants into a condition not unlike that of punch-drunk boxers, and left no time for discussion, although the discussions were the declared primary purpose of the whole enterprise."

And on late arrivals, "The other absentee was Bruno Kaleski, last year's winner of the Nobel Prize for Peace; he had wired that he was delayed by urgent business and would arrive later in the morning. That sort of thing, too, inevitably happened among the Call Girls. Some were always late, some had to leave before the end of the conference, some came only for one day, delivered their papers, collected their fee, and dashed off again."

Everything is described in accurate detail: the ritual cocktail parties; the paraphrasing of the same talks that the speaker has given at several previous conferences; the tunnel vision of each participant who believes only HIS approach can solve the problems; the non-stop speaker and the trouble in readjusting physiological clocks to local time and food.

The Call Girls "looked up themselves as a traveling team of professional wrestlers, who are familiar with one another's antics and go through their paces each time pretending surprise and indignation at the base tricks of their opponents."

The symposium goes the way of all symposia: everyone has his say; no one listens; and nothing comes of it. But what were you expecting? They would save the world? Better you just enjoy this book.

—Marion Downs

[Continued on Page 7]

FILMS

Operant Audiometry with Severely Retarded Children"
Color, 16 mm
Rental\$15.00
Purchase\$100.00

Robert T. Fulton,
Joseph E. Spradlin,
Lyle L. Lloyd

Purpose: To demonstrate the application of basic operant conditioning principles in testing the hearing of severely retarded children.

Audience: Audiologists, Psychologists, Teachers, College Students, Behavioral Scientist and others in Developmental programs.

Description: As a demonstration of positive reinforcement in testing the hearing of a severely retarded person, this film traces the progress of a 13-year-old boy through several clinical sessions designed to detect and diagnose hearing impairments. It demonstrates how the child is conditioned to wear a headset and how reinforcement techniques are employed to train the child to respond to auditory stimuli.

"Hearing Assessment for the Young and Difficult-to-Test"

Color, 16 mm
Rental\$10.00
Purchase\$100.00

Robert T. Fulton

Purpose: To demonstrate the use of operant audiometric techniques in the hearing assessment of a variety of difficult-to-test persons.

Audience: Parents, Administrators, Teachers, Audiologists, Psychologists, Students, Behavioral Scientists and others in developmental programs.

Description: The testing of a number of individuals who are considered difficult to test is demonstrated during the course of this film. The application of the operant paradigm is featured. Through the use of clinical sessions, the film depicts a broad range of conditions which make hearing evaluation difficult. The operant procedures permit testing despite those conditions.

"Temporal Parameters of Auditory Stimulus-Response Control"

Color, 16 mm
Rental\$15.00
Purchase\$100.00

Robert T. Fulton and
Joseph E. Spradlin

Purpose: To illustrate a procedure to insure accurate data in auditory threshold evaluations of severely retarded children.

Audience: Audiologists and other speech and hearing specialists.

Description: The test demonstrated in this film presents signals in random or alternating order with nonaudible control periods. Intervals between auditory signals are systematically varied. Programming safeguards and their effects on test results and subject behavior are illustrated by continuous, realtime animation superimposed over film of a subject being tested. The animation reflects, second-by-second, the variations of the testing program as it affects, and is affected by, the subject.

"Developing Auditory Stimulus-Response Control with Young Children"

Color, 16 mm
Rental\$15.00
Purchase\$100.00

Robert T. Fulton,
Pamela A. Gorzycki,
Wilma Hull

Purpose: To demonstrate the behaviors of very young children and how these behaviors are brought under stimulus-response control to achieve hearing assessments.

Audience: Audiologists, Physicians, Psychologists, and others concerned with the evaluation of handicaps in very young children.

Description: Auditory stimulus-response control is a critical dimension in the testing of children two years of age. Children may have suspected hearing losses, but they may be too young to respond to spoken instructions. Their behavior may be directed toward attempts to escape from the testing environment rather than toward cooperating with the audiologist. If the child can be placed under stimulus-response control, the auditory measurement becomes rather routine. This film demonstrates techniques used to obtain reliable bilateral auditory data from children as young as nine months.

Rental: Send all rental orders to:
University of Kansas
Film Rental Service
746 Massachusetts Street
Lawrence, Kansas 66044

Purchases:
University of Kansas
Bureau of Child Research
Lawrence, Kansas 66045

BOOK REVIEWS

[Continued from Page 6]

"List of Personal Hearing Protection and Attenuation Data"

H.E.W Publication
No. [NIOSH] 76-120
Division of Laboratories and
Criterion Development
Cincinnati, Ohio 45202

A listing of suppliers of ear protection devices, models and types of ear protectors, average attenuation values at test frequencies 125-8000 Hz, test standards and testing laboratories. Advice is given as to how to choose ear protectors, and how NIOSH calculated the attenuation factors for ear protectors.

Hearing Aid Specs Nearing Approval

The proposed specification standards on hearing aids outlined by Sam Lybarger in the January "Corti's Organ" are moving steadily toward eventual approval by the Federal Food and Drug Administration. The present status of the standard is that it has been approved by the Acoustical Society of America Committee of Standards and has been forwarded to ANSI for consideration.

Once ANSI approval has been received, the standard will be published—possibly in late summer or fall.

An April 21 excerpt from the Federal Register explains the development of these standards:

"On March 10, 1975, the FDA Panel on Review of Ear, Nose and Throat Devices made a preliminary recommendation that hearing aids be classified as devices for which performance



American Audiology Society members, Jakob Skadegard, President of Oticon Corporation USA, and Jerry Northern, Ph.D., of the University of Colorado Medical Center share a few social moments at the UNESCO Building in Paris. Skadegard holds the International Trophy awarded to the Oticon Foundation.

standards will be required after enactment of proposed medical device legislation (S. 510, H.R. 11123). Of all devices placed in the standards category by the Panel on Review of Ear, Nose and Throat Devices, hearing aids were ranked as the first priority for the establishment of standards. FDA has been working with interested persons to develop a standard for hearing aids. At

FDA's suggestion, the American National Standards Committee on Bioacoustic (S-3), through its Working Group on Hearing Aids (S3-48), has developed a draft standards, known as S 3.22, 1976,

American National Standard for Specification of Hearing Aid Characteristics, which would specify uniform methods for testing and measuring the electroacoustical characteristics and properties of the hearing aid

(Ref. 10). The standard was based in part on earlier American National Standards (Ref. 11 and 12). Although these proposed regulations do not adopt any minimum or maximum performance requirements for hearing aids, under proposed 801.420 (c) (3), the technical data that would be required in hearing aid labeling would be determined in accordance with the test methods of the standard S 3.22, 1976."

Bringing Home The Bacon

It seems you just can't trust anyone anymore. Politicians, law enforcement officers, lawyers, doctors, and even clergy have earned a raised eyebrow for themselves. People are just plain tired of being deceived. I guess Watergate, Vietnam, Cambodia and other fraudulent deceptions have numbed us, and, it seems to me, scientific reporting has fallen prey to the same evil. Our journals are full of misleading statistics, confusing data, unjustified conclusions, and fuzzy logic, despite the best intentioned editors and the most wary of referees. In a time when resources must be used most efficiently and expeditiously, most investigators should be asking themselves some pretty basic questions—Am I really contributing something? Have I added anything to what's already known? Does what I'm reporting make sense?

Perhaps we can learn something from Sir Francis Bacon, who, in 1620 described a system of inductive reasoning whereby facts are observed, catalogued and linked. This milestone in the development of scientific thought deserves renewed interest amongst those of us called "researchers". Too often, the desire to produce meaningful research is clouded by one's ego and prejudices. Let's face it. Francis Bacon was right. That system which divorces itself from bias and unproven deductions serves science best. That framework which helps readers apply scientific observations to individual patients serves the latter best. It's time we redefine our investigations and scrutinize their worth. In short, we need to call a moratorium on fat and concentrate more on the bacon.

Arden D. Meyers, M.D.

Be Kind to Neighbor But Stay Out of Noise

It has been established that people lose their Good Samaritan traits in the presence of a noisy environment. Two psychologists, as reported in the Journal of Personality and Social Psychology (Vol. 32, No. 4), set up experiments to determine the difference between people's behavior in quiet and in noise.

52 student volunteers were each made to wait in a quiet room (48 db) to be called for an expected experiment. The experimenter was waiting in the same room with a pile of books on his lap. When he got up, he dropped the books. Three-quarters of the 52 students helped pick up the books in the quiet situation. However, only half that number helped with the books when noise of 85 dB was introduced into the room.

A similar street experiment was set up, with a man carrying two large boxes filled with books from his house to his car. As a potential subject walked by, the man dropped several books, and then spilled more when he reached down. When the noise level was measured at about 50 dB, 20% of 80 random subjects stopped to help, and this number was increased to 80% when the book-carrier wore a cast on his

arm. But when a lawn mower nearby produced 87 dB of noise only 10% helped the normal book-carrier and 15% helped the man with the cast.

There go the nobler instincts of man, drowned out by a high environmental noise level. EPA, take note.

Children Are A Noise Hazard

It may come as no surprise to parents of vocal children to learn that their little ones can (and do) produce dangerous noise levels. A 12-year old girl uttered screams of 122 dBA, according to an article in the "New Scientist" (Vol. 68, No. 980). The researchers clocked the mean level of 200 screeches by primary school children at 114 dBA on the sound level meter.

The Environmental Protection Agency should be alerted to this new health hazard. We conjure them to regulate the vocal exuberances of young children just as other environmental noises are being regulated. Some retooling by laryngologists may be the first line of defense against this dangerous occupational hazard for parents.

NEWS FROM ALASKA

Rural Alaska has often been identified as an area of the United States with the highest incidence of otitis media. This has been documented on numerous occasions including studies by Maynard & Hammes (1970) and Reed (1965). Unpublished (audiometric and impedance) data collected by the Communicative Disorders Program of Alaska Department of Health & Social Services in 1975 revealed that preschool children tested demonstrated 20% to 33% with either type B tympanograms (middle ear effusion) or tympanic membrane perforations (% vary - depending upon which section of the State is surveyed). The predominant cause of Type B impedance findings is believed to be serous otitis media. Type C (eustachian tube obstructions) impedance findings were recorded in 22 to 27% of this population.

In addition to its ongoing programs statewide, the CDP is monitoring intensively the status of Headstart children in 11 rural Alaska villages in an area surrounding the S.W. Alaska community of Bethel. Over a period of one year these children will receive 4 audiological evaluations consisting of pure tone and impedance audiometry. The final two tests will be conducted in the fall of 1976 and will be supplemented by ENT exams and the necessary medical and surgical management. This project is a joint venture of the CDP of the Department of Health and Social Services, Alaska Headstart, the Bethel PHS Service Unit Hospital and a private ENT physician.

This study should provide some baseline information concerning the duration and variability of serous otitis in addition to providing needed audiological and ENT care to these remote villages.

The CDP audiologists responsible for S.W. Alaska are Mr. Bill Orr and Mr. Carl Dixon. David R. Canterbury, Ed.D., is the Chief of the Alaska Communicative Disorders Program.

The Alaska State Department of Education initiated the Alaska Child Find Project during 1975. The purpose of this project is to identify, locate and begin educational services to all out-of-school handicapped children and youth. In Alaska, handicapped children from 3-19 years of age are included in the public school educational domain.

A public awareness campaign was initiated in order to increase parental and professional awareness of the educational services available to handicapped children. Handicapping conditions may include mental retardation, visual handicaps, blindness, hard of hearing, deafness, multiple handicaps, physical handicaps, emotional handicaps, speech impairments, and specific learning disabilities.

Because Alaska Child Find is an on-going project with no termination date, physicians, public health nurses, and other health and educational personnel are encouraged to continue to make

every effort to work with local school districts in identifying unserved handicapped children and youth. Parents are also encouraged to initiate the process of obtaining education services for their child. Parental participation is one of the most important factors involved in serving handicapped children.

—Judy Hayden
Education Specialist
Department of Education
Pouch F
Juneau, Alaska 99811

Sharon L. Murray, Ph.D., is the new director of the speech and hearing center associated with the Alaska Crippled Children and Adults (ACCA) in Fairbanks, Alaska. Upon returning from a recent field trip to the interior villages and schools, she reviewed the role of the center in providing speech and hearing services to the rural areas. She was asked to comment about the results of this evaluation and these edited comments are offered for publication.

A BRIEF LOOK AT PROBLEMS INVOLVED IN MANAGEMENT OF COMMUNICATIVE DISORDERS IN RURAL ALASKA AND THE ROLE OF THE NON-PROFIT, FREE-STANDING CLINIC

THE DILEMMA:

The problems encountered in serving the rural areas of Alaska with speech and hearing services are not only complicated by inaccessibility of the villages and the population but by the varieties of cultural entities which exist. Past efforts have assumed that evaluation and remediation of hearing and speech language problems are, indeed, desirable. Historical acceptance of middle ear pathology and multiple dialects of several distinct Eskimo and Indian cultures all weigh on this assumption.

Otitis media has been acknowledged for the past ten years as one of the State's primary health problems in the native population and it logically follows that all areas of speech and language development would be affected.

PRESENT PROGRAMS:

The resources and expertise of the free-standing speech and hearing centers, the physician, the itinerant public health nurses and health aides, the native health services, Rural-Cap's Head Start Program, Department of Education, State Health Communicative Disorders Program and local schools are required to overcome some of the physical and cultural differences within Alaska to provide services for communicative disorders.

The two non-profit private centers offer services on a two fold approach to isolated villages: (1) Families referred from local villages are flown into the centers for intensive work, sometimes remaining two to three weeks; (2) Clinicians fly to the villages, usually remaining several days mostly due to lack of available return flights. Workshops and institutes for training

aides and teachers have also been accomplished both at the center and in the villages.

FUTURE TRENDS:

The role of the non-profit private clinic toward effective program management within the villages could go in one or more of three major directions in the northern interior region of Alaska. The first would be as a consultant; that is, working with a "speech generalist" who is either located in a village or traveling between other villages similar to the itinerant speech clinician in the public schools. As a consultant, the center would provide assistance with screening and in-depth diagnosis, behavioral planning and follow-up. All this will be accomplished with the consultant visiting the respective villages.

A second direction that is currently being considered is a contract between school districts and the center to provide an itinerant speech pathologist. This person's responsibility would be the screening, evaluation program planning and monitoring of children with communicative disorders in the various villages. In contrast to the itinerant "speech generalist", there would be a contract arrangement for a salary with the clinic and, therefore, the clinic's responsibility for quality management.

A third direction should occur regardless of who serves the population directly, and that is on-the-job training of village health and teacher aides and preschool teachers. Periodic workshops held at the clinic would supplement this training and allow group program development. This would allow services to be more tailor made to the particular needs within each village setting.

—Sharon L. Murray, Ph.D.
Director
Alaska Crippled Children and Adults
Speech and Hearing Services
1020 Barnette Street
Fairbanks, Alaska 99701

The staff at the Alaska Native Medical Center (ANMC) have observed that the children exhibiting auditory discrimination disorders prior to undergoing middle ear surgery often continue to exhibit this disorder after restoration of normal hearing acuity.

An on-going study is attempting to determine the effects of auditory discrimination training upon children's auditory function following surgery. The hypothesis being that auditory discrimination training following middle ear surgery will result in a statistically significant improvement in auditory discrimination skills when compared to a similar group of children receiving no training in auditory discrimination.

The children selected are those admitted to ANMC for middle ear surgery and who range in age from 6 to 18 years. In addition to the usual array of audiometric tests, the Goldman-Fristoe-Woodcock Test of Auditory Discrim-

ination (GFWTAD) is utilized to assess auditory discrimination skills. Complications were initially encountered when it was found in the pre-test procedures that the Native children could not identify some of the concepts because of the unfamiliarity with the picture stimuli in the GFWTAD. For example, many of the children had never been exposed to such concepts as "cab" or "big" as they had no exposure to taxis or elephants.

The investigators received authorization from the publishers of the GFWTAD to modify the test to meet the demands of the cultural background of the children. The services of a linguist was contracted to substitute the unfamiliar concepts with those more recognizable by the Native children and yet retain the desired phonetic integrity. An artist was then employed to modify the pictures.

The experimental group will each receive daily individualized instruction in auditory discrimination while the controls will receive daily individualized instruction in an area determined not to be associated with auditory discrimination. Amplification by use of auditory training units will be utilized and, prior to release from ANMC, post-testing status will be done by a qualified person who is unaware of which group the child had been assigned. If a statistically significant difference is observed in the measured

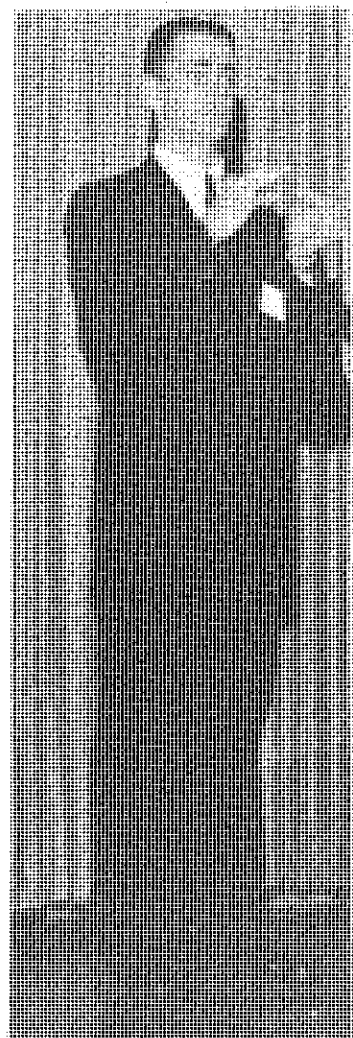
changes in auditory discrimination skills of the experimental and control group, training in auditory discrimination will be included in the curriculum of the ANMC school.

—Clyde Farrington, Coordinator
Alaska Vision/ Hearing
Impaired Program
Anchorage, Alaska, and
Marinne Brabanski, Audiologist
Alaska Native Medical Center
Anchorage, Alaska

The University of Alaska, in conjunction with the Alaska Speech and Hearing Association is offering a graduate level credit course, June 23-27, at the University of Alaska in Fairbanks. The course, Auditory Processing: Assessment and Remediation, will be taught by Katherine G. Butler, Ph.D., California State University (San Jose) who is presently director of the Language, Speech and Hearing Center and associate dean of Graduate Studies and Research at that institution.

The course, directed to speech pathologists, audiologists, teachers of the hearing impaired, reading teachers and teachers of special education, will provide basic theoretical and practical information regarding auditory processing as it relates to language and learning disorders. Specific auditory perceptual skills will be identified which are thought to affect language learning and academic achievement.

Name This Famous Audiologist



[See Answer on Page 11]

Kent Hearing Aid Collection Available

The Speech and Hearing Clinic at Kent State University houses what is undoubtedly the largest collection of hearing aids in the world. This hearing aid museum has more than two thousand different hearing aids on display. There are non-electric models, carbon aids, vacuum tube instruments, transistor models, and the latest miniature devices.

In addition to the hearing aid there is an archives comprised of hearing aid patents from the United States and abroad, technical data sheets about specific hearing aids, advertising materials, photographs, and historical documents. There is also a large collection of books, pamphlets, and article reprints relating to amplification. The hearing aid museum and archives is a veritable goldmine for individuals desiring to do historical or technical research on hearing aids.

The museum and archives are open for use by anyone interested in hearing aid research. At present there is no staff time available to search for specific documents or to answer detailed questions by mail, but scholars are invited to visit Kent State University to use the materials.

Kenneth W. Berger, Ph.D., is the curator of the Kent State University Hearing Aid Museum and Archives.

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[Continued on Page 10]

* Current as of June, 1976

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Hoos, Barbara Lee, Orange
Oberhand, Robert I., Westfield
Ockner, Elyse L., Cherry Hill
Pearce, Jeanne K., Haddonfield
Prout, Kathleen A., Haddonfield
Rickenberg, Herbert E.,
Paramus
Roncace, Emilio A., Haddonfield
Scott, Richard J., Union
Skadegard, H. Jakob, Union
Sophocles, Aris M., Trenton
Sussman, Judith A., Glen Ridge
Torr, Arthur L., West Orange
White, Emily J., Princeton
Yanick, Paul Jr., Summit
Zbar, Lloyd I. S., Glen Ridge

NEW MEXICO

Haecker, Ernest E., Santa Fe
Hattler, Karl W., Albuquerque
Johnson, Jeannette S.,
Los Alamos
Roberts, John B., Albuquerque
Stallcup, T. Allan, Albuquerque
Stewart, Joseph L., Albuquerque

NEW YORK

Allison, Richard E., W. Seneca
Anderson, Marcia Lee,
Great Neck
Aronow, Barbara E.,
Port Jefferson
Bartkowiak, Loretta M., Dunkirk
Bearce, Maj. G. R., West Point
Bellucci, Richard J., New York
Berkowitz, Alice O., New York
Bernstein, Joel M., Buffalo
Bianchi, Patricia A., Schenectady
Blaugrund, Annette, New York
Butler, Sheila Ann, New York
Carlin, T. Walter, Ithaca
Cleveland, Edwin I., Bronxville
Cunningham, David R.,
Rochester
Debole, S. Mario, Buffalo
Di Carlo, Louis M., Syracuse
Duffy, John K., Port Washington
Edelman, Florence, New York
Egbert, William S., New York
Eisenberg, Ada, White Plains
Fay, Thomas H., New York
Flaxman, Sheila Belkin,
New York
Forman, Bonnie, Bayside
Galleher, Jerrold L.,
Poughkeepsie
Gelfano, Janice D., Staten Is.
Gorelick, Norrie, New York
Graber, Deborah J., Orchard Pk.
Green, Kathleen W., Ithaca
Green, Walter B., Ithaca
Greenstein, Gerald N.,
Jamestown
Grimes, Charles T., Syracuse
Gruppe, Karl, Sauquoit
Harmon, Bernard, Huntington
Hetchman, Marvin, Brooklyn
Hoberman, Shirley E., Yonkers
Hochberg, Irving, New York
Holmes, David W., Rome
Honig, Lenny, Great Neck
Joscelyn, Edwin, Huntington
Kamrod, Joseph F., New York
Klar, Irwin, Dobbs Ferry
Kligerman, Anne Barbara,
Valhalla
Knight, Elmo L., Buffalo
Kole, Gregory L., New York
Kolins, Marilyn K.,
Port Jefferson
Koutstaal, Cornelis W., Rye
Kramer, Marc B., Brooklyn
Kruger, Barbara, Commack
Kuller, Janice, New York
Liebman, Jerome, Latham
Lorenz, Geraldine H., Bronx
Matteson, Mark, Ithaca
Mattuelli, Kenneth F.,
Great Neck
Meltsner, Ron, Long Island City
Molloy, Kathleen A., New York
Pearlman, Ronald C., Dunkirk
Reed, George F., Syracuse
Resnick, Steffi B., New York
Reynolds, William V., Oneonta
Rosen, Barbara, New York City
Schaffer, Lee E., Rochester
Schaffer, Elliott, Fredonia
Serio, Joseph C., Buffalo
Shulman, Abraham,
Long Island City
Smith, Clarissa B., New York
Stassen, Raymond A., Tarrytown
Stuart, Dennis C., Buffalo
Valerio, Michael W., Syracuse
Vanderhorst, David A., Bay Shore
Whitfield, Stanely, New York
Wilber, Laura Ann, New York
Wood, Harry R., Ithaca
Woodward, Sandra H.,
Schenectady
Wright, Herbert N., Syracuse
Zelnick, Ernest, Brooklyn
Zwerling, Samuel, Massapqua

NORTH CAROLINA

Denniston, Garrett L., Asheville
Dixon, Richard F., Greensboro
Hume, W. Garrett, Greenville

King, Burton B., Durham
Neff, Brooks E., Winston-Salem
Shufelt, Winifred, Asheville
Thomas, William Grady,
Chapel Hill

NORTH DAKOTA

Decker, T. Newell, Grand Forks

OHIO

Benke, Ruth, Cincinnati
Berger, Kenneth W., Kent
Coppel, Miriam Sandra,
Cincinnati
Danahauer, Jeffrey L.,
Bowling Green
Dunn, Derek E., Cincinnati
Edgerton, Bradley J.,
Bowling Green
Emanuel, Melvin, Medway
Fleming, Richard B., Cincinnati
Glaser, Robert, Dayton
Goldstein, Beverly A.,
Cleveland Heights
Greenberg, Herbert J.,
Bowling Green
Hazard, W. G., Toledo
Hobeika, Claude P., Cincinnati
Keith, Robert W., Cincinnati
Kreider, Thomas N., Zanesville
Langer, Deana K., Columbus
Luebbe, Mary Lou, Columbus
Mecklenburg, Dianne J.,
Bowling Green
Miller, Gale W., Cincinnati
Millin, Joseph P., Kent
Nilo, Ernest R., Columbus
Nozza, Robert, Cincinnati
Ray, John Walker, Zanesville
Rich, Raymond Z., Cleveland
Rink, Timothy L., Columbus
Ruth, Roger A., Columbus
Stahl, Richard H.,
Coyahoga Falls
Vliet, Louise Van, Trotwood
Walker, Michael M., Toledo

OKLAHOMA

Ahaus, William H.,
Oklahoma City
Barry, S. Joseph,
Oklahoma City
Beeby, Gary J., Stillwater
Dilling, Jerome Martin, Enid
Dilling, Pamela A., Enid
Dorow, Stuart A., Lawton
Hough, J. V. D., Oklahoma City
Merifield, David, Tulsa
Phillips, Merle Allen, Enid
Stokinger, Thomas E.,
Oklahoma City
Stuart, Royal, Tulsa
Stuart, W. David, Oklahoma City
Tobia, Jerry V., Oklahoma City

OREGON

Artz, Frederick J., Portland
Conway, William D., Eugene
Corcoran, James C., Eugene
Hughes, Fred M., Portland
Johnson, Ellen E., Albany
Johnson, Warren E., Portland
McGuire, Jesse B., Portland
Scheurer, Ronald L., Portland
Vernon, Jack, Portland
Willoughby, Paul J., Beaverton

PENNSYLVANIA

Angelelli, Roger M., Pittsburgh
Balmer, William F., Bethel Park
Bellefleur, Philip A., Philadelphia
Bienvenue, Gordon R.,
University Park
Black, Franklin O., Pittsburgh
Brenman, Arnold King,
Philadelphia
Brown, Jonathan R., Franklin
Caparosa, Ralph J., Pittsburgh
Comer, Elaine K., Philadelphia
Coughlin, Patrick, Danville
Craig, William N., Pittsburgh

Dempsey, Charlotte, Philadelphia
Doerfler, Leo G., Pittsburgh
Eberhart, John L., West Chester
Elliott, Carolyn A., Philadelphia
Felder, Herman, Pittsburgh
Frank, Thomas A., University Pk
Friedman, Frances, Pittsburgh
Geadah, Fouad, Camp Hill
Goldman, Marilyn M., Norristown
Graham, Barbara J., Scranton
Grine, Clifford N., Sharon
Hartley, Harold V., Clarion
Hawk, Del L., Indiana
Henry, Gretchen B., Uniontown
Hoberman, Joyce B.,
West Chester
Hopkinson, Norma T., Pittsburgh
Junker, Carol W., Pittsburgh
Katinsky, Sandra E., Philadelphia
Kean, Herbert, Philadelphia
Kerlin, Roger L., University Pk.
Libby, E. Robert, Upper Darby
Lovrinic, Jean Hahn,
Philadelphia
Lybarger, Edward H., Pittsburgh
Lybarger, Samuel F., McMurray
Mann, Neal E., Erie
McClure Haas, Barbara, Media
McDonnell, Eileen, Lansdale
Michael, Paul L., State College
Mynders, Joel M., Philadelphia
Payne, John L., Pittsburgh
Prout, James H., University Pk.
Rintelmann, William F.,
Philadelphia
Ronis, Max Lee, Philadelphia
Rosenberg, Philip E.,
Philadelphia
Shaffer, D. Dale, York
Smith, Deborah A., Philadelphia
Snow, James B., Philadelphia
Sorkowitz, Melvin, Jenkintown
Sung, Grace S., Pittsburgh
Turley, William A., Danville
Van Deventer, Alice J.,
Lawnsdowne
Vargo, Steven W., Hershey
Weiss, Samuel, Philadelphia
Wieczorek, Rita, Philadelphia
Winchester, Richard A.,
Bryn Mawr
Wollins, Sally A., Harrisburg
Young, In Min, Philadelphia

SOUTH CAROLINA

Bates, G. Walker, Charleston
Cook, Roger A., Orangeburg
Cox, James R., Orangeburg
Dawsey, Benjamin W.,
Spartanburg
Waldron, Daryle L., Charleston

SOUTH DAKOTA

Hoover, James R., Jefferson

TENNESSEE

Flugrath, James M.,
Johnson City
Gardner, Gale, Memphis
Glasscock III, Michael E.,
Nashville
Graunke, W. Lloyd, Johnson City
Harford, Earl R., Nashville
Kelly, Ben R., Johnson City
Levy, David H., Knoxville
Limpscomb, David M.,
Knoxville
Mathes, W. T., Johnson City
McHaney, Verna A., Memphis
Miller, Betty B., Johnson City
Page, Olga H., Arlington
Schumaier, Daniel R.,
Johnson City
Shea, John J., Jr., Memphis
Studebaker, Gerald A., Memphis
Wood, James F., Johnson City

TEXAS

Anderson, Anne Mary, Midland
Anderson, Charlie D., Austin
Anthony, W. P., Ft. Worth
Beauchamp, James A., El Paso

Beaver, Harold G., Temple
Bernstein, Phyllis F., Dallas
Bragg, Vernon, San Antonio
Brister, Frank L., Brownwood
Campbell, John C., Dallas
Clark, John Greer, Austin
Cooper, John C., San Antonio
Danford, Roy, Brooks AFB
Dawson, Gerald J., Texas City
Freeland, E. Elaine, Ft. Worth
Gates, George A., San Antonio
Gehm, John R., Garland
Gerken, George M., Dallas
Glorig, Aram, Dallas
Goode, Nelo, Dallas
Granitz, David W., Beaumont
Harlow, Bradford, Austin
Helfer, Thomas Michael, Dallas
Hill, Elizabeth C., Austin
Holland, George D., Lubbock
Houchen, Ronald H., Ft. Worth
Jarvis, Barbara S., Dallas
Keim, William Edward, Houston
King, Michael, San Angelo
Kopra, Lennart L., Austin
Kos, Susanne, Dallas
Livingston, Ollie B., Lubbock
Love, J. Thom, Galveston
Lucenay, Ted, Waco
Martinez, Daniel M., Dallas
McGovern, Carl, Commerce
Michael, Ludwig A., Dallas
Millay, Kathleen, Dallas
Miltnerberger, Gerald E.,
Galveston
Newell, Edward A., Dallas
Raica, Anthony N., Galveston
Riess, Richard L., Temple
Roeser, Ross J., Dallas
Sanders, Johnny L., Houston
Smaldino, Joseph J., Temple
Storrs, Lloyd A., Lubbock
Stream, Kathryn S., Galveston
Weir, Linda, Dallas
Williams, H. N., El Paso

UTAH

Dolowitz, D. A., Salt Lake City
Goates, Wallace A.,
Salt Lake City
Magid, Stanley L.,
Salt Lake City
McCandless, Geary A.,
Salt Lake City
Nielson, Melvin A., Kaysville
Robinette, Martin S.,
Salt Lake City

VERMONT

Heisse, John W., Burlington

VIRGINIA

Albright, Paulette, Richmond
Alluisi, Mary Jane,
Virginia Beach
Davis, Martha E.,
Charlottesville
Edwards, Ernest C., Lynchburg
Hahn, Milege J., Charlottesville
Hecker, Henry, Newport News
Holtzclaw, Margaret E.,
Alexandria
Lenhardt, Martin L., Hayes
Mackay, Murdo M., Covington
Moghtader, Ali, Woodbridge
Moon, Cary N., Charlottesville
Mullen, William Earl,
Alexandria
Pastore, Peter N., Richmond
Richards, Jacqueline,
Virginia Beach
Schweitzer, Howard C., Sterling

WASHINGTON

Craig, J. Marvin, Cheney
Dawson, Warren R., Seattle
Franks, J. Richard, Pullman
Fujikawa, Sharon, Kirkland
Hagan, Cornelius E., Spokane
Killingsworth, Carol H., Sea

[Continued on Page 11]

Calendar of Events

JULY

5-9

National Association of the Deaf Biennial Convention, Shamrock Hilton Hotel, Houston, Texas.

5-11

Fifth Symposium on Middle Ear Surgery at Theodor Heuss Academy and Municipal City Hospital, Gummersback (Cologne), West Germany. Write to: Claus Jansen, M.D., Otolaryngology Department, Municipal City Hospital, 527 Gummersback 1, West Germany.

12

Audiometric Technician Refresher Course, Boone, North Carolina. Fee: \$85.00. Contact: Oto-Data, Inc., 842 N. Highland Avenue, N.E., Atlanta, Georgia 30306.

12-14

Audiometric Technician Training and Certification Course, Boone, North Carolina. Fee: \$185.00 (see above).

12-16

7th Annual Industrial and Product Noise Control Institute. (With the cooperation of Bolt, Beranek and Newman, Inc., Union College, Schenectady, New York.) Registration fee: \$475.00. Graduate Studies and Continuing Education, Wells House, 1 Union Avenue, Union College, Schenectady, New York 12308.

12-23

61st annual course in Head and Neck Anatomy and Clinical Otolaryngology, Indiana University.

26-30

Industrial Noise Control Seminar. Fee: \$275.00. Contact: B&K Instruments, 5111 West 164 Street, Cleveland, Ohio 44142.

AUGUST

1-5

Seventeenth Annual Frederick T. Hill Seminar in Otolaryngology, Dean Medical Center, Thayer Hospital, Waterville, Maine. Write to Robert H. Kams, Division of Special Programs, Colby College, Waterville, Maine 04901.

16-18

Audiometric Technician Certification Course. Contact: Dr. Donald Hogan, Townhouse Condominium, Ste. # 2, Guayanilla Final, Rio Pedros (San Juan), Puerto Rico.

19-21

Audiometric Technician Certification course. Fee: \$175.00. Contact: Dr. D.A. Metz, American Industrial Hearing Services, 2475 Esat 22nd Street, Cleveland, Ohio 44114.

24-26

Community Noise Seminar. Fee: \$125.00. Contact: B&K Instruments, Inc., 5111 West 164 Street, Cleveland, Ohio 44142.

SEPTEMBER

7-9

Industrial Hearing Testing Workshop. Fee: \$250.00. Contact Center for Continuing Education, Emerson College, 148 Beacon Street, Boston, Massachusetts 02116.

13-16

Human Acoustics Seminar. Fee: \$250.00. Contact: B&K Instruments, Inc., 5111 West 164 Street, Cleveland, Ohio 44142.

16-18

American Neurotology Society course: "Update Neurotology" at Lenox Hill Hospital. Registration fee: \$100. Address inquiries to: Kenneth H. Brookler, M.D., Lenox Hill Hospital, 100 East 77th Street, New York, New York 10021.

30-Oct. 2

A New Advanced Course and 3rd International Symposium in Impedance Audiometry, Philadelphia. For information: Educational Services Division, American Electromedics Corporation, 145 Palisade Street, Dobbs Ferry, New York 10522.

OCTOBER

5

Annual Meeting of American Audiology Society, Las Vegas, Nevada.

5-6

Research Forum of the Association for Research in Otolaryngology, Las Vegas Convention Center, Las Vegas.

6-10

1976-Annual Meeting of O&O, Las Vegas, Nevada.

9-24

16 Day European Study Tour, Denmark to Italy.

18-21

International Audiology Society, Florence, Italy.

21-24

National Hearing Aid Society Annual Meeting, Palmer House, Chicago.

30-31

Western Regional Auditory Approach Conference: The Hearing-Speech Chain - A.G. Bell and Listen Foundation, Sponsors; Dr. Mark Ross, Leahea Grammatico, speakers. Hilton Hotel, Denver, Colorado.

NOVEMBER

16, 17, 18

Annual Meeting of Society for Ear, Nose and Throat Advances in Children. New Orleans, Louisiana Maison Dupuy Hotel. Write to Dr. Basharat Jazbi, The Children's Mercy Hospital, 24th at Gillham Road, Kansas City, Missouri 64108.

16-19

Acoustical Society of America, San Diego, California.

20-23

American Speech and Hearing Association, Houston, Texas.

1977

FEBRUARY

20-24

Ear Surgery Course, J. Brown Farrior, M.D., Tampa, Florida.

MARCH

5-12

Medical Audiology Workshop, Vail, Colorado. For information write to: Box B210, 4200 E. 9th Avenue, Denver, Colorado 80220.

Answer: Jerry Northern in 1966, signing for a program for the deaf.

Sentac to Meet In New Orleans

The Society for Ear, Nose and Throat Advances in Children will hold its annual convention in New Orleans, Louisiana November 16, 17, and 18, 1976. The convention will be held at the Maison Dupuy Hotel in the French Quarter. The program will be comprised of participation by the four primary disciplines represented within SENTAC; otolaryngology, pediatrics, audiology and speech pathology. Several recreational

Lynch, J.P., Everett
McRandle, Carrol C., Ellensburg
Pulliam, Robert L., Long View
Rees, Thomas S., Seattle
Snyder, Jack M., Seattle
Stillwell, Nancy C., Seattle
Voorhees, Richard L., Seattle
Weber, Bruce A., Seattle

WEST VIRGINIA

Cather, Carl H. Jr., Morgantown
Cody, Robert C., Morgantown
David, Corrine P., Charleston
Frum, James P., Wheeling
Gotsch, Donna T., Huntington
Hawkins, Jo Ann T., Huntington
Lim, Romeo Y., Charleston
Mathias, Phillip B., Morgantown
Morgan, William C., Charleston
Siegel, Robert B., Charleston
Smith, Rosemary Lynn, Fairmont
Spencer, James T., Charleston
Whitaker, Charles F., Parkersburg
Woodford, Charles M., Huntington
Zerbe, Shirley D., Parkersburg

WISCONSIN

Dahlke, Michael G., Wausau
Fox, Meyer S., Milwaukee
Hartbauer, R.E., Oak Creek
Ivey, Robert G., Madison
Jones, Bronwyn L., Milwaukee
Jones, Ernest I., Lacrosse
Kile, Jack E., Oshkosh
Kipnes, Bari S., Milwaukee
Lucht, James L., Neenah
Mollerud, Theodore E., Eau Claire
Mullarky, Marilyn R., Menomonee Falls
Nehr, Michael William, Milwaukee
Ritchie, Betty, Milwaukee
Ryan, Stephan B., Lacrosse
Sauer, Richard C., Madison
Sciara, Paschal A., Sheboygan
Shaw, James, Ashland
Stefonik, William J., Washburn
Wiersema, Gergory N., Elm Grove
Wiley, Terry L., Waunakee

MEMBERSHIP...

[Continued From Page 10]

WYOMING

Harmon, Robert R., Cheyenne
Watkins, Thomas M., Laramie

OUTSIDE USA

Adelman, Sharon, Canada
Alberti, P.W., Canada
Alexander, Walter, Canada
Amatyakul, Poonpit, Bangkok, Thailand
Fernandez-Blasini, Nelson Santurce, Pr.
Brainerd, Susan H., Canada
Brunelle, Louise, Canada
Cashman, Marlene, Canada
Chiossone, Edgar, Venezuela
Constam, Alfred G., Switzerland
Dossena, Elda, Milan, Italy
Darbyshire, John O., Canada
Frye, Deborah J., Canada
Gardner, Marsha Lee, Canada
Gilbert, John H. Victor, Canada
Hawke, Naneve Malchy, Canada
Hinchcliffe, Ronald, England
Johnston, R.B., Canada
Kalra, Sheila M., Canada
Kuttner, Paul, Canada
Leckie, John E., Canada
Lescouffair, Guy, Canada
Lim, Manuel G., Philippines
Lindeman, Hans E., Netherlands
Ling, Daniel, Canada
Loui, Calvin M., Canada
Papafrangos, Constatine, Greece
Pizarro, J. Paulo N., England
Smoler, Jose, Mexico
Vicens, Enrique A., Ponce, Pr.
Stewart, Jean, Agana, Guam

Crosby Joins Advisory Board

Norm Crosby, as many people know, has a hearing impairment—the result of a wartime injury. "I make no bones about the fact that I have a hearing loss and that I wear hearing aids," says Crosby, who takes every available opportunity to talk about his problem, and the help he receives from hearing aids, on television and in his personal appearances.

In addition to his membership on the Better Hearing Institute Advisory Board, Crosby stars in BHI TV and radio public service announcements and appears in the Institute's "They Overcame Hearing Loss" celebrity booklet. He is the first person to have received BHI's Better Hearing Achievement Award for his charitable work in aiding people with a hearing deficiency.

EUROPEAN STUDY TOUR DEADLINE

The final deadline for reserving space on either of the European Study Tours is August 1st. Details are in Corti's Organ Vol. 1, Numbers 1 and 2. Send your \$100.00 refundable deposit to:

AMERICAN AUDIOLOGY SOCIETY
c/ o FIRST TRAVEL SERVICE
1st NATIONAL BANK BLDG.
ONE CENTRAL AVENUE
BROWNWOOD, TEXAS 76801

PROGRAM

1976 ANNUAL MEETING

AMERICAN AUDIOLOGY SOCIETY

Tuesday, October 5, 1976

PLACE: ROOMS H 51-56 [Rooms 1-6]
Las Vegas Hilton Convention Center

REGISTRATION:

Members \$5.00
Non-Members \$8.00

Begins 8:30 a.m.

8:30-12:00 p.m. EXECUTIVE COMMITTEE MEETING
12:30-12:35 p.m. INTRODUCTION & AWARD-Pres. W.D. Ward
12:35-2:30 p.m. FIRST RAYMOND CARHART MEMORIAL
LECTURE by JAMES F. JERGER, Ph.D.
2:30-2:45 p.m. COFFEE BREAK
2:45-5:07 p.m. CONTRIBUTED PAPERS
5:10 p.m. - til BRIEF BUSINESS MEETING

[Because Monday, October 4th, is Yom Kippur, the public portion of the meeting has been compressed into approximately 5 hours of the afternoon of October 5th. This will, hopefully, allow our colleagues of the Jewish faith to use Tuesday morning as travel time to reach the meetings.]

CONTRIBUTED PAPERS

HEARING AIDS

2:45-2:57 p.m.

Relationship of Performance Characteristics in Hearing Aids to Cavity Volume.

Robert E. Jirsa, Ph.D.
Thomas W. Norris, Ph.D.

2:58-3:10 p.m.

The Effect of In-the-Ear Hearing Aid Canal Length on Frequency Response.

John C. Sinclair, Ph.D.

3:11-3:23 p.m.

Increasing Acoustical Efficiency with In-the-Ear Hearing Aid Fittings.

T.S. Griffing, Ph.D.
D.A. Preves, Ph.D.

PERIPHERAL AUDITORY & VESTIBULAR SYSTEMS

3:24-3:36 p.m.

Estimation of the Stapedius Reflex in Industrial Hearing Loss.
P.W. Alberti, M.B., Ph.D., F.R.C.S.

3:37-3:49 p.m.

The Effect of Ventilation on Middle Ear Volume and Eustachian Tube Function in Secretory Otitis Media.

H. Bryan Neel, III, M.D.
Lawrence W. Keating, Ph.D.
Thomas J. McDonald, M.D.

3:50-4:02 p.m.

Air Calorics: A Technique and Results

Jaime T. Benitez, M.D.
Kenneth R. Bouchard, M.A.
Yong K. Choe, B.A.

4:03-4:15 p.m.

Natural History of Idiopathic Sudden Hearing Loss

F. Blair Simmons, M.D.
Douglas E. Mattox

4:16-4:28 p.m.

N1 Latency of the Human Whole-Nerve Response to Filtered Clicks.

Stanley Zerlin, Ph.D.
R.F. Naunton, M.D.

CENTRAL AUDITORY SYSTEM

4:29-4:41 p.m.

Effect of Peripheral Hearing Loss on Central Auditory Tests

Gerald E. Miltenberger, M.A.
Gerald J. Dawson, M.S.
Anthony N. Racia

4:42-4:54 p.m.

Rapidly Alternating Speech Perception: A Test of Brain Stem Dysfunction

George E. Lynn, Ph.D.
John Gilroy, M.D.

4:55-5:07 p.m.

Dichotic Listening Performance in Partial Split-Brain

Martin L. Lenhardt, Ph.D.

The Experts Discuss Myringotomy
& Tube Placement in
THE INTERROGATORY
Page 5

President
W. Dixon Ward
Reports the OSHA
Hearings in His
Message. Page 3

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

THIRD CLASS

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society

Vol. 1, No. 4

October 1976

AAS Annual Meeting Airs Scientific Topics

A lively, rapidly-moving program marked the 1976 Annual gathering of the A.A.S. in Las Vegas. Chuck Berlin organized and chaired a meeting that was given A-ratings by all attending. More than seventy members listened to a memorable address by James Jerger. His talk represented the first annual Carhart Memorial Lecture, established to honor the memory of Raymond Carhart. In it he presented nostalgic views of Dr. Carhart and the Northwestern Clinic of 30 years ago.

Jerger stated that Carhart invented speech audiometry almost single-handed. At De Shon Hospital in the late war period Carhart adopted the Harvard

Psycho-acoustic Lab speech material for use in hearing aid evaluations. The English-speaking world still uses these materials unchanged 30 years later, indicating that Carhart was indeed ahead of his time.

At the Texas Medical Center Jerger and his associates are attempting to broaden the scope of speech reception material. They have been using synthetic sentences composed of a different order of words in a meaningless context. The subject identifies which of ten 7-9 word sentences is being presented, in a matrix of a competing message.

[Continued on page 7]

News About Members and Others

Laura Ann Wilber has been elected President of the New York State Speech and Hearing Association for 1977-78.

Jim Curran has moved to the Maico Hearing Instruments Co. as their Director of Auditory Research. His duties will be related solely to product development and research in the area of the application of hearing aids to the hearing impaired.

William J.A. Marshall has been appointed Director of the Model Secondary School for the Deaf at Gallaudet College.

[Continued on page 2]

New Organization Established for Professionals in Hearing Conservation

A new professional organization, the Hearing Conservation Association, has recently been established. Representatives from two companies currently involved in industrial audiology, Environmental Hearing and Vision Consultants, Ltd., of Syracuse, New York and Miami Hearing Conservation of Miami, Florida, met together when they recognized the need for a professional association which would serve a number of functions in this specific area. Currently, most professionals involved in industrial hearing conservation are members of individual professional associations but there is no parallel association for professional corporations or consultants who function either as members of a group or as individuals. In this regard, the Hearing Conservation Association is more like a professional

trade association rather than an association for individuals.

The specific purpose of the Hearing Conservation Association is to encourage education and to advance hearing conservation practices and procedures among professionals so engaged. One goal is to work toward the development of cooperative activities between providers of industrial hearing conservation services which would facilitate homogeneity in the quality of these services across corporate networks when individual providers have geographical limitations. This would assure an industrial purchaser of these services that the same standard of services could be obtained in any location across the country.

Letters announcing the intent to establish the organization were sent to audiologists and otolaryngologists and the Association was

officially established in June 1967. Alan Feldman, Fredric W. Pullen, II, Lennon G. Adams, Jr., and Constance H. Cabeza, are President, Vice President, Secretary and Treasurer, respectively. Other at large members of the Executive Council are William H. Call, and Don L. Wolfe.

There have been in excess of 65 responses from people in the fields of Audiology and Otolaryngology, representing professional groups (corporations) and individuals, who have applied for membership. The first meeting of the Association is being planned for February 11th and 12th, 1977, at the Marriott Hotel in Miami. Additional information may be obtained by writing to Lennon G. Adams, Secretary, Hearing Conservation Association, 309 Mercy Professional Building, 3661 So. Miami Avenue, Miami, Florida 33133.

What C.H.E.A.R. is All About

The charitable activities of an organization by the name of Children's Hearing Education and Research (C.H.E.A.R., Inc.) have recently been in the news. Corti's Organ requested the information on the goals and activities of this organization, and received the following run-down from Mr. Ben Parmer, Administrator:

"C.H.E.A.R., Inc. (Children's Hearing Education and Research) was founded in 1969 to do for the hearing impaired what was and is being done on a national level for other diseases such as Heart, Cancer, and other handicaps.

The problems of deafness and especially Nerve Deafness has received little help, interest or research from organized groups, and no organization has yet become the nation-wide organization that one can turn to for the unbiased, accurate information necessary for the parent, person involved, or even the general public, in the areas of education, scientific research, treatment and therapy.

That is what C.H.E.A.R. is all about—to force this to occur on a national level so that: (1) the urgent, vital medical research and monies necessary to find a cure for or alleviation of Nerve Deafness is available and done; (2) the persons involved can make an intelligent choice as to education; (3) the general public understands the seriousness of this tragic communicative problem, and what deafness is and what it is not; and (4) people with or without the problem can learn how to help, so that the discrimination against the deaf in the areas of research, education, treatment, and employment can be overcome.

On a purely voluntary basis, with no paid professional employees, we have given contributions that have succeeded in having other organizations committing larger sums for research in the Nerve Deafness area. One example is the Deafness Research Foundation.

C.H.E.A.R. has awarded Grants for Deafness Research to the following noted scientists and organizations:

Dr. Robert Ruben, Albert Einstein School of Medicine in New York City, for Medical Research involving cell biology and deafness.

Dr. David Hilding, New Jersey College of Medicine, for an Early Detection Deafness Research Program to determine the best device to use in a maternity hospital to screen newborn babies.

Dr. Howard House, Ear Research Institute of Los Angeles, for medical research program involving cochlear research.

Deafness Research Foundation, New York City.

In addition, C.H.E.A.R. has also awarded scholarship prizes for schools, both public and private, that have educational programs for the hearing impaired and are interested in mainstreaming education of the deaf or who specifically service hearing-impaired children.

C.H.E.A.R. issues a quarterly newsletter entitled "Hearing Research Developments", which is a digest of the latest information and developments on hearing impairment.

C.H.E.A.R. has available radio tapes which have been used as part of public service announcement programs on the leading radio stations in the United States. The purposes of these radio spot messages is to alert the general public about the problems of hearing impaired and to gather support for C.H.E.A.R. by raising research funds or allowing us to give further information about this tragic communicative disease.

C.H.E.A.R. raises funds for its varied activities in many ways.

1. Through donations by several Foundations.
2. Contributions of various organizations such as the Odd Fellows.
3. Individual contributions of friends, and businesses.
4. Localized chapter card parties, theater groups, a city charity fair, a week-end at a resort hotel, week-end journal, fashion shows, charity circus, a raffle, a Raceway night."

[Editors's note: The newsletter of C.H.E.A.R. is entitled "Hearing Research Developments", and is available from C.H.E.A.R., 871 McLean Avenue, Yonkers, New York, 10704. It reports the activities of the organization. One paid advertiser, the Widex Hearing Aid Co., advertises in this newsletter.)

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Sept. 8-10

Southern Audiology Society Meets

The Southern Audiology Society held their annual convention September 8-10 at Ft. Walton Beach, Florida. The meeting fulfilled the Society's motto, "Conviviality and Erudition". Some 110 Society members participated in scientific meetings as well as the annual golf tournament, tennis tournament, deep-sea fishing venture and lethargic beach combing!

Research Grants Given for Ear Implants

The University of Washington Department of Otolaryngology has been awarded a \$1 million grant to study electrode implantation into the cochlea of monkeys. Dr. Joseph M. Miller will be project director. The grant is for a five-year investigation to determine the efficacy of such devices in monkeys. Dr. Miller reports that his team will study a four-channel model developed at the University of California, San

Francisco School of Medicine. Another study will be made at the University of Oregon Health Sciences Center, with Dr. Richard A. Wallach of the Otolaryngology Department as Project Director. Under this grant, cats instead of monkeys will be utilized; similar electrode implantation is contemplated. The studies are being funded by the National Institutes of Health and Deafness Research Foundation.

Robert Harrison was the overall chairman of the annual convention and John C. Cooper, from the University of Texas Medical School at San Antonio was chairman of the scientific sessions. John produced an exciting and interesting scientific program dealing with the general theme "Kids are Keen". Formal presentations were made by Jose M. Louro, Barbara Finlayson, Earl Harford, Richard Stream, and Katherine Stream. The outside guest

Yankee-cowboy speaker was Jerry L. Northern, University of Colorado Medical Center.

The Society's coveted annual rotating golf trophy was won for the year by Tom Davidson of Knoxville, Tennessee. The tennis tournament was won by Chuck Berlin, of New Orleans, Louisiana and the deep-sea fishing venture was completed with Wayne Staab of Minneapolis, Minnesota compiling the most caught fish.

At the Society's business meeting past President James Jerger, of Houston, Texas handed over the Southern Audiology Society presidential reins to Robert Harrison of the University of Mi-

Robert W. Hocks Named Chairman

The American Tinnitus Association has elected Robert W. Hocks as chairman of the association. Mr. Hocks is president of Hocks Laboratories in Portland and is active in many civic and national groups.

The A.T.A.'s goals are to support research into the problem of tinnitus and to educate the public about tinnitus.

Advisory Board Members are: Charles Unice, ATA's founder; David De Weese, chairman, Department of Otolaryngology, University of Oregon, Health Services Center; Albert Attyah, vice president of ATA; Del Clausen, U.S. House of Representatives; Bob McLennan, assemblyman, Californian legislature; Harold Wilkins, member of California State Board of Medical Examiners; Tony Habeeb, vice president, Metro Media Corp.; Kay Toma, California State Board of Medical Examiners; and Robert Hocks, president, Hocks Laboratories, Portland, Oregon.

A special Tinnitus Clinic has been started at the Kresge Hearing Research Laboratory at the University of Oregon. Only severe tinnitus patients are seen at this clinic.

The ATA held a public meeting on tinnitus in Portland on April 26, with 51 people attending. Further meetings are contemplated.

ami Medical Center. Full membership in the Southern Audiology Society requires residency in one of the confederate states as well as certification in audiology by the American Speech Hearing Association. However, associate membership is available to those who live in the northern aggression states but who share the Society's goals of conviviality and erudition. Applicants interested in membership should contact Bob Harrison.



JERRY NORTHERN

Acoustic Horrors?

The following editorial appeared in the June, 1976 *Sounds & Vibration*, and deserves to be reprinted in its entirety:

THE 1/10 dB SYNDROME

"There are lies, damned lies, and statistics." Mark Twain said it almost 70 years ago. I wonder what he'd say today, particularly after reading some of the current publications and standards in acoustics.

It's difficult to take seriously the arguments which rage over whether "...it has been scientifically established that..." be Y or Y+2 dB; etc., etc. For level of noise which can be permitted in our work spaces whether the doubling rate should be Y or Y+2 dB; etc., etc. For indeed, very little has been scientifically established! In fact, we have only statistical inference, based upon some awfully shaky statistics.

Item: A distinguished audiologist recently wrote that three ostensibly qualified audiologists will take audiograms from the same patient with typically as much as 10 dB variance in results. What, then, is "normal" hearing acuity, and how do we define hearing loss?

Item: A distinguished audiologist recently wrote that three reports that the results of less than 10% (sic!) of all tests run at that lab are ever published. How would you like to base your statistical inference on 10% of the available data?

These are but a few of the horror stories which permeate the practice of acoustics. Differing measurement procedures, equipment variability, operator

[Continued on Page 3]

News About Members . . .

(Continued From Page 1)

Sam Lybarger, president of the Hearing Aid Foundation, announced that the Foundation has issued \$12,000 in grants to institutions serving the hearing impaired. He states that the Howard Fogel Memorial Fund was awarded to HEAR, Inc.

William A. Yost, Institute for the Advanced Study of Communication Processes, has been elected president of the Florida chapter of the Acoustical Society of America.

Norman Carmel and Frank Frueh were among the members of a group investigating the need for an organization of dispensing audiologists. The group is planning sessions at the American Speech and Hearing Association convention and at the Society of Medical Audiologists meetings to determine the need for such a national group, or whether it should

be an interest group within a larger organization.

Bob Briskey was a speaker at the Missouri Association of Licensed Hearing Aid Specialists at the Lake of the Ozarks in Central Missouri.

Wilbur L. Pronovost will be the new editor of *The Volta Review*, official journal of the A.G. Bell Assn. for the Deaf. Former editor George W. Felledorf will become active in demonstration projects, in teacher preparation centers, and in the new Ad Hoc Committee on Oral Advocacy.

Miriam Henoch, formerly Assistant Professor of Audiology at Ball State University, Muncie, Indiana, recently accepted a position as Associate Director of the Detroit Hearing and Speech Center, Detroit, Michigan.

Has the Pathology of Otitis Media Changed?

Dr. Imre Friedman, well known ear pathologist and author of *Pathology of the Ear* was a visitor to the United States recently. Following his attendance at the First International Conference on Cholesteatoma in Iowa City he furnished Corti's Organ with some remarks on the pathology of otitis media.

"It is important to realize that infections of the middle ear cleft have maintained their hold and that in spite of the excellent results of modern treatment of acute otitis media the incidence of both acute and chronic otitis media has not abated.

One is reminded of the lament of some otologists soon after the

introduction of penicillin in the treatment of acute otitis media and mastoiditis, regarding it "as a girlfriend who has jilted them; that she has been mixing with the wrong type of organisms and taking some drugs that have had an adverse effect on her character."

In other words it has been suggested that the pathology of otitis media may have changed, or that microorganisms causing it were different and that antibiotic treatment may have altered the disease.

The pathology of otitis media has not changed fundamentally as has been proven by the present writer's studies on human and ex-

perimental material when compared with earlier reports published in the pre-antibiotic period. Evidence has been presented that the old-fashioned organisms such as *S. pneumoniae* still cause extensive damage to human or animal ears and this has been confirmed recently by Howie.

The purpose of treatment is, of course, to alter the course of any disease. But the implication that it might have a masking effect and therefore to be harmful has been exaggerated.

Preventive medicine has an important role to play, but vaccination against pneumococcal otitis as advocated by Howie might be a dream of perfection."

Editorial

Several members have commented—some vehemently—about the apparent contradiction between the President's Message and our editorial in the July issue of the Organ. In his message, Dr. Ward indicated that in the future the society should directly enter into the realm of professional politics by working to abolish government controls and further licensing requirements. In our editorial we stated that the A.A.S. would NOT become involved in political issues or union type activities, nor would it engage in licensing activities. This philosophy is based on the statutes of the society which are the guiding principle of the organization.

Dr. Ward's message was not intended as a reflection of A.A.S. policy, but rather as a personal editorial comment from the President. He had suggested that the message be placed on the editorial page, as he considered it to be editorial in nature. It is therefore our fault for placing it as a feature item on the front page.

So unruddle your feathers, you reactionary members of A.A.S.! We will continue to be objective, non-controversial and simple in all matters!



Abstract of Papers at AAS Annual Meeting

The President's Message

Hearing Aids

"Relationship of Performance Characteristics in Hearing Aids to Cavity Volume."

Robert E. Jirsa and Thomas W. Norris [University of Nebraska Medical Center, Div. of Audiology & Speech Pathology, 42nd and Dewey Ave., Omaha, Nebraska 68105]

Hearing aid performance characteristics are traditionally measured in a 2 cc coupler to stimulate the impedance characteristics of the average real ear. Performance data thus obtained serve as the basis for hearing aid selection. While there are obvious differences between the coupler and real ear measurements (Lybarger, 1975), Walden and Kasten (1976) used adult ears to demonstrate that, at comfort setting, aided threshold improvement closely approximates acoustic gain. This same relationship between threshold improvement and acoustic gain for children, however, does not appear applicable. A 2 cc coupler simulation is perhaps appropriate for adults, but its appropriateness for children has not been established. While it is known that a reduction in cavity volume will increase SPL,

how a hearing aid's performance characteristics are affected by variations in cavity volume has not been systematically examined.

This present investigation was designed to examine: (1) specific changes in hearing aid performance characteristics resulting from a reduction in coupler volume from 2 cc, and (2) the relationship between aided threshold improvement in children and acoustic gain determined in variable volume couplers.

To examine the effect of volume reduction on acoustic performance characteristics, B&K analyses were completed on 24 hearing aids utilizing the traditional 2 cc coupler and experimental 1 cc and .5 cc couplers. As expected, reduction in cavity size was accompanied by systemic increases in both overall SPL and harmonic distortion. Specifically, as cavity size was reduced by one-half, SPL levels increased an average 6 dB. No significant changes were noted in frequency response.

To examine the relationship between threshold improvement and acoustic gain, aided and unaided SRT's and ear canal volume measurements were obtained from 8 hearing impaired children. Aided thresholds were established with the hearing aid to comfort level for a speech input of 60 dB SPL. Immediately following, acoustic gain was determined at comfort level in both the 2 cc coupler and the experimental coupler most closely approximating the subject's real ear volume. In all instances, threshold improvement exceeded the traditional 2 cc acoustic gain measure. When the acoustic gain was determined in a coupler approximating the real ear volume, a much closer relationship between acoustic gain and threshold improvement was obtained.

The results suggest that in small children where hearing aid selection is based largely on 2 cc specifications, care must be exercised that over-amplification does not occur. More accurate fittings may be obtained by determining real ear volume and measuring acoustic gain in a variable coupler whose volume approximates that of the real ear.

"The Effect of In-the-Ear Hearing Aid Canal Length on Frequency Response."

John C. Sinclair [H.C. Electronics, 250 Camino Alto, Mill Valley, California 94941]

Summary

This paper experimentally differentiates between two canal length parameters which affect the frequency response of in-the-ear aids. One is the volume of the cavity between the tympanic membrane and the hear-

ings are currently being held in Washington dealing with the possible economic impact of proposed federal regulations governing noise exposure—or more accurately, noise levels. That is, although the regulations are supposed to indicate limits of noise dose (some product of level and time), federal agencies seem unable to grasp this concept and persist in thinking that there is some sort of magic line dividing hazardous levels from non-hazardous ones. The concept of the critical level, alas, dies hard, and it apparently is not yet defunct. Indeed, it seems to have been tacitly accepted by the world's leading noise consultants.

But let me outline the background. In 1974, OSHA published the proposals in question, which, in essence, reaffirmed certain provisions of the 1970 OSHA regulations—a basic 90-dBA 8-hr permitted dose, with a 5-dBA per doubling time relation for shorter exposures to levels up to 115 dBA (15 minutes at that level), but with some changes and additions such as extending the 5-dB trading relation down to 85 dBA (i.e., 8 hr of 85 dBA would constitute a dose of 0.5), specifying that monitoring audiometry would be required for all workers whose daily dose is 0.5 or greater, and requiring regular noise surveys and resurveys. These steps were intended to increase the effectiveness of the program to ensure that hearing losses attributable to industrial noise are minimized.

However, it appeared that the program would be rather expensive to implement, especially if one tried to reduce all noise levels to 90 dBA rather than all exposures to the equivalent of 90 dBA for 8 hr. Damned expensive, in fact. The eminent noise engineering firm of Bolt, Beranek and Newman ("BBN", not "BB&N") estimated, at OSHA's request, that the cost to industry for reduction of all noise levels to 90 dBA (where it was possible at all) would be 13.5 billion dollars. In order to make that sum sound like chicken feed, OSHA also had BBN estimate what reduction to 85 dBA would cost; this estimate turned out to be 31.6 billion dollars, i.e. \$18.1 billion more than for reduction to 90 dBA. The ostensible reason for making an 85-dBA estimate was that the Environmental Protection Agency had been insisting that the Noise Control Act of 1972 (the Act that started all the mischief by stating that EPA was to determine those levels—not, unfortunately, doses—the attainment and maintenance of which were requisite to protect the public health and welfare with an adequate margin of safety) gave them the power to be involved in all decisions regarding noise, and they wanted 80 dBA as a maximum on all noise levels but would settle for 85 dBA.

Hearings on the original proposal took the better part of the summer of 1975, during which it developed, not too surprisingly, that industry opposed anything that would cost more money, and labor opposed anything except complete reduction of all even re-

motely hazardous noise levels by engineering means (so that the worker would not have to take any initiative whatever to protect himself). Each side smote the other hip and thigh, labor accusing industry of being insensitive and money-grubbing (quite ignoring the obvious fact that the costs of compliance will not come from the "capitalist stockholder" but from the ever-suffering consumer), and industry in turn pontificating that workers are sissy if they object to earplugs or earmuffs. In a flurry of bent statistics, bogus logic, fanciful speculation and eloquent non sequiturs, these hearings ended in just about a draw, I would judge.

However, apparently someone didn't like the figures of 13.5 and 31.6 billion dollars as the price of compliance, so BBN was commissioned by OSHA, for \$180,000 to get a better estimate of these costs. The revised figures, submitted to OSHA on April 21 and released to the public on June 18, are now only \$10.53 billion and \$18.5 billion. It is this report that is the object of the commentary that, one hopes, will surely be at a merciful end by the time you read this, although the final decision about the form of the new regulation by the Secretary of Labor will even more surely not be made public until after my daughter Laurie's 21st birthday (she happens to have been born on November 2).

When one reads, with any care at all, the BBN Report, it is obvious that these estimates represent the sheerest of speculation. From an estimate (very, very rough, to understate the case) of the exposure of some 62,000 workers in a variety of industries, plus knowledge of what BBN's services and recommendations have cost some of these industries, they generalize to the 13,000,000 workers of the present USA economy. Much of industry's attack on the report therefore takes the form of showing that in specific cases the new estimates are too low. (One of BBN's representatives blandly dismissed the relevance of such instances by declaring that the accuracy of the estimates for individual types of industry had nothing to do with the accuracy of the grand total—that any errors were bound to cancel out. This preposterous statement so nonplussed the audience that nobody had the presence of mind to point out that by that peculiar logic, there should have been no difference between the 1974 and 1976 cost figures, as they both involved rough estimates!)

The expected benefits of reduction to 85 dBA are, on the other hand, somewhat exaggerated in the report. The main benefit, of course, is that some number of workers who, without exposure regulation, would have suffered hearing impairment (under present convention, an average Hearing Level of 25 dB at 500, 1000 and 2000 Hz) will now not become impaired. However, BBN confused the issue by basing their estimates of rescued ears on two sets of industrial audiometric

data, one of which is known to be heavily contaminated by temporary threshold shifts, the other so scanty that its applicability is in question. If one rules out the former, then the estimate of the number of workers saved by the present 90-dBA regulation over a period of 20 years is about 260,000, but further reduction to 85 dBA will save only an additional 20,000 or so. Thus, although the cost per rescued ear is high enough in the 90-dBA system to give one pause, about \$40,000, it would be 10 times as high for those 20,000 benefitted by an 85-dBA limit: \$8 billion divided by 20,000 workers, or \$400,000 per impairment prevention—and the median degree of impairment of these 20,000 would have been less than 10% in the first place. Thus industry argues that even a 90-dBA regulation will result in serious financial problems, and an 85-dBA limit would mean economic disaster. The President's Council on Wage and Price Stability, I might add, agrees.

The BBN report estimates that an audiometric program to monitor the hearing of persons whose daily dose exceeds 0.5 will cost \$20 per year per worker, and that the required noise monitoring program will require about \$12/year/worker. They also estimate that if reduction of exposures were accomplished by use of personal protective devices alone (plugs, muffs), this could be done for about \$10/year/worker; since there are an estimated 4.5 million workers whose daily dose is 0.5 or greater, the total cost would be \$45 million per year. However, only short shrift is given to that figure, because the proposed regulation reaffirms formally the stance that the Department of Labor has taken on personal protection—namely that ear protectors represent only an interim solution, to be used only until the source of the noise can be brought down to 90 (or 85) dBA by "feasible" engineering controls. (This seems to be one of the few issues on which EPA is in agreement with OSHA.)

This issue—how protection is to be achieved—is the most controversial of all. Industry's view is that its duty to the worker includes only the identification of hazardous noise-exposure conditions, and then providing protection by the most feasible means, whether by noise reduction, rotation of work stations, or use of plugs and muffs. I happen to agree with this view, which is why I am representing several industries in this donkeybrook. The Department of Labor, however, excludes personal protective devices. In practice, this means that an industry must prove that reduction of a noise at the source is impossible if ear protection is to be deemed acceptable.

Furthermore, OSHA has taken the position that all possible noise-reduction steps must be taken even if it is known in advance that these steps still will

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[Continued on Page 4]

Lyle F. Yerges
Contributing Editor

Abstracts of Papers . . .

(Continued from Page 3)

ing aid, and the other the tubing coupling receiver out of the hearing aid. A hearing aid shell was built into an ear replica mounted on a Zwislocki coupler using a 1/2" microphone representing the tympanic membrane. The measured static volume of the Zwislocki coupler was .55cc. The "long" canal hearing aids reached the outside edge of the Zwislocki coupler volume. The "short" canal used in the experiments increased cavity volume by .43cc. By using combinations of long canals and long receiver tubings with short canals and short receiving tubings, it was possible to differentiate the two effects mentioned above. The experiment was repeated using real ear techniques, as compared with the ear replica measurements and very good agreement observed. In particular there was a 10 dB increase in sound pressure level to the ear drum at frequencies below 500 Hz when using long canals and long tubings.

"Increasing Acoustical Efficiency with In-the-Ear Hearing Aid Fittings."

T.S. Griffing and D.A. Preves [Starkey Laboratories, Inc., 6700 Washington Ave. South, Eden Prairie, Minnesota 55343]

Response curve data of gain provided by head diffraction, pinna focus and external meatus resonance was obtained in an anechoic chamber using a probe microphone on real ears and on Knowles Electronics Manikin for Acoustical Research (KEMAR). This datum was comparable to that obtained in an earlier study (F.M. Wiener and D.A. Ross, J. Acoust. Soc. Am. 18; pp 401-408 - 1946) which showed that the natural physiology of the head significantly preamplifies incident acoustic sounds.

Further measurements were made comparing response curves obtained for in-the-ear and both bottom facing and forward facing behind-the-ear microphone inlet positions. Results showed, as in a previous study, (O. Berland and T.E. Nielsen), Oticon Laboratories, Denmark - Oct. 1968) that an in-the-ear microphone inlet location provides 5-10 dB more gain in the 1500 to 5000Hz region than the better of the two behind-the-ear microphone locations. Almost all of the preamplification remains after occluding the concha and external meatus portions of the ear with the earmold of an in-the-ear aid. Thus, the acoustic gain provided to incident sound by an in-the-ear microphone inlet does not appear to be a function of external meatus resonance acting in conjunction with an unfilled concha. The Oticon study reached the same conclusion because a skeleton earmold was in place during all of their probe mic tests. Significant size vents in the in-the-ear aids add further gain due to the 2.5KHz canal resonance combining with the microphone inlet preamplification.

As a result of this increase in

acoustic gain, before the hearing aid is even turned on, signal to noise ratio is enhanced in the 1500 to 5000Hz frequency region. The amount of energy contained in this frequency range is critical to achieving good discrimination in the presence of noise (S.J. Freedman, Laboratory for Research in Neuropsychology, Inc. - May 1970).

Localization is achieved, in part, by utilizing differences in the spectrum of incident sound from various directions (J. Blauert, *Acustica*, 22; 1960-70). It is therefore desirable to have these differences magnified to the largest extent. Thus, also as a result of the increased high frequency gain provided by an in-the-ear microphone inlet and vented earmold, an improvement in localization may be obtained with an in-the-ear hearing instrument.

Peripheral Auditory & Vestibular Systems

"Estimation of the Stapedius Reflex in Industrial Hearing Loss"

P.W. Alberti F.R.C.S. [Mount Siani Hospital, Div. of Otolaryngology, 600 University Ave., Toronto, Ontario M5G 1X5]

The current epidemic of noise-induced hearing loss is stretching resources of hearing testing facilities to the limit. In the Province of Ontario, Canada, with its population of 8 million people we anticipate in excess of 2,000 new compensation claims for hearing loss in the year of 1976. In order to maximize the use of limited major testing facilities an attempt is being made to develop a profile of test results based on relatively simple testing procedures which would indicate reliable or unreliable audiograms. This profile will help select people requiring 'advanced' testing. One of the parameters being investigated is the value of stapedius reflex estimations.

In the past 5 years some 1,500 patients with occupational hearing loss have been tested for compensation purposes in our Department. Virtually all of them have had stapedius reflex thresholds measured for pure tones, and large numbers also for white noise, and some for high and low pass filtered white noise. An analysis has been made of the relationship between stapedius reflex thresholds to pure tones, and the pure tone threshold, and also the results of the Neimeyer test in the population, and a statistical evaluation made of its efficacy in predicting exaggerated hearing loss (or unreliable hearing threshold) based upon the results of evoked response audiometry plus a full conventional test battery.

We feel it is a useful tool as a part of a battery of tests in identifying the patient who requires testing in a central facility with sophisticated equipment, including ERA audiometry.

"The Effect of Ventilation on Middle Ear Volume and Eustachian Tube Function in Secretory Otitis Media."

H. Bryan Neel, III, Lawrence W. Keating and Thomas J. McDonald [Mayo Clinic and Mayo Foundation, Rochester, Minnesota 55901]

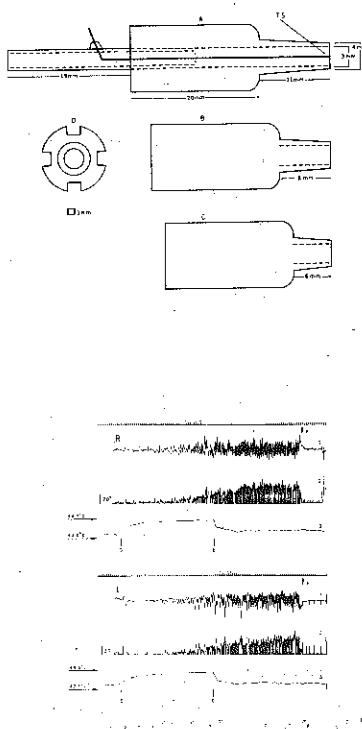
Conductive hearing loss due to secretory otitis media is the commonest form of hearing loss in children. Eustachian tube dysfunction is often implicated as the most important factor in the origin and course of the disease. It is well known that myringotomy, aspiration of fluid from within the middle ear, and ventilation with any one of several types of tubes will restore hearing and mobility of the tympanic membrane in the vast majority of patients. The effects of these procedures on eustachian tube function and middle ear cleft volume, particularly on a long-term basis, has not yet been clearly delineated.

Thirty-six children (72 ears) with secretory otitis media were studied. During the course of the disease fluid was aspirated from the middle ear and silastic ventilation tubes were inserted. Hearing levels, tympanogram type, middle ear volume and eustachian tube function were determined pre- and postoperatively.

Following myringotomy, aspiration of fluid, and ventilation we found that 1) middle ear volume progressively increased during a period of three to eight months postoperatively, 2) eustachian tube function remained abnormal while ventilation tubes were in situ, and 3) hearing was restored to normal levels. The significance of these results will be discussed.

"Air Calorics: A Technique and Results."

Jaime T. Benitez, Kenneth R. Bouchard and Yong K. Choe [William Beaumont Hospital, Div. of Otolaryngology, Royal Oak, Michigan 48072]



The bithermal caloric test with water has been an important tool for the evaluation of vestibular function. Performing the test with air has many advantages. Some problems have been noted: patient discomfort due to the acoustic component of the air flow, a burning sensation, ear ache and increased variability of caloric responses. It is felt that a major problem is one of technique.

A short film was presented describing a method that greatly diminishes the above noted difficulties. To insure appropriate air presentation, a delivery probe was designed (fig. 1). This modification has allowed a flow that provides adequate vestibular stimulation yet not annoy the patient. It permits one to easily keep probe placement consistent from ear to ear and fit different external canals.

The film illustrated techniques that allow accurate and repeatable stimulation with air; appropriate head placement, examiner's position, visualization of flow rate and/or temperature variations during stimulation. Due to the difference in heat capacity between air and water, each point of possible variability is magnified for air. Constant technique is essential.

We are able to use a flow of six liters/min for 60 seconds at temperature settings of 24° and 50° C. It is essential that the temperature is controlled close to, but not within the external canal. The temperature in the canal is affected by the body temperature and by the amount of back-flow. As measured by a sensor at the tip of the probe, one can see the temperature course during irrigation in the recording (fig. 2). An examination of these curves for hundreds of stimulations have shown a marked similarity between ears.

A normal study was carried out (30 subjects). The range of caloric responses, mean maximum speed, and standard deviation are similar to water stimulations. Various tests of significance performed show no differences between ears for warm or cold (p. 50). The surprising finding was that there was no significant difference between all four irrigations. Jongkee's formulae, using the clinically accepted two times the standard deviation disclosed a 16% value for unilateral diminution and 12.5% for directional preponderance.

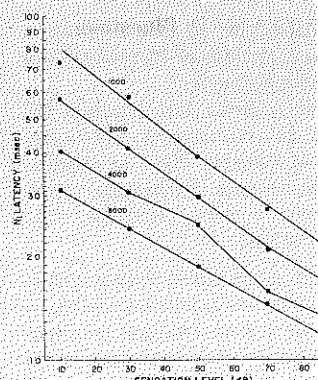
We have performed over 2000 clinical examinations that incorporate the technique with satisfactory results and minimal patient discomfort. These findings were discussed.

Legends:

Figure 1: Design of irrigating probe. (A) Probe for the majority of adult external canals. (B) Medium probe for narrow adult canals and younger individuals to age nine. (C) Small probe for young children under nine. The total length is a constant 50 mm. A cross section (same for all probes) shows location of slots for proper back-flow. (TS) Temperature sensor.

Figure 2: Temperature recordings during warm caloric stimulation, right (R) and left (L) ears: Sensor location shown in

figure 1. Air stimulator controls are set for 6 liters/min. at 50° C. (1) Direct eye movement, perpendicular upward correspond eye movement right. (F) Fixation. (2) Measurement of slow component velocity (Riksson Method). (3) Temperature measurement. (S) Start stimulus. (E) End of stimulus. Paper speed is 2.0 mm/sec.



Natural History of Idiopathic Sudden Hearing Loss."

F. Blair Simmons and Douglas Mattox [Stanford Univ. Medical Center, Div. of Otolaryngology, Stanford, California 94305]

We have reviewed the circumstances, treatment, audiometric and other parameters associated with Sudden Hearing Loss (SHL) in a prospective study of approximately 100 patients. All were primary cases, not second-order referrals. Prognosis for recovery is excellent and is best correlated with early diagnosis, but is completely independent of type of treatment. Typical audiometric findings, vertigo, demographic, and laboratory findings will be reviewed.

"N2 Latency of the Human Whole-Nerve Response to Filtered Clicks"

S. Zerlin and R.F. Naunton [University of Chicago, Section of Otolaryngology, 950 East Street, Chicago, Illinois 60637]

In previous studies, we described the physical and audiometric characteristics of filtered (tave) clicks (S. Zerlin and Naunton, *Audiology* 14:13 - 1975) and began exploring ear's electrical response to clicks (R.F. Naunton and Zerlin, *Audiology* 15: 1-9, 1976) the course of electrophysiologically assessing the hearing children seen in our laboratory. We have obtained results on young ears with normal peripheral sensitivity and can now describe normal N1 latency function of both frequency and sensation level. In Figure 1, mean N1 latency is plotted in semi-log coordinates as a function of sensation level with frequency as parameter. Latency varies monotonically (essentially linearly) with sensation level at all frequencies, and each frequency function is displaced upward as frequency decreases. These results follow from what is known about traveling-wave behavior in the cochlea, and are confirmed by single unit recordings in cat, i.e. the human nerve response to narrow band click appears to be a valid

[Continued on page 7]

THE INTERROGATORY

Question: When do you deem it advisable to initiate a myringotomy with tube placement? Do you have any particular rationale for this policy?

Charles D. Bluestone
Children's Hospital of Pittsburgh

At present, our indications at

Children's Hospital of Pittsburgh for tympanostomy tube insertion are the following:

1. Persistent middle ear effusion present for two months or longer and unresponsive to adequate medical treatment:

The patient must have been treated with ampicillin and, pre-

ferably, an oral decongestant-antihistamine for at least two weeks. If the patient is allergic to ampicillin, then erythromycin and a sulfonamide should be administered. This mode of therapy is strictly empirical since there has been no controlled study for chronic middle ear effusions re-

ported in the literature.

2. Recurrent acute otitis media, at least three bouts during the preceding three months:

Again, this indication has not been absolutely proven in a controlled clinical trial. The rationale for this procedure is the elimination of persistent or transient negative middle ear pressure which prevents aspiration of unwanted nasopharyngeal secretions into the middle ear. In addition, it is our clinical experience that when patients have had bilateral tympanostomy tubes inserted for this indication, they remain free of symptoms except for occasional intermittent otorrhea. In addition, we have noted that when one tube spontaneously extrudes and the other tube remains in place, it is a frequent finding that when the patient develops an upper respiratory infection, the middle ear that does not have a tympanostomy tube becomes infected, while the ear that has the tympanostomy tube remains normal. For these reasons, we feel that tympanostomy tubes are efficacious, especially in the very young.

3. Persistent tympanic membrane retraction pockets with impending acquired cholesteatoma:

We frequently use a tympanostomy tube to restore middle ear ventilation when there is a deep retraction pocket in the posterosuperior quadrant in the presence of high negative middle ear pressure. The tube relieves the middle ear atelectasis and the tympanic membrane frequently will return to the neutral position. If the retraction pocket does not return to normal the patient has adhesive otitis media and impending cholesteatoma. It is our observation that the chain of events in acquired cholesteatoma is the following: persistent negative middle ear pressure, atelectasis, posterosuperior retraction pocket, adhesive otitis media, and finally, cholesteatoma.

4. Persistent negative middle ear pressure with significant hearing loss:

Many patients are seen in our Outpatient Department with persistent significant hearing loss and sustained high negative middle ear pressure proven by tympanometry and by pneumatic otoscopy. If this condition is not relieved by medical means, a tympanostomy tube should be inserted to eliminate the hearing loss. Negative pressure may cause just as much hearing loss as a middle ear effusion and if persistent, will most likely cause a handicap.

The complications of tympanostomy tubes still present a problem. Troublesome otorrhea, persistent perforation, and implantation cholesteatoma. Reflux of nasopharyngeal secretions or from contamination from the external canal during bathing or swimming may be eliminated by the advent of the new semipermeable membrane ventilating tube. This tube should prevent contamination from water from the external canal and prevent reflux from the nasopharynx.

Raymond P. Wood II
University of Colorado Medical Center

There are two indications for myringotomy and ventilating tube placement in children with chronic serous otitis (one must first rule out other lesions such as nasopharyngeal carcinoma, angiofibroma and submucous cleft palate and cleft palate). These indications are: first, significant hearing loss, which I feel may be defined arbitrarily as 20 dB or greater in the speech frequencies. In some instances such as evidence of speech problems or poor performance in school or a superimposed sensorineural hearing loss, a lesser degree of conductive loss may be considered significant. The second indication is marked atelectasis with retraction of the tympanic membrane and impending adhesive otitis media, regardless of the degree of hearing loss. In the infant, if we can be relatively certain of the hearing being normal, no treatment is indicated. If the hearing is felt to be impaired, the presence of fluid and an immobile tympanic membrane may constitute an indication for myringotomy.

In general, we perform adenoidectomy and myringotomy and tube placement at the same procedure. If the patient has submucous cleft palate, we may perform no adenoidectomy or only lateral band adenoidectomy. Children with cleft palate and middle ear effusion should have myringotomies and grommet tubes placed at the first sign of effusion.

It is demonstrable that the hearing loss can usually be returned to normal levels by myringotomy and tube placement. Furthermore, it can be documented that delayed or impaired speech and language development occurs in otherwise normal children whose hearing loss exceeds 20 dB. Thus, the indication of hearing loss.

The long-term consequences of adhesive otitis media and/or frequent inability to repair these tympanic membranes and reconstruct the ossicular chain with good results, seems to me to argue strongly for the use of the relatively simple procedure of myringotomy and tubes. I cannot, however document our success from this approach.

The role of medical therapy in middle ear effusion is not well established. There is no documented proof that decongestants are of benefit, although we use them. The use of intranasal steroid sprays is an intriguing possibility in certain cases where allergy may play a role in the etiology. Antibiotics have no indications and in fact if one reviews the bacteriological studies of middle ear effusions, the carefully done studies fail to demonstrate the presence of bacteria either by culture or by the indirect evidence of bacterial infection, which is suggested by the absence of polymorphonuclear leukocytes.

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Meeting of the Executive Committee of the AAS

DATE: October 4, 1976

PLACE: Hilton Convention Center
Las Vegas, Nevada

TIME: 8:30 AM

MEMBERS IN ATTENDANCE:

Jaime T. Benitez
David Dolowitz
Bruce Graham
Norma T. Hopkinson
Fred Linthicum
Geary McCandless
Ralph Naunton
Ross Roeser
Hiroshi Shimizu
F. Blair Simmons
W. Dixon Ward
Laura Ann Wilbur
Aram Glorig
J. Donald Harris

GUESTS:

Marion P. Downs
Gae O. Decker
Wolf Niemeyer

The meeting was called to order by President Ward at 8:40 AM.

1. The minutes from the 1976 Executive Committee Meeting were read and approved.

2. The income and expense statement for the period January through August was read and approved.

3. After a brief discussion, the following motion was made:

"The editor of Corti's Organ be automatically appointed as an ex-officio member of the Executive Committee." (Passed unanimously).

4. The Statutes were reviewed with respect to membership. In the statutes, it is stated that the Executive Committee must approve all new members. Since this procedure has not been formally followed, the following motion was made:

"All members who have been informally admitted to the Society shall be approved for membership by the Executive Committee." (Passed unanimously)

In the future, applicants will be given provisional membership until they are formally approved by the Executive Committee during the Annual Meeting.

5. A discussion regarding how to attract new members was held. After discussing several possible mechanisms the following motion was made:

"The membership Sub-Committee consider problems of recruiting members, ensuring professional distribution of membership, and maintaining the size of the present membership." (passed unanimously)

Ralph Naunton will report on these activities at the next Executive Committee Meeting.

6. During the last meeting of the Executive Committee, the following motion was adopted:

"The Executive Committee authorizes the President of the American Audiology Society to approach the International Audiology Society requesting that the American Audiology Society be made the recognized representative to the International Audiology Society from the United States."

Because this statement implies sole representation, the following motion was made:

"The phrase, 'the recognized representative' be changed to 'a recognized representative.'" (Passed)

7. President Ward indicated that the International Commission on the Biological Effects of Noise (ICBEN) has requested that the Society provide nominal sponsorship at the next International Congress on Noise as a Public Health Problem. After discussion, the following motion was made:

"The American Audiology Society will provide non-financial support for sponsorship of the next International Congress on Noise as a Public Health Problem." (Passed).

8. The possibility of having an independent convention was discussed. The consensus was that the size of the membership of the Society is not adequate to sponsor an independent meeting. It was decided to hold our next meeting with the Fall Meeting of the acoustical Society of America if it is to be held in Miami, Florida. Harris Pomerantz was appointed Program Chairman.

9. Several instances in which the Society's name was used inappropriately were cited. The appropriateness of having the term "Audiology" as part of the Society's name was questioned, since all members are not audiologists according to the contemporary restricted use of the term in the U.S. A. The following motion was made:

"The proper procedure be instituted for changing the statutes of the American Audiology Society, including changing the name of the society to the American Auditory Society, and that a committee be formed to make additional proposed changes in the statutes." (Defeated)

After the defeat of this motion, an alternate motion was made as follows:

"Membership of the American Audiology Society be apprised of the possibility of a name change

for the Society through Corti's Organ and be asked for their reaction." (Passed)

The Executive Committee will approve the material to be printed in Corti's Organ before it is published.

In addition, because there are several areas that are not specifically clear in the statutes, the following motion was made:

"The President of the American Audiology Society appoint a committee to review the statutes and suggest possible changes." (Passed)

10. The Editorial Policy Board must reappoint its members every two years. The following motion was made:

"The present members of the Editorial Board be retained and two additional members be appointed by the Editor-in-Chief." (Passed)

11. Volume 1 of the Journal of the American Audiology Society did not utilize the allotment of 360 pages. It was decided that the Secretary/Treasurer either contact Williams & Wilkins directly or have an Executive Committee Member contact them directly to propose that the unused pages be allocated to future volumes.

12. F. Blair Simmons was elected Vice President/President Elect for 1977.

13. A Committee was appointed to establish guidelines and criteria for the Carhart Memorial Lectureship and Award, and to identify the recipient of the next award. Tom Tillman was suggested as Chairman of the Committee, with two alternates, Leo Doerfler and Wayne Olsen. President Ward will contact Dr. Tillman regarding this.

14. A Nominating Committee was formed to select names for replacing the seven Executive Committee Members to be replaced next year. Dave Dolowitz was appointed Chairman, Laura Wilbur and Hiroshi Shimizu were appointed members.

15. Several other organizations refrain from using degrees when referring to their members. As we have no set policy on this, the following motion was made:

"The American Audiology Society refrain from listing degrees of its members in the Directory and in Corti's Organ, but degrees shall be indicated in the Journal of the American Audiology Society." (Passed)

There being no additional business, the meeting was adjourned at 11:45 a.m.—R.J. Roeser.

The Interrogatory

(Continued from Page 5)

David F. Austin
Chicago, Illinois

In the treatment of otitis media with effusion, the use of myringotomy with tube insertion is so wide spread as to be considered standard. At the same time it is well documented that approximately 95% of such patients will recover spontaneously leaving a small group with a more chronic, difficult to treat problem. The efficacy of tube insertion for this group has not yet been fully documented.

It has been demonstrated on the other hand that in bilateral cases, if one ear is untreated and tube insertion carried out in the other, both ears respond identically; clearing in most and a few continuing with effusion. The implication of this finding is that either some other aspect of the surgical procedure than the tube insertion is therapeutic (the induction or detubation, the nitrous oxide administered, the adenoidectomy) or that the pre- and post-operative care is effective in securing resolution.

My standard treatment for such patients is to treat medically nose and throat infection, improve the nutritional status, administer vitamin C in 1 gram daily dosage to children (2 grams to adults) and to teach self-inflation of the ear via the Frenzel technic. Non-resolution of the problem after four weeks indicates adenoidectomy. At this time if hearing loss is present, a myringotomy with aspiration is performed on one ear only. No tube insertion is done. Post-operative care is carried out as defined for the pre-operative period.

Fewer than one percent of my younger patients have failed to respond to this method of treatment. Only 4 adult patients have had needed tube insertion in the past five years. I feel that the children with chronic unrelenting otitis with effusion (such as those with cleft palate problems) should be fitted with a hearing aid rather than have multiple tube insertion.

Michael M. Paparella
University of Minnesota

I would consider myringotomy and ventilation tubal placement only for chronic middle ear effusion, that is, chronic serous otitis media or chronic mucoid otitis media. It should not be used in acute or subacute cases since these should be treated conservatively. Usually youngsters with conductive losses are picked up through screening programs in the schools and by the time we see them they have already had longstanding cases of chronic middle ear effusion. Nevertheless, conservative therapy using medication and eustachian tubal exercises is still useful. In general, if the fluid has persisted after several months of medical management I would utilize tubal placement.

Another indication for tubal placement is in children who have recurrent bouts of acute suppurative otitis media. We

have seen children who have them so frequently as to occur every two weeks or so. In these instances we treat the child actively with medication, including appropriate antibiotics and when the child's ear is as devoid of infection as possible, then, under sterile conditions, a myringotomy and tubal placement are done. The purpose here is to prevent further attacks of acute suppurative otitis media and in small children it is remarkable how beneficial this can be if utilized properly.

There is a third indication which may not be germane to this particular discussion, namely, the use of ventilation tubes in conjunction with tympanoplasty techniques. The paramount underlying problem that leads to chronic otitis media continues to be eustachian tubal ventilation dysfunction. As such, whenever possible, a ventilation tube is inserted through a normal portion of tympanic membrane when grafting and reconstruction takes place during tympanoplasty in order to assist the eustachian tube in its function of ventilating the round window.

Victor Goodhill
Beverly Hills, California

Our indications for myringotomy with tube placement relate to persistent middle ear fluid retention refractory to appropriate medical therapy. This includes cases with and without evidence of mastoid haziness on x-ray, and it includes patients who have re-accumulations of fluid on adequate medical therapy. Rationale is based upon the fact that many patients will respond to medical therapy which frequently will include allergic management of concomitant nasal and sinus disease. In our techniques we emphasize both anterior and posterior inferior radial incisions for adequate suction and ventilation, even though only one tube may be placed. My colleagues and I use varying types of tubes for special purposes.

This represents the opinion of Victor Goodhill, Seymour J. Brockman, Irwin Harris, Joel Shulman, and Stephen Cooper.

F.H. Linthicum, Jr.
Los Angeles, California

Myringotomy with tube placement should be done after a complete attempt to control the situation with medical therapy. Most children develop middle ear effusions with respiratory infections, and it sometimes takes three weeks for this to resolve if no treatment is given. Therefore, one examination is not enough to determine whether myringotomy and tube placement should be done, particularly if the child has had a history of a respiratory infection within the preceding three weeks. A careful history of the possibility of an allergic diathesis, either in the child or the parents, should be obtained. Should there be any indication of such,

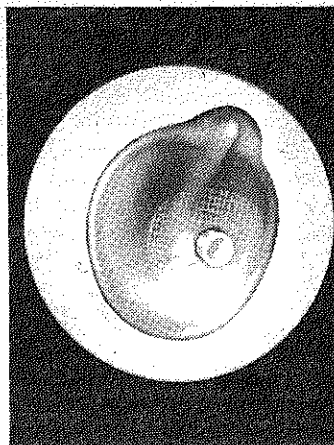
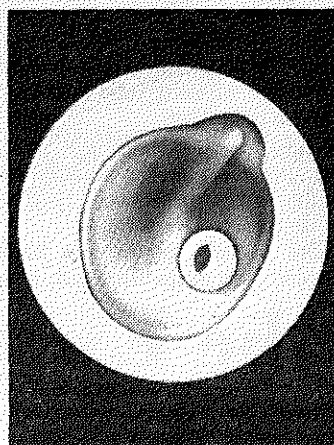
then an antihistamine usually in conjunction with a decongestant is given at least a three-week trial. Should this fail to result in a resolution of the fluid in three weeks, then the child is taught to Valsalva or the parents to politzerize the child twice daily 30 minutes after the administration of the antihistamine and decongestant. For the politzerization I use the rubber nipple, developed by Victor Goodhill and supplied by the Surgical Mechanical Research Company, that fits on the end of a teardrop-shaped rubber syringe, which can be obtained at any drugstore.

Should conservative treatment fail to produce resolution of the fluid and if there is a significant hearing loss or recurrent acute otitis media due to infection of the middle ear effusion, then myringotomy and ventilation tube placement is indicated. For the first placement of ventilation tubes I prefer the collar-button-type tube, placed anterior to the umbo with the flange impinged under the umbo (Fig. 1). These will usually remain in place up to a year. Once the extrusion has taken place, the above-mentioned medical therapy is again carried out, and if there is no recurrence of the fluid after extrusion, the child is seen three weeks after his next respiratory infection and again medical and autoinflation treatments are begun.

Semipermanent tubes are used if there is evidence of damage to the tympanic membrane or temporary tubes have been previously inserted. These are called mesh tubes and are similar to the Per-Lee tube. They have the advantage over the temporary tubes in that the flange is soft and can be inserted through the myringotomy incision smaller than the diameter of the flange. The flange is placed medial to the handle of the malleus (Fig. 2). The tubes are left in place until the child has reached an age that one can be fairly certain that the eustachian tube has matured. This is tested utilizing the vacuum pump of the tympanometry equipment. If the patient can relieve negative pressure within ten swallows, then it is considered time to remove the tube. In a young child or adolescent, this usually requires a general or local anesthetic for removal.

RATIONALE

Patience on the part of the doctor and the parents will usually allow one to clear middle ear effusions with conservative medical treatment. However, persistent significant hearing loss, recurrent acute otitis media, or evidence of impending permanent damage to the tympanic membrane, particularly in the pars flaccida, are indications for middle ear ventilation. The only semiurgent situation is that of the idiopathic hemotympanum, or blue eardrum. This indicates a development of a cholesterol granuloma which may within a year or two become organized by fibrous tissue and create the completely fibrotic middle ear, for which there has been found no suitable tympanoplastic correction.



ILLUSTRATIONS:

Figure 1: Collar-button ventilation tube with flange under umbo.

Figure 2: Mesh tube placement showing mesh medial to manubrium.

Virgil M. Howie
Huntsville, Alabama
[Dr. Howie submits his article, "Treatment of Serous Otitis Media with Ventilatory Tubes," Clinical Pediatrics, 13-11, Nov. 1974. Excerpts from this article follow:]

We report here the results of audiograms on ten children in a private pediatric practice who had 19 tympanostomy tubes inserted under local anesthesia during a one-month period. All children were diagnosed as having serous otitis media prior to insertion of the tympanostomy tubes; two had a superimposed purulent otitis media in one ear and serous otitis media in the other year.

PATIENTS

The ten children, ranging in age from four to nine years, were seen in a one-month period in the general practice of pediatrics of the two authors. In each child, pneumatic otoscopy indicated the presence of middle-ear fluid which was known to be persistent for at least one month or had recurred at least three times during the preceding 12 months. Of the 17 cultures performed, only two showed the usual pathogens (pneumococcus and Hemophilus influenzae) associated with otitis media; these two middle ears seemed acutely inflamed prior to insertion of the tympanostomy tubes.

RESULTS

The results of the audiograms performed before, immediately after, and two to three weeks after effective middle-ear ventilation shows the mean improvement in hearing to be 15.3 decibels. All 10 patients could hear all

frequencies at 20 decibels or less immediately postoperatively. The two-week audiogram showed even better hearing than the 15-minute postoperative audiogram.

COMMENTS

Children under four years of age have otitis media much more frequently than the 10 children aged four to nine years who are described in this study. However, the testing of hearing is more complex and less reliable in the younger children. Middle-ear fluid can be persistent or recur immediately with or without infection.

Several studies have shown that suboptimal hearing even when intermittent may permanently affect a child's ultimate verbal intelligence. A high rate of conductive hearing impairment exists among the retarded. Some of this retardation may be caused by less than optimal hearing.

Our observations, made in a one-month period in a two-man partnership general pediatric practice, leave no doubt that tympanostomy tubes can and do improve hearing instantly and that this improvement continues with functioning ventilatory tubes. Richards, who compared simple myringotomy with the insertion of grommets, noted that the ears receiving grommets had less hearing loss as long as the grommets remained functional and in place.

Middle-ear fluid can best be detected by the use of the Impedance Audiometer ("jet see style") but can also be detected by the routine use of the pneumatic otoscope ("horse and buggy style"), which is available to every practicing primary physician. Primary care physicians should be skilled enough to recognize and treat this problem as an office procedure, since recurrent otitis media affects 20 percent of the babies under our care.

LaVonne Bergstrom
University of California at Los Angeles

The placement of a myringotomy tube is a somewhat individualized decision. I would be inclined to do it quite promptly in the cleft palate child who very likely is not going to resolve serous otitis media promptly. In the youngster or adult whose onset is clearly related to a recent upper respiratory infection and/or a change in atmospheric pressure, I may not treat it at all but just wait to see if it resolves. If an acute episode is particularly bothersome to the individual, particularly the adult, or is slow to resolve, I would use myringotomy to aspirate the fluid but would not place a tube. In the individual, usually a child, who has a prolonged problem that does not resolve readily and who has already been treated with decongestants, I would approach the problem in one of two ways. If his adenoids are hypertrophied and seem quite clearly to be contributing to the problem I would do adenoidectomy and perhaps

[Continued on Page 7]

AAS Annual Meeting . . .

[Continued from Page 1]

of the SSI in various types of evaluations: 8th nerve lesion, Central problems, Brain Stem Trauma, Basilar Artery Insufficiency, and Presbycusis. One measure of importance is the difference between the SSI Max and th PB Max; i.e., the point on the articulation curve at which the SSI scores fall off, as compared with the PB scores fall-off. For example, if the relationship differs out of proportion to the degree or shape of the audiogram, an 8th nerve lesion is suspected. If the SSI function falls below that of the PB, and the audiogram is not worse in the low frequencies, a central loss is suspected.

In presbycusis the SSI Max is 20-25 dB lower than PB's, and the scores may differ markedly: 70%

for PB's, 40% for SSI's.

These results indicate that the scope of speech audiometry can be expanded to diagnostics. In addition, SSI's can be used in hearing aid evaluation to measure performance with and without the hearing aid. If one tests at 60 dB SPL the competing message can be varied to arrive at some significant differences.

Following the lecture, A.A.S. President Dixon Ward presented Jerger with a plaque memorializing the occasion of the 1st Carhart Memorial Lecture. An honorarium was also presented.

The contributed papers that followed were well received by the membership. Abstracts of all these papers are published in this issue.

The Interrogatory

[Continued from Page 6]

myringotomy and tube under the same anesthetic. If his adenoids have been removed and removal has been adequate and the problem has persisted I would perform myringotomy and place a Grommet tube. In the adult who develops serous otitis media without any apparent cause such as recent upper respiratory infection or abrupt change in altitude I would make a careful search for a nasopharyngeal tumor. This would also be true of the young boy or adolescent male who develops serous otitis in conjunction with obstruction of nasal breathing which he has not previously had. In this instance I would be suspicious of a nasopharyngeal angiofibroma. The treatment in this instance would be directed at the primary cause and not at secondary symptoms.

There is no scientific evidence that decongestants work and therefore it is difficult to rationalize the use of this type of medication on any scientific grounds at all. I think we need to recognize this fact whenever we prescribe these medicines. Most of us have used oral decongestants for acute episodes of nasal congestion and have noted what seems to be symptomatic improvement. Since the mucosa of the Eustachian tube is identical to that of the nose, it seems rational that this method should work but, to be honest, we have no proof of this. My rationale for doing myringotomies and tubes promptly in the cleft palate child is that probably close to 100% of young cleft palate children have serous otitis media and about 50% of those with submucous cleft palate have this or another manifestation of chronic middle

ear problems. Adenoidectomy is often contraindicated in children with overt cleft palates, repaired or unrepaired, and decongestants don't work in this particular situation which seems to be on the basis of mechanical malfunction of the Eustachian tube musculature. There is perhaps some evidence that chronic negative pressure and perhaps chronic serous effusion in the middle ear may be permanently damaging. There is no question that the hearing loss involved when chronic or frequent may interfere with the child's learning processes. Therefore, in these children I feel there is no place for temporization. In other instances, I would not perform surgery immediately. An example of this would be the child who wishes to swim during the summer vacation from school and who has no indication that permanent changes are beginning to occur in the ear such as retraction or monomeric membrane. I would let this child swim with the fluid in the middle ear

and then, prior to school, if the condition is still present, I would do a myringotomy and insert tubes. I might add that there are occasions in the adult who has chronic middle ear effusion who has had a tympanoplasty to close a large perforation there may be indication for doing a myringotomy and placing a tube to ventilate the middle ear and allow him to have a small opening in the tympanic membrane rather than a large one. Again, I would like to emphasize that there has been no good objective double blind study of the efficacy of any of these modalities and I think that the construction of such a study will prove difficult.

JOBS, JOBS, JOBS

No, we don't have any available, but we'd like to list yours. Need a Friendly Otolaryngologist in your medical group, or a competent Audiologist in your practice, hospital or clinic? Send in your job requirements and the old ORGAN will try to get you a body.

Abstract . . .

[Continued from page 4]

cation of "place" on the basilar membrane.

These data serve additionally, as norms for diagnostic electrocochleography: ambiguous N1 responses can be assigned a greater or lesser degree of validity depending upon their correspondence to these mean values.

Figure 1: N1 latency of the human whole-nerve response as a function of (third-octave) click frequency and sensation level. Mean results based on promontory recordings of 15-20 normal young ears.

Central Auditory System

"Effect of Peripheral Hearing Loss on Central Auditory Tests". Gerald E. Miltenberger, Gerald J. Dawson and Anthony N. Raica [Center for Audiology & Speech Pathology, University of Texas Medical Branch, Galveston, Texas 77550]

This study was conducted to assess the feasibility of administering a central auditory test battery to patients with sensorineural hearing losses. Seventy subjects with sensorineural hearing losses of varying severities and slopes participated in this study. The subjects ranged in ages from 14 years to 65 years. In addition to receiving a standard audiological assessment and otological examination, each subject also received a central auditory processing (CAP) test battery consisting of: Task 1 - a dichotic listening task consisting of competing sentences having similar length and linguistic content; Task 2 - monosyllabic filtered words passed through an electronic filter. The rejection characteristic was 18dB/octave for those frequencies above 5kHz; Task 3 - a binaural fusion task utilizing spondaic words with the presentation of a low-band-pass segment (500-700 Hz) to one ear while the other ear is simultaneously presented with a high-band-pass segment (1900 - 2100 Hz) of the same word; and Task 4 - a rapidly alternating speech task involving single sentences wherein the continuous stimulus is switched alternately between the two ears every 300 msec. The CAP test battery was administered to assess the following: (1) the effect of degree/configuration of hearing loss on these tests, and (2) the effect of reduced speech discrimination ability on these tests.

The results of the data showed that patients with sensorineural hearing losses of different severity and slopes produced poorer scores during the administering of the filtered speech task than any of the other three subtasks. Scores obtained during the administering of the filtered speech subtask were affected by (1) degree of hearing loss at 2000 Hz when the puretone air conduction thresholds at 500 Hz and 1000 Hz was within normal limits, (3) the PB max scores, and (4) the overall degree of hearing loss

through the speech frequencies.

The other subtasks: competing sentences, binaural fusion, and alternating speech were not effected to the same extent or necessarily in the same manner as the filtered speech subtask.

In summary, the described central auditory test battery can be utilized on patients with sensorineural hearing losses providing all results obtained are interpreted with caution in view of results obtained during the standard audiological assessment.

"Rapidly Alternating Speech Perception: A Test of Brain Stem Dysfunction." George E. Lynn and John Gilroy [Wayne State University School of Medicine, Department of Neurology, Detroit, Michigan 48201]

The identification of auditory disorder originating from brain stem lesions remains a major clinical problem in neuro-audiology. The purpose of this paper is to describe a modification of Bocca's and Calero's "swinging speech technique" called Rapidly Alternating Speech Perception (RASP) and its localizing value in identifying patients with brain stem disorders.

The test consists of recorded sentences which, when spoken, alternate rapidly between the listeners two ears in 300 msec bursts. In the normal listener with intact central auditory pathways, the amount of information presented to each ear alone in these 300 msec bursts is insufficient for understanding and discrimination scores are usually less than 10% correct in each ear. However, when the material is presented binaurally the alternating bursts of speech fuse or resynthesize into meaningful sentences with high intelligibility (90 to 100% correct).

Sixty-seven patients were tested with RASP. Performance scores in the binaural alternating mode of presentation averaged 84% correct or better among 18 normal listeners, 2 patients with 8th nerve lesions without brain stem involvement, 9 patients with upper brain stem lesions and 32 patients with unilateral cerebral lesions involving the temporal or parietal lobes. In contrast, 6 patients with lesions located primarily in the caudal region of the pons obtained relatively low scores averaging 36% correct. The difference in performance between the 6 patients with low pontine lesions compared to 9 patients with involvement of the upper pons including the mid-brain and thalamic levels was statistically significant ($t = 3.34$, $df = 13$, $p 0.01$). The data would seem to indicate the following: (1) perception of rapidly alternating speech depends on integrity of auditory centers and pathways low in the pons, (2) low performance scores would seem to implicate involvement in the region of the cochlear nuclei, superior olivary complex and the decussating fibers of the ventral acoustic stria, and (3) lesions in the upper brain stem or cerebral hemispheres would not be expected to affect perception of rapidly alternating speech unless involvement is bilateral or diffuse. An important limitation which must be kept in mind when

using this technique is that peripheral lesions of the cochlea and 8th nerve affecting phonemic discrimination may also disturb understanding of rapidly alternating speech.

Tests employing material which alternates rapidly between the two ears in short bursts may contribute useful information in the localization of brain stem auditory disorder.

"Dichotic Listening Performance in Partial Split-Brain."

Martin L. Lenhardt [Medical College of Virginia Commonwealth University, Department of Biocommunications, Richmond, Virginia 23298]

CV syllables (kindly provided by Kresge, LSU) were presented dichotically to a 13 year old boy prior to and post surgical section of the majority of his corpus callosum. Preoperatively no ear advantage was observed; however, after callosal section a clear right ear superiority emerged. Correct performance approximately doubled for the right ear and fell to chance for the left ear. Voiceless CVs were reported correct more often than voiced, both prior to and post surgery. In addition alveolars were more often reported correctly than labials, which in turn are reported more correct than velars. In single correct response performance was highest when pairs shared voicing preoperative and lowest when pairs shared place. Post operatively sharing place still resulted in the lowest % correct, however, performance was highest when pairs shared neither place nor voice. An analysis of pairs resulting in errors revealed that for: 1) voiceless/voiceless condition 16.6% errors occurred pre and post operatively, 2) voiceless/voiced condition 64.4% errors occurred pre op and 58.4% post op. Thus error pattern did not change after section. These data suggest that callosal section results in suppression of the ear contralateral to the speech processor by removing the interhemisphere relay route. It is suggested, then, that there is a unidirectional pathway for channeling linguistic information from the right hemisphere to the left hemisphere. It would also appear that there is some subcortical ipsilateral suppression by the stronger contralateral pathway post callosal section.

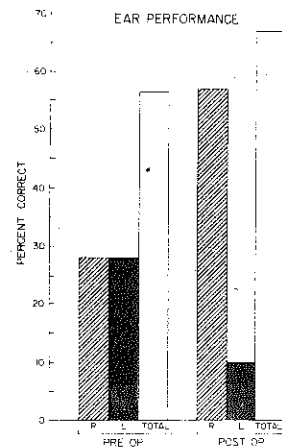


Figure 1: Percent correct identification of CVs for each is about the same level prior to surgery. Post surgery the right ear exceeds the level for both ears confirmed before surgery. Note the left ear is drastically suppressed.

Article and Book Reviews

Tympanometric Detection of Middle Ear Effusion in Infants and Young Children.

J.L. Paradise, C.G. Smith and C.D. Bluestone. Pediatrics, 58-2 [August 1976] pp. 198-210.

This report is a timely reminder that it is the physician who is the ultimate arbiter of whether or not tympanometry is an acceptably valid tool. Here, we find Dr. Paradise, who is among the most knowledgeable pediatricians in the country in otologic problems; Dr. Bluestone, who is among the most knowledgeable otologists in the country on pediatric problems; and C.G. Smith, an able audiologist who appears to have given the requisite support to these dynamic physicians. Together they have reported a thorough study demonstrating the extent of the usefulness of tympanometry in identifying middle ear effusion in young children.

280 children, 10 days through 5 years of age, were given tympanometric tests. All were examined by means of pneumatic otoscopy, and in 107 the findings at myringotomy were reported. Comparison of tympanometry with all of the physical findings showed high correlation in children 7 months to 5 years.

The authors describe five tympanogram curves based on a classification scheme whose primary divisions were based on air pressure-compliance relationships, and whose secondary divisions were based on gradients. For example, in the myringotomy group (177 ears) what we think of as "flat" curves showed 89% agreement with the finding of middle ear effusion. "Normal" curves showed 95% agreement with physical findings. Steep high-negative pressure curves presented 69% agreement with normal ears; "gradual" negative pressure curves were correlated with 85% with effusion. Thus curve gradient proved consistently important in distinguishing effusion from non-effusion. The same was true in the "transitional" category (air pressure at or near atmospheric (-100 to -150) and compliance intermediate (4.5 through 5.5). Here the "steep" transitional correlated 100% with normal ears and the "gradual" transitional correlated 83% with middle ear effusion.

IN the children who were only given pneumatic otoscopic examination (not myringotomy), even higher correlations were reported:

Normal curves: 98% correlation with normal findings;

Steep High-Negative pressure: 72% correlation with normal findings;

Gradual High-Negative pressure: 60% correlation with effusion;

Steep transitional curves: 85% correlation with normal findings.

Gradual transitional curves: 82% correlation with effusion.

"Flat" curves: 82% correlation with effusion.

High Positive Pressure: 57% correlation with normal findings.

The authors state that these statistics afford more precise correlations in the 7 month to 5 year old group, than were heretofore available.

However, in the 43 infants under 7 months of age, only the "flat" or very low curves were associated with middle ear effusion. Curves that in the 7 month or over age group were almost invariably associated with normal ears were in this age group often associated with effusion, i.e., of 66 normal curve types, 32 had effusion. The authors explain this lack of correlation by their observation that the canal walls in many infants can easily be seen to distend under pneumatic otoscopy. Accordingly, they graded the canal wall distensibility of all study subjects on a scale of 0 to +4. When applied to the correlations, they found that distensibility does indeed vary inversely with age, with the sharpest drop-off occurring just after 6 months of age. The authors feel that this high compliance of the canal wall renders electroacoustic measures within the sealed canal unable to differentially identify reduced compliance of the tympanic membrane.

With the exclusion of this younger group, the suggestion is made that tympanometry appears a promising tool as a screening test not only for school age children but also for infants and children in day-care and nursery school settings. They feel that further evaluation of its feasibility and validity is needed for pediatric populations of various ages and backgrounds.

This study proves a welcome addition to the impedance bridge literature, coming as it does from a set of very demanding medical scientists who are in touch with the real world of medical reality.

Mother-Infant Communication and Language Acquisition in Deaf Infants

J.M. Greenstein, B.B. Greenstein, K. McConville and L. Stellini - Lexington School for the Deaf, 30th Avenue and 75th Street, Jackson Heights, New York 11370.

At last, an acceptable investigation demonstrating the advantages of early intervention for the hearing-impaired child! The research team of the Lexington School for the Deaf has put together a neat little study that answers several questions about early language acquisition of the deaf child: (1) How effective is intervention during the first three years of life of the hearing-impaired child?; (2) Is there a "critical period" during which such intervention is maximally effective?; (3) What aspects of the early mother-infant communication system are most relevant to the deaf child's acquisition of language?; and (4) How may early intervention programs be designed to foster those aspects of mother-infant communication or interaction which facilitate language acquisition?

On all counts the study points up the value of earlier initiation

of training programs. Language competence is greater in those whose training is begun earlier; the mother-child interaction improves when language skills are greater; and effective aspects of mother-infant interaction are more highly correlated with the child's language acquisition than with the technical aspects of the mother's language.

The subjects were thirty children diagnosed as severely or profoundly hearing-impaired who had been admitted to the Infant Center of Lexington School prior to their second birthdays. The mean of the pure tone losses (500-2000 Hz) was 98.6. The children were followed through to 40 months of age. Two groups were identified: those who were admitted prior to 16 months of age and a group admitted between 16 and 24 months of age. The formal measures of language skills used were the REEL Scale and the Lexington Preschool Oral Language Assessment. Informal measures were observational assessments of Mother-Infant Communication in six areas: (1) Unstructured Interaction; (2) Behavioral Elicitation; (3) Expressive Language Elicitation; (4) Receptive Language Elicitation; and (5) Imitation Elicitation, and (6) Separation.

The results of the evaluations at 24, 30, 36 and 40 months showed that the children admitted prior to 16 months are consistently superior to the later admitted children in all aspects at all age levels. Statistical significance on all comparisons was p.10, but was largest in expressive language.

The Lexington group proposed that the three most plausible interpretations for the differences are:

(1) That parents who bring their children in earlier for diagnosis and remediation may be more sensitive, concerned, or have other personality characteristics that facilitate their children's language acquisition. It is clear that the group favors this hypothesis. They cite the finding that there were striking group differences between the mothers' language behavior and closeness to the child. A thoughtful discussion of the reciprocal nature of the mother-child relationship illuminates the study.

(2) That there is a critical period for early intervention, possibly at or before 16 months, so that children aided before this age respond better than those aided later. The group felt that the sample studied was too small to test the critical period hypothesis adequately. They suggested that more data on children from hearing homes who are aided at a young age might isolate the maximally effective period.

(3) That some aspects of the training in the intervention program (possible even the mere passage of time after diagnosis) have an additive effect, such that longer exposure to these conditions facilitates language acquisition; or

(4) Some combination of all of the above.

The group discounted hypothesis (3) because the differences in

language competence noted at 24 months did not "wash out even after 16 months of training.

The Lexington group tackled the question of the effects of deaf vs. hearing parents by dividing the children from hearing homes into an Early Admission group (n=9) and a Late Admission group (n=10). This was necessary because the average age of admission for the children of deaf parents was 10 months earlier than for children of hearing parents. In this study the children from deaf families tended to do better in ratings and tests of language competence. The deaf mothers were rated as warmer and the flow of communication between mother and child easier.

However, the children of those hearing parents rated as warmer and more sensitive tended to do as well. The group feels that the nature of the mother-infant interaction is more crucial than the mother's hearing status.

The reports end up with a plea to educate the medical establishment to early intervention programs and to audiological practices. It states "The failure of our current medical services system to provide early diagnosis and referral of hearing-impaired infants approaches the proportions of a national disgrace." And to this we can only say AMEN!

Hearing Conservation: New Challenge for the Team. Proceedings of the Summit Conference on Hearing Conservation sponsored by the Colorado Hearing and Speech Center, Denver, April 26-27, 1976. In the July-August, 1976 issue of Occupational Health and Safety.

Here are gathered together the top echelon in Industrial Hearing Conservation: Dr. Morton Corn, Assistant Secretary of Labor for Occupational Safety and Health Administration; Frank Barnalo, Chairman, OSHA Review Commission; Sheldon Samuels, Director of Health, Safety and Environmental Department, AFL-CIO. To speak with these administrators are such experts as Dr. Floyd Van Atta; A.A.S. President Dr. W. Dixon Ward; Dr. Roger Strassburg of B.F. Goodrich Co.; Dr. Victor Hildyard, otologist; Al Babb and William Sedgely of the Coors Company; Robert Feeney and John Nyberg of Johns Manville and Broyles, Allebaugh and Davis, Inc.; Dr. John Krawleski of the University of Colorado Medical School; and H. Tom Buelter, Executive Director of the Colorado Hearing and Speech Center and the host of the meeting.

The entire issue of the magazine is devoted to the talks given by these knowledgeable people. It provides an encyclopedic source of information on the present status of Hearing Conservation in Industry. Readers will find these articles hard-hitting, lively reading.

Industrial Noise Manual
Third Edition. Size: 8 3/4 x 11 1/2
162 pp., illustrated, hard cover
Published 1975 by American
Industrial Hygiene Association
66 S. Miller Rd., Akron, OH 44314
Price: \$15.75.

This manual presents the principles of sound, discusses noise measuring instruments and noise analysis; surveys medical evaluation methods, examines means of noise control, both personal protection and engineering control of noise and the sound and treats legal aspects and liabilities in detail.

The twelve chapters in the book are: Physics of Sound; Instruments for Sound Measurement; Technique of Sound Measurement; Noise Survey; Vibration; Anatomy and Physiology of the Ear; Effects of Noise on Man; Hearing Measurement; Medical Aspects of Industrial Hearing Conservation; Personal Protective Devices and Hearing Conservation Programs; Engineering Control; and Legal Aspects of the Industrial Noise Problem. A total of 91 noise control case histories are included in the Engineering Control chapter.

**INFO Series 2:
Equipment Designed to
Improve the Communication
Skills of the Deaf.**
National Technical Institute
the Deaf, May, 1976.

This monograph, chiefly written by Donald D. Johnson, presents a variety of equipment recently designed and developed at NTID to help improve the communication skills of its deaf population. Each of seven chapters gives the rationale, as well as the actual design and development, of one or more specific items and its related work space. The items are: (1) Telecommunication systems for the Deaf; (2) A Speech Training Table for the Deaf; (3) An Auditory-Speech reading Training Table; (4) Student Response System; (5) Hearing Aid Center and Shop; (6) A Visual Speech Training Aid (VSTA); and (7) Communication.

A valuable source of current advances in equipment for training the Deaf.

**The Auditory Training Handbook
for Good Listeners**
D. Cassie. The Interstate Printers and Publishers, Inc., 1927
Jackson Street, Danville, Illinois
61832. [Order No. 1762] \$2.50, 64 pages.

A total auditory training program for the deaf and hard-of-hearing is presented in this easy guide to listening. It is aimed at children 3 to 12 years old, with games that progress from gross discrimination, identification of pitch, rhythm, fluency, and voice discrimination.

The booklet includes instructions on the care and treatment of auditory training units and individual hearing aids, as well as the use of tape recorders, musical instruments, plays and puppets.

[Continued on Page 9]

Facts From The Feds

NIH Support for Postdoctoral Research Training

On July 2, 1976, the National Institutes of Health announced the continuation of the Individual National Research Service Award Program to support postdoctoral training in specified areas of biomedical research. Support is provided to individual applicants who compete nationally for awards.

Applicants must be citizens or non-citizen nationals of the United States, or have been lawfully admitted to the United States for permanent residence and have in

their possession a permanent visa at the time the application is submitted. Applicants must also have completed, at the beginning date of the proposed training, the requirements for a doctoral degree.

Applications must be for support in one of the research disciplines specified by the NIH. In the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS), areas that may be of interest to people seeking postdoctoral research training in communicative disorders are audiology, clinical investigation, neurophysiology, otopathology, sensory physiology and biophysics, and speech pathology.

Prior to submission, applicants must arrange for an appointment to an appropriate institution and be accepted by a sponsor who will supervise the training and research experiences. The training institution can be either a domestic or foreign non-profit or public institution, including the NIH. Applications from individuals wishing to study abroad will be approved only if comparable training and research experiences are not available at a domestic institution.

Annual trainee stipends begin at \$10,000 and are increased depending on the number of years of relevant postdoctoral research and/or training experience at the time of the award. No stipend exceeds \$13,200. In addition, the institution where the training is to be taken receives a \$3,000 Institutional Allowance.

The next date for the receipt of applications is February 1, 1977 and those received by that date and assigned to the NINCDS will be evaluated by the National Advisory Neurological and Communicative Disorders and Stroke Council at its meeting in September 1977.

Additional information and applications can be obtained from Raymond Summer, Ph.D., Assistant Director for Manpower Programs, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland 20014. Telephone 301-496-9236.

The National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) makes fellowship awards. Individual postdoctoral fellowship awards in audiology and speech pathology were made to: Fredericka Bell-Berti, Edward M. Burns, David S. Isenberg, Barry H. Leshowitz, Roger R. Marsh, Elise F. Masur, Sandra P. Pinkerton, Harry A. Whitaker.

An institutional fellowship award was made to the University of California, Los Angeles with Dr. Vicente Honrubia as Program Director.

J. Buckminster Ranney, Ph.D.
Chief, Scientific Evaluation
Branch

National Institute of Neurological and Communicative Disorders and Stroke

Article and Book Reviews (Cont. from Page 8)

Industrial Noise and Hearing Conservation

Julian B. Olishifski and Earl R. Harford, 425 N. Michigan Avenue, Chicago, Illinois 60611. \$24.00

This book has been endorsed by the Council for Accreditation in Occupational Hearing Conservation for use as Reference matter at local courses. The book covers (1) Fundamentals of Noise Problems and Physical Aspects of Sound, (2) Measurement of Sound, (3) Effects of Noise on Man, (4) Measures for Noise Control, (5) The Technician who Screens, and (6) Role of Nurse, Physician and Audiologist in the Hearing Conservation Program.

Survey of Hearing Conservation Programs in Industry

M.E. Schmidek, M.A. Layne, B.L. Lempert and R.M. Fleming, NIOSH, Cincinnati. Supt. of Documents, U.S. Government Printing Office, Washington, D.C. 20402, No. 1733-00085, \$2.00

This survey was conducted by NIOSH to evaluate present Hearing Conservation programs. The results are not encouraging. Engineering and administrative controls were found wanting in most of the industries interviewed. Audiometers failed to meet standards and hearing test facilities were inadequate in 80% of the cases.

Because of the lack of consistency in the training of audiometric technicians it was recommended that standardized procedures be set up, such as outlined in the CAOHC Guidelines.

Earmolds and Associated Problems

The transactions of the 7th Danavox Jubilee Symposium. Supplement of Scandinavian Audiology, 1976. The Almqvist and Wiksell Periodical Co., P.O. Box 62, S-101 Stockholm, Sweden. A 307 page report of the lectures presented at the International Danavox Symposium in 1975.

Quiet, Please, an 8-page booklet by the Metropolitan Washington Council of Governments. Features information on the major sources of environmental noise pollution and its dangers to human health. Helpful hints for citizens trying to reduce noise levels are given. Write to: Metro-

politan Washington Council of Governments, Metropolitan Information Center, 1225 Connecticut Avenue, N.W., Washington, D.C. 20036.

The Healing Hand Man and Wound in the Ancient World.

By Guido Manjo, Harvard University Press, Cambridge, Massachusetts, 1975. \$25.00.

A book to delight the physician, inform the layman, and beguile the medical historian. It started as a pathologist's historical preface to a small paper on inflammation; slowly the preface took over, and for ten years the author searched out the sources describing medical treatment in antiquity. The search led him into the study of hieroglyphics, cuneiform and Chinese characters. Starting with inflammation his study took him to wounds, and from there to biology and history. The book became a history of wounds, and as scholarly a tory of ancient medicine as one will find anywhere.

Dr. Manjo writes as a teacher as well as a scholar, taking time to explain basic biological principles clearly to the non-medical reader. Although only occasional discussions are related to the ear, head or neck, they will have interest for those of us who care to explore our beginnings.

Some 25,000 years ago men of the Aurignacian culture left "signatures" on the walls of the Gargas cave in southern France. These were negative imprints made by blowing black or red color around the hand laid on the rock. Many of the hands lack one or more finger, although the

thumb was spared. (See illustration 1.17.) Manjo at first speculates that the whole group suffered from Raynaud's disease, a condition that could have led to gangrene of the hands in that cold climate. But similar hands turned up in the Maltravieso cave in central Spain, with a milder climate. The next possibility was ritual amputation. Both African Bushmen and several Indian tribes in Canada have been known to cut off fingers as a form of sacrifice. But some of the missing fingers in the paintings appeared to have been retouched, i.e., painted over, so the fingers seemed more of a code, perhaps for hunting. There is a code used today by the Bushmen that could represent the same kind of messages. (Illustration 1.19.) Was this the first beginnings of sign language, and of communicative writing?

Boxing was a popular sport in Hippocrates' time and the resulting cauliflower ears were portrayed in Greek scenes and sculpture. Aristophanes coined the term "oto-kataxi", or "ear-breaker", for boxer. Manjo projects what the Hippocratic iatros (physician) might say to such a patient: "As to your ears, almost anything I could do would make matters worse. It is sometimes a good remedy to apply nothing at all, and this is true not only for the ears. Even a bandage would hurt. Later on, if pus forms, I may have to cut, and maybe even burn a hole in the ear with the cautery, though that would leave you with one ear smaller than the other. In the meantime we will work at preventing suppuration: take this to purge you from above with a

mild method called syrnaism, according to which you load your stomach with a large amount of salt, water and radishes, then throw it up. After that you can go home, and do not sleep on your ears."

Many similarities are found between ancient treatments and modern techniques: Rebuilding the nose with forehead flaps is a modern operation; it was described by Sushruta in India, certainly as early as 1000 A.D. Two short tubes were used in place of the nostrils, as still used today.

A description of Galen's discovering of the recurrent laryngeal nerve is gruesome: While vivisectioning a pig that was squealing loudly he cut one of two "inferior laryngeal nerves". The squealing stopped. He repeated the experiment on dogs, goats and other animals. The result was always the same. Manjo feels that Galen should be relegated to scorn.

Other ancient medicines are also covered in detail: Egyptian, Grecian, Indian and Chinese. The basic meaning of Chinese acupuncture was drainage.

The Greeks also believed in drainage to restore the balance of the four humors of the blood, but they literally drained the blood from the veins. The Chinese solution was that there were a set of imaginary vessels or "meridians" containing not blood but ch'i, denoting energy. It could either be drawn out or replenished (inward) by needling the right ch'i vessel. Thus the needling could be a form of drainage of energy, or of replacing it.

One of the mysteries is that with all the imagination of Hippocrates, Galen, Sushruta and the others, none conceived of the use of the hemostatic tourniquet to stop blood. It was not until man was shooting at his brothers with guns that the tourniquet was finally discovered.

Galen in one of his writings warned against the poison contained in the human bite. For it he recommended treatment with ear wax, preferably from the ear of the bitten.

So if you don't enjoy this fascinating book, at least you have found a use for ear wax. Try it—the book, I mean.

M.P.D.

Hearing Aids

Specs Standards

Approved

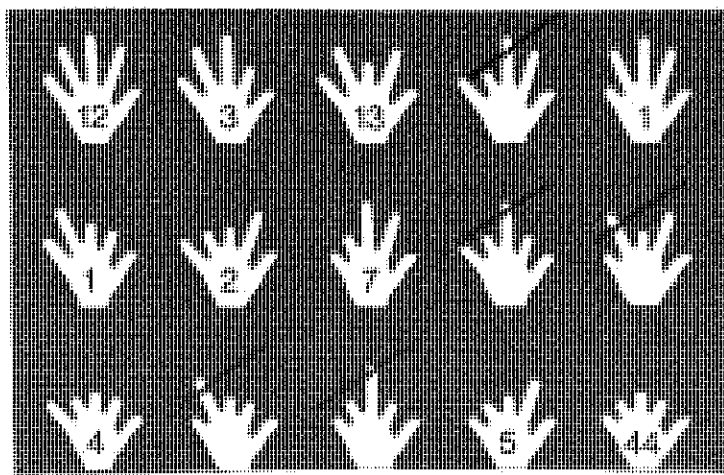
The American National Standards Institute (ANSI) approved the new Standard Specification for Hearing Aid Characteristics on July 23, 1976, according to Sam Lybarger, chairman of the ANSI working group. The new standard had already been approved by the Acoustical Society of America.

The correct designation for the standard is: Acoustical Society of America Standard 7-1976 (ASA Standard 7-1976/ ANSI Standard S3.22-1976) Specification for Hearing Aid Characteristics.

This standard ASA STD 7-1976, is available at a single-copy price of \$7.00 prepair (a handling charge of \$2.00 is required if payment does not accompany order).

Make checks payable to the ASA Standards Secretariat. This standard and other standards listed in the ASA Standards Catalog may be ordered from the following address: Back Numbers Department, Dept. STD., American Institute of Physics, 335 East 45th Street, New York, New York 10017, Telephone (212) 685-1940.

Corti's Organ salutes Sam Lybarger, his working group, and the ANSI for an expeditious job in putting out these standards in such a short time. Few government agencies work with such dispatch, as we see in OSHA's heel-dragging on the noise standards.



Third International Impedance Symposium

The III International Symposium on Impedance Audiometry was held in New York City on September 29, 30 and October 1 and 2. In spite of a late change of location for the Symposium from Philadelphia to New York City, the program drew 140 registrants as well as 35 faculty members. The American Electromedics Corporation sponsored the Symposium while James Jerger and Jerry Northern served as Scientific Program Co-chairmen.

The featured speakers were truly international coming from Europe and South America. They included Erik Borg, Stockholm, Sweden; Andrea Bosatra, Trieste, Italy; Denzil Brooks, Manchester, England; Gisle Djupesland, Oslo, Norway; James Jerger, Houston, Texas; Wolfhart Niemeyer, Marburg/Lahn, Germany; M. Maurice Rainville, Paris, France and Juan Tato (h), from Buenos Aires, Argentina.

Workshop panels each afternoon offered program registrants an opportunity to choose attendance at two of three discussions featuring some 25 American impedance experts. Discussions centered around Future Directions and Research Applications for Impedance Measurements, Otologic Applications of Impedance Audiometry, and Pediatric and Screening Implications of Impedance Audiometry. The Workshop panels were chaired respectively by Terry Wiley, from the University of Wisconsin, Robert Keim, from the University of Oklahoma Health Center and Geary McCandless of the University of Utah Medical Center.

Unique features of the Symposium and Advanced Impedance School included two practicum sessions whereby round-table groups of registrants matched selected audiometry results with appropriate sample audiometric patterns to reach diagnostic conclusions. Group table decisions were reached concerning the best match of impedance and audiometric patterns, while Dr. Jerger provided the actual answers to each diagnostic problem case. A

Johnson Named President Of Danavox

The Danavox International Company of Copenhagen has announced that James Johnson, formerly president of Zenith Hearing Instruments, has been appointed president of Danavox, Inc., the U.S. subsidiary in Minneapolis. He will also serve as a member of the Board of Directors.

An A.A.S. member, Johnson also holds memberships in the Acoustical Society of America, American Marketing Association, Audio Engineering Society and IEEE. He received his B.S. in Electrical Engineering from Purdue and his M.B.A. from the University of Chicago.

"Meet-the-Faculty" cocktail party and a banquet with wandering musicians contributed to the organized social aspects of the Symposium.

Proceedings from the III International Symposium on Impedance Audiometry are currently in press and will be available for a fee from the American Electromedics Corporation, 145 Palisade Street, Dobbs Ferry, New York 10522.



Faculty for the III International Symposium on Impedance Audiometry. Left to right, top row: I. Klar, E. Borg, F. McCandless, R. Keith, P. Rosenberg, R. Harrison, J. Sanders, D. Hogan, T. White; middle row: A. Bosatra, J. Lapidus, S. McLinn, C. Bluestone, E. Rock, G. Djupesland, T. Wiley, W. Fee, R. Margolis; R. Keim, G. Neely, C. Jordan, Ms. Bosatra, J. Cooper, L. Wilber, J. Jerger, S. Jerger, J. Northern and W. Niemeyer. Not shown are D. Brooks, M. Rainville and R. Sullivan.

BHI Is . . .

(Corti's Organ is happy to print this article on the Better Hearing Institute as a retraction of our statement in the April issue of C.O. that the BHI is "an organization of the hearing aid industry". Their Director of Public Information informs us that it is a totally independent organization, not of the hearing aid industry. We apologize. The error was due to the fact that we observed BHI's Board of Director to be composed entirely of representatives from the hearing aid industry.)

Questions and Answers About The Better Hearing Institute

Q. What is BHI?

A. Better Hearing Institute (BHI) is a nonprofit educational organization dedicated to informing the hearing impaired, their friends and relatives, and the general public about hearing loss and available medical, surgical, and amplification assistance.

Q. How many hearing-impaired Americans are there for BHI to serve?

A. Hearing loss is our nation's number one handicapping disability. According to a U.S. Public Health Service survey, at least 14.5 million Americans, including three million school-age children, suffer from hearing disorders. Only an estimated 3.5 million have sought help.

Q. Why are BHI education programs so vitally needed?

A. Because more than 11 million Americans suffer from uncorrected hearing handicaps. Most of these people could be helped. But first they need to know that nearly everyone with a hearing loss can benefit by medical or amplification assistance. They also need to know more about such help and how to obtain it.

Q. What is it that BHI hopes to accomplish?

A. BHI's goal is, through its information and education programs, to remove the stigma currently attached to wearing a hearing aid and to help eliminate hearing loss as a personal handicap in everyday life. A major BHI objective is to help persons with normal hearing protect themselves against preventable hearing impairments—for example, by alerting them to avoid extended exposure to noise.

Q. How does BHI disseminate information?

A. Primarily through mass communication—public service radio and television announcements, news and feature stories in the nation's broadcast and print media, audiovisual aids, exhibits, and a speaker's program. BHI distributes hearing help booklets, a newsletter, and other literature. In addition, BHI an-

[Continued on Page 11]

Computer Management Educational Hearing Conservation Program

screening programs, we saw the need to provide a practical means of recording tympanometry findings and pure tone results for schools which would be easy to understand and thereby upgrade local hearing screening programs.

"During the research and development of our program we realized that even if the high percentage of false positives and false negatives could be reduced by using impedance measures, we couldn't assume that those children who were identified would get treated. Thus, this new concept would be no better than existing archaic programs in terms of early identification and treatment of children with suspected ear disease."

Mr. Lapidus reported, "We have developed a system of testing and data recording procedures that can be easily learned by existing personnel already performing hearing screening in local public schools."

The H.E.A.R. Program provides explanatory letters to parents about procedures, case history and test forms to schools and consultant services. The entire program is computerized. Printouts are in two forms: one version specifies tympanogram patterns, stapodial reflex and pure tone thresholds as well as static compliance measurements - for the audiologist; the second version specifies the degree of suspected hearing problem and middle ear aberration in simple, easy-to-understand sentences - for the school nurse, special educational directors, and other educational personnel. In addition, recommendations on every child for each successive test day are listed. Appropriate statistics for each school and district are also indicated.

"Perhaps the most beneficial result of this concept of computer management were the letters printed to parents and physicians by the computer," Mr. Lapidus said.

"No longer is the local school nurse bogged down with coordinating data and typing letters. With composite readouts the nurse is able to quickly determine who may have a suspected problem and what the audiological recommendations are. Pre-printed letters can be mailed to parents with the appropriate results and recommendations for their child."

Computer Management has enabled Metropolitan Centers to more accurately identify a child with a potential hearing problem and alert parents and physicians as quickly as 2 to 4 days after the testing. In other programs, children are not examined by a doctor for as long as twelve weeks after testing because of the paper work involved. By then, the condition may have changed and the physician may dispute test findings. All too often the physician and the parent lose confidence in the school screening program.

"We think we're on the right road in helping to overcome these

drawbacks of traditional programs," Lapidus emphasized. "H.E.A.R. enables us to help school systems, head start and welfare projects; even HMO and multi-phasic medical screenings to provide a better means of identification, treatment and follow-through of suspected hearing and middle ear problems."

Mr. Lapidus also said there was more to come. "The more involved we get, the more we realize how much electronic data processing can help us. We now have a method of monitoring the accuracy of test results as well as the test procedures."

"For the first time, effective audiological services can be provided to rural areas. The H.E.A.R. Program can be run in rural schools and supervised by only a few periodic visits by one audiologist serving a wide area. The school nurse can contact the audiologist by phone to ask questions, while both can refer to their computer readouts. The audiologist can also help upgrade testing procedures by referring to specific cases and specific results."

And still there's more. Mr. Lapidus said, "We are now in the process of finalizing the means of periodic computer updates listing those children who have been to the doctor, for example; listing the diagnosis and correlating medical and audiological test findings in order to constantly re-evaluate pass-fail criteria."

The computer system will also specify those students who have not followed through on their recommendations, thus enabling local personnel to immediately contact the family.

H.E.A.R. still maintains human control and intervention during this entire process. Even though the computer now prints out retest forms for all children who need further testing with retest recommendations (i.e. pure tone threshold right ear, tympanometry retest each ear, etc.), the final decisions are still made by the tester.

"We think this program is flexible and dynamic enough to begin to provide a better approach to the essential task of accurate early identification and follow-through of potential auditory disorders in children."

"The statistical gathering ability programmed into this entire package has allowed us to accurately assess the real answers to numerous questions of performance level in school systems of controlling ear disease and its potential for contributing to learning disabilities. The automatic statistical printout following the complete testing of a school system has given school boards and audiological personnel the kind of information never before attainable in an accurate, concise and complete manner."

Comments and questions regarding the H.E.A.R. Program may be directed to: Joel Lapidus, M.A., Administrator of Field Services, Metropolitan Centers, 1507 Washington Street, West Newton, Massachusetts 02165.

BHI...

[Continued from Page 10]

swers thousands of telephone and written requests for information annually.

Q. Describe BHI's TV and radio public service program.

A. BHI public service announcements feature celebrities with corrected hearing handicaps, including Academy Award-winning best actor Art Carney, Washington Redskin halfback Larry Brown, comedian Norm Crosby, actress Nanette Fabray, Governor George Wallace, and singer Johnnie Ray. In the spots, each acknowledges his or her own hearing disorder and encourages others who suspect a problem to seek help. In addition to the celebrity PSAs are several scenario spots aimed at specific audiences or special topics. BHI public service announcements are aired by all major networks—NBC, CBS, ABC—and hundreds of local stations across the country. The theme: You should hear what you're missing.

Q. What kind of booklets does BHI produce?

A. One of the Institute's most successful booklets is "They Overcame Hearing Loss," featuring the personal success stories of 12 prominent hearing-impaired Americans from all walks of life—television, football, theater, boxing, movies, government, and business. Another effective BHI booklet is "Sounds or Silence? We Chose Hearing Help." Using personal case histories and photographs, it features everyday people telling about their own hearing problems and where they went for help. Interspersed among the case histories are informative vignettes. BHI also distributes hearing help literature prepared by other organizations, such as the Council of Better Business Bureau's "Facts About Hearing Aids."

Q. Does BHI offer any special assistance or information to consumers?

A. One of BHI's public service programs is a toll-free Hearing HelpLine. HelpLine provides assistance of hearing field professionals, consumer affairs personnel, law enforcement officials, and consumers in handling questions, suggestions, and complaints about hearing loss, hearing help, hearing aids and hearing aid services.

AMERICAN AUDIOLOGY SOCIETY Income and Expense Statement January 1, 1976 - August 31, 1976 INCOME

Cash on Hand at 1/ 1/ 1976	\$4,046.38
Membership Dues	13,736.82
	\$17,783.20

EXPENSES

Equipment	176.40
Expendable Supplies	421.09
Postage	958.43
Duplicating Costs	222.32
Telephone	256.16
Travel	43.80
Publication Costs	10,010.60
Audit and Bookkeeping Services	167.50
Purchased Services/ Contract Services	465.72
Miscellaneous Expense	57.15
Computer Service	155.97
	12,935.14
Income (Deficit)	\$4,848.06

OCTOBER 1976

- 5 Annual Meeting of American Audiology Society, Las Vegas, Nevada.
- 5-6 Research Forum of the Association for Research in Otolaryngology, Las Vegas Convention Center, Las Vegas.
- 6-10 1976 Annual Meeting of O&O, Las Vegas, Nevada.
- 18-21 International Audiology Society, Florence, Italy.
- 21-24 National Hearing Aid Society Annual Meeting, Palmer House, Chicago.
- 22-24 Occupational Hearing Conservation Workshop, Basic and Refresher. Fee: Basic \$175; Refresher \$75. Contact: Continuing Education, Pacific Medical Center, P.O. Box 7999, San Francisco, CA 94120. Phone: 415-563-4321.
- 27-29 Speech Communication Aids for the Deaf Short Course. Fee: \$335. Contact: Continuing Engineering Education, George Washington University, Washington, D.C. 20052. Phone: 202-676-6106.
- 30-31 Western Regional Auditory Approach Conference: The Hearing-Speech Chain - A.G. Bell and Listen Foundation, Sponsors; Dr. Mark Ross, Leahea Grammatico, speakers. Hilton Hotel, Denver, Colorado.

NOVEMBER 1976

- 2-5 American Speech and Hearing Association, Houston, Tx.
- 4-11 15th Pan-American Congress of Otolaryngology and Bronchoesophagology, New Orleans. Write to Creative Associates, 5005 Newport Drive, Rolling Meadows, Illinois 60008.
- 6-7 5th Symposium on Polytomography of the Temporal Bone. Wright Institute of Otolaryngology and Community Hospital. For contact: J. William Wright, Jr., M.D. Wright Institute of Otolaryngology and Community Hospital, 1500 N. Ritter Avenue, Indianapolis, Indiana 46219.

Q. Could you describe BHI's speakers program in greater detail?

A. A major part of BHI's speaker's program is its audio-visual presentations. "You and Your Hearing," the Institute's first slide/ cassette show, is a basic, general-purpose presentation designed for broad usage. "Silence is Lonely," a new presentation, is targeted to the special needs and interests of senior citizens. In addition to slide shows, BHI distributes sample 10- to 20-minute general information speeches on hearing loss and hearing help.

Q. Who is on the BHI Advisory Board and what is its function?

A. The BHI Advisory Board is comprised of distinguished ear specialists, hearing field leaders, celebrities with hearing loss, and others prominently associated

with the hearing impaired. Advisory Board members provide vital input into Institute projects, as well as spokesmen for BHI's speaker's bureau, literature, TV and radio appearances, and other Institute projects.

Q. Does BHI ever cooperate with other hearing organizations?

A. We refer people to other hearing educational centers for certain types of information and also to direct providers of hearing help services. We distribute literature developed by various hearing organizations. Perhaps the best example, though, is Better Hearing Month—a cooperative effort conducted each May by BHI and hearing organizations across the country to focus public attention on hearing loss and available hearing help. For this program, BHI prepares a comprehensive 100-page kit of ready-to-use communications tools for use by hearing field personnel at the local level. Nationally, BHI initiates a barrage of print and broadcast publicity.

Q. How long has BHI been in existence?

A. BHI formally began in April, 1973.

Q. What is the Institute's IRS classification?

A. BHI is a nonprofit educational organization and as such is classified as a 501(c) (3) (exemption # 42-1018642) by the Internal Revenue Service. Tax-deductible contributions from all sources are welcome. Help others to hear what they're missing. Send your gift today.

Calendar of Events

- 12-16 International Symposium on Child Language Acquisition, Acapulco, Mexico. Write to Dr. Juan Garrasco-Zanini, Instituto Mexicana de La Audicion Y El Lenguaje, A.C. Avenue Professor 141-A, Mexico, D.F.
- 16, 17, 18 Annual Meeting of Society for Ear, Nose and Throat Advances in Children. New Orleans, Louisiana Maison Dupuy Hotel. Write to Dr. Basharat Jazbi, The Children's Mercy Hospital, 24th at Gillham Road, Kansas City, Missouri 64108.
- 16-19 Acoustical Society of America, San Diego, California.
- 20-23 American Speech and Hearing Association, Houston, Tex.

FEBRUARY 1977

- 20-23 Ear Surgery Course, J. Brown Farrior, M.D., Tampa, Fla.

MARCH 1977

- 5-12 Medical Audiology Workshop, Vail, Colorado. For information write to: Box B210, 4200 E. 9th Avenue, Denver, Colorado 80262.
- 13-19 11th World Congress of Oto-Rhino-Laryngology, Buenos Aires, Argentina. For information write: Dr. Alfredo Cordero, Secy., Av. Rocque S. Pena 1110-2° Piso, Buenos Aires.
- 14-17 NOISEXPO '77, The National Noise and Vibration Control Conference and Exhibition, Holiday Inn, O'Hare/ Kennedy Chicago. Technical papers, films and other presentations are solicited: NOISEXPO '77, 27101 E. Oviatt Road, Bay Village, Ohio 44140.

APRIL 1977

- 14-16 16th Annual Electronystagmography Course, New Orleans. Contact Wallace Rubin, M.D., 3333 Kingman Street, Metairie, Louisiana 70002.

MAY 1977

- 9-11 1977 IEEE International Conference on Acoustics, Speech Signal Processing, Hartford, Connecticut. Write to Harvey Silverman, IBM-T.J. Watson Research Center, P.O. Box 218, Yorktown Heights, New York 10598.
- 17-20 Acoustical Society of America, State College, Pennsylvania.
- 25-29 White House Conference on Handicapped Individuals, Washington Hilton Hotel, Washington, D.C. Write to: Jack F. Smith, White House Conference on Handicapped Individuals, 1832 M Street, W., Suite 801, Washington, D.C. 20036

AUGUST 1977

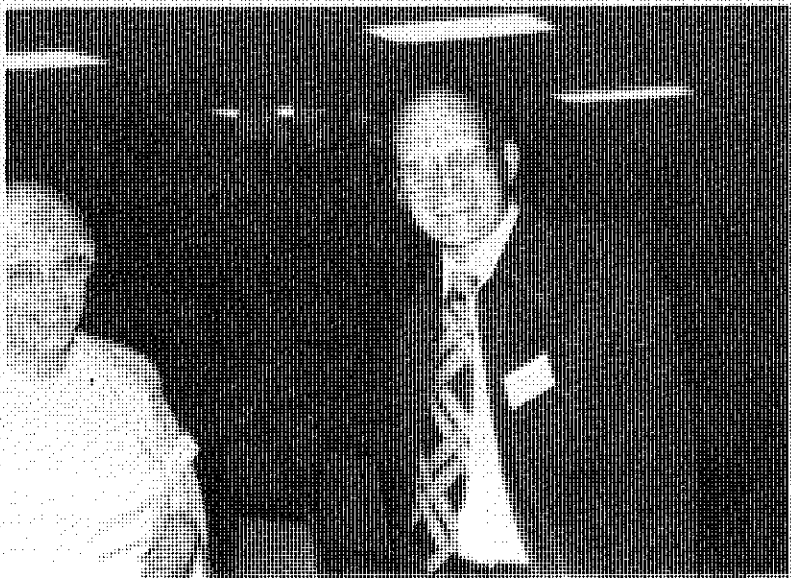
- 15-18 Symposium of the International Electric Response Audiometry Study Group, Hebrew University, Jerusalem, Israel. For information write to: Prof. H. Sohmer, ERA Organizing Committee, Medical School, P.O.B. 1172, Jerusalem, Israel.

CORTI'S ORGAN WILL ACCEPT

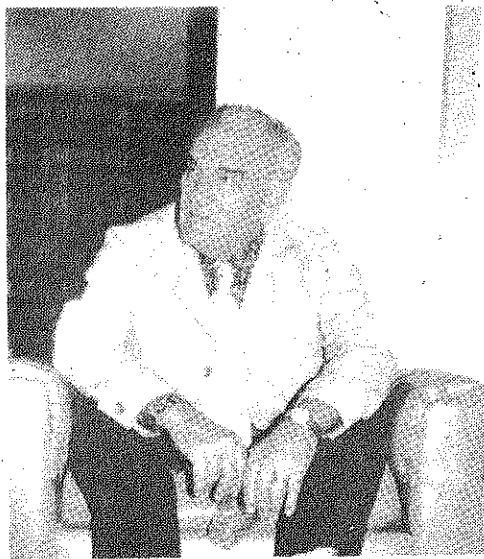
ADVERTISEMENTS

IF INTERESTED WRITE TO:
American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

Highlights of Las Vegas Meeting



Marge Skafte and John Sinclair talk after the meeting.



The editor of J.A.A.S., Don Harris, discussing Journal affairs.



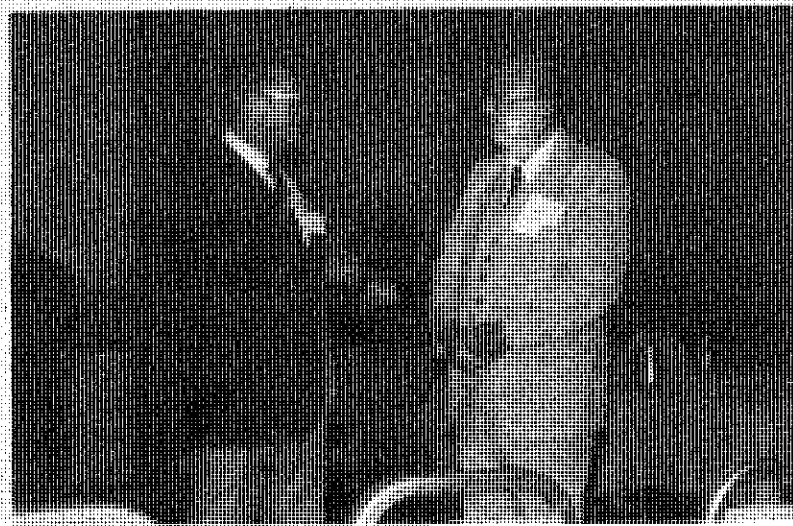
Ye Editor of Corti's Organ, Marion Downs, advertising a local Colorado product.



Our President, Dix Ward, relaxing before the meeting. (Playboy of the Month?)



Jim Jerger listens to President Dix Ward.



President W. Dixon Ward presenting the plaque to Jim Jerger after Jerger's Carhart Memorial Lecture.

President's Message . . .

[Continued from page 3]

not reduce noise levels to 90 dBA. Although this posture has recently been successfully challenged by a can-manufacturing industry, at the moment the burden of proof remains on industry to show infeasibility, rather than proof of feasibility being on the shoulders of OSHA. As any ex-debator knows, that's dirty pool, son.

Why has the Department of Labor taken such an unyielding stand against plugs and muffs? One reason they offer is because some workers don't like to wear them; another, because it is possible to wear them incorrectly, either by accident or design. Not only must the employer identify a hazard and make it possible for the worker to avoid it, say our rulers (the politicians and bureaucrats who are busy minding everyone else's business because they have none of their own), he must eliminate the hazard no matter the cost. The employer may not have promised the worker a rose garden, but good ol' Uncle is going to make sure he supplies it anyway. And if this is not possible, then the employer must act in loco parentis and make sure that his "children" are good little boys and girls and wear their ear protection dutifully.

Well, those are the main points of contention in the present hearings. Workers and their representatives would like all noises reduced to non-hazardous levels (and a little lower) regardless of cost; their evidence consists mostly of the shortcomings of ear protection. Industry would like to spend as little as possible, to avoid the inevitable price increases that could put them at a disadvantage in competition with other products and foreign manufacturers. The thrust of their testimony is that hearing conservation programs can eliminate noise-induced hearing loss and that levels below 90 dBA represent a negligible hazard. As a consumer and taxpayer, yet one who wants noise-induced hearing loss stamped out (at least that loss caused by actions other than one's own), I hope that a reasonable compromise can be reached, for every worker to avoid noise-induced hearing loss

if he chooses to do so.

Noise control experts, not too surprisingly, are solidly behind OSHA, but manufacturers of muffs and plugs oppose the stricture—unreasonable, in their view—against their products. I suppose that audiologists, or at least those engaged in industrial audiometry, should also be opposed to the Department of Labor ban-the-muff crusade, and particularly to an 85-dBA regulation. If noise levels were reduced to 85 dBA, there would be no reason to continue monitoring the hearing of industrial workers, as any losses that developed would have to be attributed to presbycusis, nosocausis, or sociacausis—the influence on hearing of the aging process, disease, or the noises of everyday life, respectively. However, since reduction to 85 dBA or even 90 dBA of all industrial noises is far, far in the future, it is safe to say that we need not worry that our audiometers will soon be gathering dust.

One more of the questions addressed by the proposed regulation (although not directly involved in the BBN report) is important to our field: the criterion of a "significant" shift in hearing and what is to be done when it occurs. As published in 1974, the proposed criterion would be an average shift of more than 10 dB at 2, 3, and 4 kHz, relative to the original baseline audiogram, which as far as I can tell from the meager published literature would not occur due to random variability in serial audiometry more than 10% of the time. However, I have heard rumors that an alternative criterion is being considered. Let us hope that they don't do something stupid like adopting a criterion of a 10-dB shift at any frequency, an event that requires retesting and reinstruction on the use of ear protection; I suspect that a third or more of all workers would have to be so retested.

As I say, there will probably be no hint of the final form of the OSHA regulation until after the election. Indeed, if it is necessary to appoint a new Secretary of Labor, he might have to have still another round of hearings. Perish the thought!

W. Dixon Ward

**Suspense story of 1977:
Will A.A.S. change its name?
See Pages 1, 3 & 4 for pros and cons.**

**Second
Notice
For 1977
Membership
Dues Pg. 8**

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

THIRD CLASS

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society

Vol. 2, No. 1

January 1977

Roger M. Angelelli Reports on Successful European Study Tour

The "XIII" International Congress of Audiology was anything but unlucky. From October 18 to 22, 1976, approximately 250 members gathered in the Palazzo dei Congressi in Florence, Italy,

to present their scientific papers. Participants represented such countries as Sweden, Belgium, United Kingdom, USA, Italy, France, Norway, W. Germany, Denmark, Japan, The Nether-

lands, Poland, Finland, Spain, Yugoslavia, Mexico, Austria, Israel, Czechoslovakia, Hungary, Rumania, Greece, Thailand, Egypt, Canada, Switzerland and Bulgaria. The working languages of the Congress were English, French and Italian. Simultaneous translation in these languages were provided by a skillful team of female translators.

The Palazzo dei Congressi was an impressive structure blending the "old" architecture, where several conference rooms were located, with the new design of the twentieth century. The new structure housed the magnificent oval-shaped auditorium with star-studded light dimmers in the ceiling, and comfortable chairs with sliding armrests, under which were jack plugs for earphones. A closed-circuit television network was in operation to give information regarding the speakers in session in different rooms of the Palazzo. This system was also used to announce bus departures for various tours.

The major areas covered in the program included: (1) Advances in acoustic impedance measurements, (2) Effects of noise, (3) General audiology, (4) Peripheral coding of auditory signals, (5) Inner ear: ECOG, (5) Impedance measurements, (6) Ototoxic drugs: psychoacoustics; embryology, (7) Auditory processing of speech and its implications with respect to prosthetic rehabilitation, (8) Brain-stem and cortical auditory responses, (9) Hearing aids and related problems.

Florence or as the Italians refer to it, "Firenze", is a city of approximately 500,000 inhabitants. It is a city of many churches, of magnificent splendor and serenity constructed before Christopher Columbus embarked upon his voyage to the new world. One is overwhelmed



New Name for AAS?

"A rose by any other name..."

Recently a great deal of concern has been expressed over the name of our organization, the American Audiology Society. Opposition to the name comes primarily from member audiologists who feel that the generic name "Audiology" in the name of our organization is inappropriate. They argue that the AAS name is inconsistent with the stated interdisciplinary nature of the Society. The concerned audiologists apparently feel a proprietary right to the name of their profession which they are reluctant to share with a multidisciplinary society. Public confusion can exist when individuals engaged in allied disciplines are referred to be "audiologists" because of their membership in the American Audiology Society.

Problems regarding the current name of the Society came to the forefront in recent federal investigations. Representatives from the American Speech and Hearing Association have been involved in depositions and testimony during 1975 and 1976 during which confusion has been apparent to the interrogators about the role of ASHA and the role of AAS. This confusion has been recorded in direct testimony between Kenneth O. Johnson, Executive Secretary of ASHA, and the U.S. Patent Office over the petition of ASHA to have NHAS's use of the term "Certified Hearing Aid Audiologist" declared illegal. The Federal Trade Commission hearings in Washington, D.C. regarding the proposed trade regulations for the hearing aid industry brought out the fact that hearing aid

dealers might represent themselves as "audiologists" because of their membership in AAS.

An audiologist is defined by ASHA, Medicare, Medicaid, and 29 state licensing bodies in terms of specific academic requirements, regulated experience criteria, and successful passing of a nationally standardized comprehensive written examination. The definition of an audiologist does not require membership in ASHA, but ASHA will supply letters of equivalency to applicants who meet the standards by which audiologists are defined. All definitions are related to standard curricula in Departments of "Audiology and Speech Pathology".

Historically, the AAS name was established by the Executive Committee in June of 1973. Only three members of the Executive Committee at that time (three audiologists) expressed opposition to the name American Audiology Society. The name was selected so that the AAS could pattern itself after the International Audiology Society. There is now apparently some conflict in this issue since AAS and ASHA have both petitioned the International Society to be admitted as the audiology representative from the USA.

A Task Force of Audiologists met during the summer of 1976 in Washington, D.C. under ASHA sponsorship to generate resolutions regarding the future directions of the audiology profession. The Task Force, including a number of AAS members,

(Continued on page 4)

A.A.S. to Ballot On Name Change

The Executive Board of A.A.S. agreed at the Las Vegas meeting to submit a constitutional name change proposal to the membership. Before this is done, however, a straw ballot is to be taken on which name shall be proposed. This issue of Corti's Organ contains a ballot on page 11, for the members to indicate a preliminary preference for or against a change, and a choice of names that might be proposed.

The Interrogatory section will be devoted to opinions of the Executive Committee regarding name changes. In addition, C.O.

has invited Jerry Northern to describe the background for considering a change. His article "New Name for AAS" is featured on page 1. The Interrogatory begins on page 3.

After reading these articles, please cut out the ballot and return it to Ross Roeser as soon as possible. This is not a final vote on a name change, but it will guide the Executive Committee in sending out a By-Law change proposal to the membership.

We need feed-back from every member of A.A.S. Please care, one way or the other, about the organization's future.



Roger M. Angelelli at JFK before departure to Italy.

(Continued on page 6)

CORTI'S ORGAN is a quarterly publication of the American Audiology Society, printed in Dallas, Texas.

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A Janus Message

As a casual participant in the evolution of medicine, it's become apparent to me that we've lost touch with the past. The lessons and mistakes of our forebearers, no matter what our field of interest, serve as a scaffold, bridging the ignorance with progress. If we continue to ignore the ages as we do the aged, then we are squandering a huge reservoir of experience, talent and wisdom.

That's why the Politzer Society was formed in 1975. Composed of members interested in the history of otolaryngology and related fields, the group serves as a vehicle for the expression of the past to be appreciated by the present. Like the Greek figure Janus, that two headed sage, the membership of the Society strives to see where we are going while always looking behind. Indeed, what's past is prologue and we all need to appreciate that fact. Let's not be overwhelmed by technology to the exclusion of the lessons of times. An understanding and sensitivity for those individuals who comprise the roots of our speciality will help otolaryngology grow, fertilized with individuals nurtured by history.

It's been said that the only thing we have learned from history is that we don't learn from history. In these times when we need to summon all the wisdom of the past as possible, it behooves those interested in the progress of mankind to prove that aphorism false.

Take time and look where you have come from! It's a sad fact of medical life that efforts at "progress" are sometimes mere reduplication of past achievements gone unrecognized. Maybe our supposed intellectual evolution is attributable to sophisticated advertising, Madison Avenue magic and journalistic "hype", rather than good fresh ideas.

The Politzer Society offers you a ticket to the past, an opportunity to meet and hear about those who constructed the superstructure of otolaryngology. Remember, you have an appointment with history. Be sure and keep it.

Arlen D. Meyers

President, Politzer Society
(For information on membership, write to Dr. Meyers at: Dept. of Otolaryngology, University of Colorado Medical Center, 4200 E. 9th Avenue, Denver CO 80220)

Gerber is New Prexy for SENTAC

At its fourth annual meeting, the Society for Ear, Nose and Throat Advances in Children (SENTAC) has elected an audiologist to its presidency. The new president of SENTAC is Dr. Sanford E. Gerber who is Professor of Audiology and Coordinator of the Speech and Hearing Center at the University of California, Santa Barbara. All of Dr. Gerber's predecessors in this office have been otolaryngologists; and his election marks the kind of close cooperation and mutual respect which exists between our professions. Also at that meeting in New Orleans, Dr. M.C. Culbertson of Dallas was elected Vice-President. The continuing secretary-treasurer is Dr. B. Jazbi of Kansas City. Also two new trustees were elected: Dr. Michael Seidemann (an audiologist from New Orleans) and Dr. William Moran (an otolaryngologist from Oklahoma City.)

SENTAC is a multidisciplinary society oriented toward the advancement of pediatric-oto-

laryngology -audiology- speech pathology.

The convention began with a Mississippi River sternwheeler cruise the evening of November 15th. The formal meetings began November 16th with presentations by local New Orleans participants in the areas of pediatric otolaryngology, pediatric allergic problems related to middle ear disease, pediatric voice disorders, and pediatric audiological issues in middle ear measurements. The presenters for that session were George D. Lyons, Ray J. Lousteau, Michael Sly, Jeannette K. Laguaite, Donald Ramp, Michael F. Seidemann, and Greg Givens. Meetings on November 16th adjourned at noon so that the attendees could participate in a city tour around the New Orleans area that afternoon. On November 17th there were several presentations in pediatric otolaryngology in addition to the following presentations in pediatric

[Continued on Page 4]

JOBS, JOBS, JOBS

No, we don't have any available, but we'd like to list yours. Need a Friendly Otolaryngologist in your medical group, or a competent Audiologist in your practice, hospital or clinic? Send in your job requirements and the old ORGAN will try to get you a body.

Zwislocki Receives International Prize

Milan, Italy - Dr. J. Zwislocki, of the Institute for Sensory Research in Syracuse, New York, has been unanimously awarded the 1976 Centro Ricerche e Studi Amplifon Prize (approximately 6,000 dollars). This prize is the most important award established to honor audiological scientists.

This announcement was made by Mr. A.C. Holland, president of CRS Amplifon.

"Dr. Zwislocki," Mr. Holland said, "has been unanimously voted by all the 15 members of the Award Committee because of his contribution and research on cochlear coding and on the sensory perception of the auditory message."

Dr. Zwislocki was presented the CRS Amplifon International Prize on the 25th of November 1976 in Milan; two lectures were also organized at Centro Ricerche e Studi, with Dr. Zwislocki discussing

his auditory theory both with the otologists and with the bioengineers.

CRS International Prizes have been awarded since 1973 to:

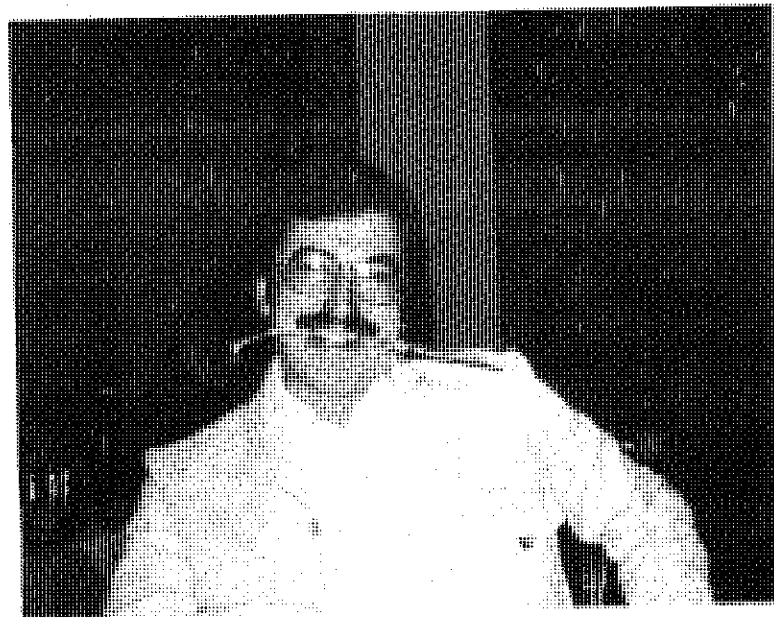
- Prof. Tokuro Suzuki, Shinshu University, Matsumoto, Japan;
- Prof. Erik Wedenberg, Karolinska Institute of Stockholm, Sweden;

- Prof. Hallowel Davis, Central Institute for the Deaf of St. Louis, U.S.A.;

- Madame Suzanne Borel Maissonny, Centre Experimental Orthophonique and Pedagogique of Paris, France;

- Prof. James Jerger, Baylor College, Houston, Texas, U.S.A.

"I am extremely proud," A.C. Holland commented, "That the name of such an eminent scientist as Dr. Zwislocki will from now appear amongst those of the other world-famous figures to whom CRS has granted its prize."



The new president of SENTAC, Sandy Gerber, says everything's coming up roses!

Editorial

In view of the fact that Aram Glorig was the prime force behind starting the American Audiology Society, and is one of the past presidents, we have asked him to comment on the name change issue. MPD-RHR.

AUDIOLOGY—WHAT IS IT?

Humpty Dumpty says, "Words mean what I want them to mean." The crux of our present dilemma is, who is Humpty Dumpty in this case? If one uses Dorland's Medical Dictionary, audiology is defined as "the study of hearing, including treatment of patients with impaired hearing." This rather broad meaning presents considerable confusion since only physicians are licensed to treat patients in the traditional sense. Dorland's Medical Dictionary also defines otology as "the sum of what is known regarding the ear." But Humpty Dumpty, in this case, has given it the flavor of medical and surgical treatment of the ear.

The Humpty Dumpty of audiology (ASHA) on the other hand is hoping to restrict the field of audiology only to those who hold, or are eligible for, ASHA certification.

The audiologists of the United

[Continued on page 4]

Letters to the Editor

David P. Goldstein: An issue has recently come to my attention about the A.A.S.

At recent FTC hearings, ASHA representatives have had to defend the notion that the term audiologist only applies to persons having completed a particular curriculum. Hearing aid people would like this term to apply to their salesman. In their argument against restricting the term audiologist to those who have completed a particular curriculum, the dealers cited A.A.S. as support for their position that anyone can use the term audiologist. They based their contention on use of the term audiology in the title of an organization which accepts people from many disciplines including hearing aid dealers who are not trained as audiologists.

While I support the goals of

A.A.S. I worry if its title is being used to subvert other related and worthwhile goals. I understand that some of the founding fathers (should I say persons) expressed concern over this potential problem. Now that their fears have come to pass I would like to suggest that the Executive Committee change the title of the organization to more appropriately reflect the varied disciplines it embodies.

Earl R. Harford: I cannot endorse strongly enough the position to change the name of A.A.S. In no way should we allow A.A.S. to be used by the hearing aid sales element as rationale for hearing aid dealers without credentials using the designation of "audiologist." It is obvious that this is the case; consequently we must change the name of A.A.S.

THE INTERROGATORY

Corti's Organ has asked the members of the Executive Committee to respond to the questions: "Do you favor a name change for AAS? Why? If you favor a change, what name would you prefer?"

Jaime T. Benitez: Please be advised that I do not favor changing the name of our society. Therefore I would not like to consider any of the proposed names.

Leo G. Doerfler: My only comment is that any change which will clarify language and its meaning rather than further degrade it would be welcome. If the use of the term *Audiology* in the name of our Society tends to confuse the identity and/or competencies of our members, and I believe this may be the case, then a change in title is in order.

David A. Dolowitz: I feel that the present name best exemplifies the effort to unite all aspects of the field of audiology and do not feel that we need concern ourselves about hearing aid members and using the name illegally. It is more important that we concentrate on seeing good Federal and State hearing aid laws.

A. Bruce Graham: The name *Audiology* has come to mean the profession rather than just an interest in hearing; therefore, I can see the need to drop that particular word because the purpose is still sharing the ideas with otolaryngologists, audiologists, and those interested in the production of hearing aids. I think the word "hearing" should certainly be a part of the Society name. The American Hearing Society and the National Association of Hearing Speech Action which was formerly the American Hearing Society, The American Association for Hearing and the American Hearing Association are too close to ASHA with just one item removed. Of those suggested, my favorite is the American Society for the Study of Hearing which would give the initials ASSH.

J. Donald Harris: I vote for a change in the name to "The American Auditory Society."

Gilbert Herrer: I am greatly concerned about the confusion now created in the United States by the use of the term *Audiology* in the Society's name. It does allow those non-audiologist members of the society, who choose to do so, to imply they are audiologists (definition as is generally accepted in the United States) when such is not the case. I do not believe that our learned Society should be placed in a position to allow this to happen. I, along with many others, joined the Society to benefit from the interaction with people from a variety of disciplines. I expected the Society would be a learned one and not involved in professional political business. As an audiologist, the latter for me would be taken up through the American Speech and Hearing Association.

I concur that a change in the Society's name seems in order to avoid misinterpretation of the term audiologist, and to avoid the

Society's being a battleground between disciplines interested in hearing impairment. On the contrary, a name change would lend itself to just the opposite: a society where people from varied interests can interact and learn from each other.

I could see our Society's name changed to such titles as: American Auditory Society or American Society of Audition without compromising its interdisciplinary character and intent.

I sincerely hope the Executive Committee gives serious thoughts to the issue you set forth in your letter, and that positive steps are soon initiated within the Society to resolve the issue.

Norma Hopkinson: Although originally I did not favor changing the name of the Society, I have since decided that a change of name would simply avoid a whole set of problems. Some of the problems are based on the possibility of certain legal decisions which will define audiology more narrowly than the Society had originally intended. Other problems are assumed ones, stemming from the lesser than broad concept that led to the initial organization of the society to bring together all specialties interested in audition, without concern for clinical qualifications, research expertise, electroacoustic skills, etc.

Of the possible suggestions that were listed, I would choose: 1) American Auditory Association or 2) American Auditory Society. This choice was made largely by the process of elimination. The words *Ear* and *Hearing* got ruled out because they also seem narrow in concept. Somehow I have prejudice against the word *National*, the reasons for which escape me. If I were beginning all over again without any input I would still favor American Audition Association (or Society), or American Association (Society) for the Study of Audition. These names seem to me to represent more scope than the suggested ones, though I recall, the Committee generally rejected *Audition* as part of a new name.

F.H. Linthicum, Jr.: I personally think the present name of the American Audiology Society should suffice. Changing it at this time so early in its organization might confuse future members. However, if it is the decision of the membership to change the name, I favor the first on the list, i.e., American Hearing Society.

Ralph Naunton: The use of the term "*Audiology*" in our Society's name, is I believe, correct usage; I cannot therefore support a change of name. This belief is not dictated by any wish to diminish the importance of clinical audiology nor to enhance the standing of any other professional group. Nor do I wish to belittle the American Speech and Hearing Association, an organization of which I am proud to be a Member and Fellow.

Raymond Carhart was one of those who introduced the term "*audiology*"; but it would do

little justice to his name were we to insist, that for all time, only those may call themselves audiologists who have taken the course of study and examination at the Masters level prescribed by ASHA. Such a course would also run counter to Davis' contention, made in 1947, that *Audiology* is "...a meeting of varied specialties" and that no one person can be expert in all of the disciplines involved. The American Audiology Society has taken the rational approach in deliberately setting itself up as a forum for all of the professionals with a legitimate interest in audiology, whether they be diagnostic and/or rehabilitative audiologists, physiatrists, biologists, surgeons, psychologists, teachers, speech pathologists, or social workers. To change the name of the Society by excluding the word *Audiology*, would be to deny reality.

Ross J. Roeser: I feel that the question of whether or not members of the American Audiology Society should change the name of the organization is embodied in the more basic question, "What is the present meaning of the term audiologist (note that I refer to audiologist, not *audiology*)?" Members should also be made aware of the possible advantages and disadvantages of changing the name.

I don't think there is any question that the term *audiology* refers to the science of hearing or the study of hearing; in fact, that is the literal meaning of the word. Nor would one question the fact that *otology* is the science dealing with the anatomy, physiology and pathology of the ear. However the question to be asked is whether or

not one who merely studies hearing can be called an audiologist.

If the answer to the above question is yes, then by this reasoning we can also say that one who studies the anatomy, physiology and pathology of the ear is an otologist. Since we don't want to muddy the already murky waters, I would hope that no one outside the medically trained discipline would want to be referred to as an otologist. If the answer is no, then the alternate question becomes what is the meaning of the term audiologist.

Dr. Kenneth Berger recently reviewed the genealogy of the words "*audiology*" and "*audiologist*" in the September-October issue of the *Journal of the American Audiology Society*. As pointed out in this comprehensive review, the term audiologist has had a long and rather controversial history, dating back some forty-five years. During this period the term has been claimed to represent several groups, from those individuals involved strictly in the dispensing and fitting of hearing aids to the individual having specified university training in the audiology curriculum. However, in reviewing the article it is apparent that throughout recent years the term audiologist has come to represent a specific professional entity: the individual who has completed university training at least at the Master's level with a primary curriculum in the science of hearing and its disorders. This is evidenced by the fact that the Society of Hearing Aid Audiologists, as it was once called, changed its name to the National Hearing Aid Society in 1965. Apparently this change occurred to reduce the or-

ganization's identification with the discipline of audiology. In addition, the majority of states now have licensure that limits the use of the term audiologist to those with prescribed training in audiology, eliminating most individuals in the commercial sale of hearing aids from using the term.

Since the term audiologist has come to represent a professional discipline rather than a generic area of interest, I feel that we should change the name. One of the disadvantages of not changing the name is that the multidisciplinary nature of the membership, and thus the purpose of the Society, is not represented in the present name. In addition to the university trained audiologist, we have otolaryngologists, hearing aid dealers, nurses, speech pathologists, and engineers in the Society.

A more serious problem that has emerged throughout the existence of the Society is the connotation that membership in the Society has some relationship to professional qualifications in audiology. Even though our membership requirements are minimum, and membership indicates only that the member has an interest in human hearing, is it not reasonable to assume that all members of a group that has a professional image are members of that profession? For example, if you knew an individual who was a member of the American Medical Society or the American Lawyers Society would you not assume that he or she was a physician or lawyer?

On several occasions the name of the Society has been used to im-

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High Frequency Audiometer Survives Plane Crash



Despite serious injury to the airplane and at least 12 of the 85 passengers aboard, a specially made high frequency audiometer safely survived the crash without serious injuries. This is the second serious injury that the audiometer has succeeded in

avoiding in the past three years. Parenthetically, on both of the previous occasions the audiometer was accompanied by Marion Downs, Editor of Corti's Organ, who also happened to survive.

The Interrogatory

[continued from page 3]

ply competence in the area of clinical audiology. Members were warned against using the name of the Society in advertisements. Yet, reprimands had to be given to two members because of violating this principle. The most serious incident in which the Society's name was used to indicate that the members had competence in clinical audiology was during recent FTC testimony. During that testimony it was implied that all members of the Society were audiologists.

The disadvantages that I see in changing the name have only to do with paper work and finding a more suitable name. As Secretary/Treasurer for the Society it was my responsibility to file all of the tax forms, establish IRS accounts, establish proper bank accounts, and a myriad other activities too numerous to mention. In fact, had I known of all of the paper work involved with establishing an American Audiology Society, it is certain I would have been more reluctant to readily accept my post. However, now that we have all of these matters attended to, it will only involve a minor amount of work to change the name if that is what is decided upon by the membership.

If the membership decides to change the name, as it is my hope that they do, the new name must reflect the multidisciplinary nature of the membership. The New Merriam-Webster Pocket Dictionary defines the word "auditory" as, "of relating to hearing or the sense or organs of hearing." My choice, therefore, is the American Auditory Society.

Hiroshi Shimizu: I oppose the change of name of the Society for the following reasons: 1) The term "Audiology" is internationally recognized. 2) So called certified audiologists should be called "Clinical Audiologists" like clinical psychologists and the discipline should hold a title in "Clinical Audiology." 3) It is very unfortunate that the term "audiology" means "clinical audiology" in our country, and therefore that "audiologists" are referred to as those who do only hearing assessment and serve for aural habilitation or rehabilitation. A Statement of Orientation drafted in 1955 defines audiology as the "science of hearing." Audiology is concerned with anatomy and physiology of the auditory system, acoustics, psycho-acoustics, history-pathology of the auditory system, its biochemistry, medical aspects of hearing impairment, audiometry, aural habilitation and rehabilitation. "It is the mobilizing of professional skills to cope with the phenomena of hearing." When an otologist studies a temporal bone, he is working in the field of audiology. It should be one of the missions of the AAS to remind or let the public know what audiology is; it is not just audiometry, by inviting more experts in various disciplines as members under the present name.

Let us not let our Journal become another journal of clinical audiology."

F. Blair Simmons: This is not the first time this argument has come before us and since I was unable to be at the full meeting (nor did I know this was on the agenda) I want to express my own feelings about this "problem." First, whatever a hearing aid dealer decides to do in representing himself is, I think, irrelevant to our Society. I really can't get excited about a proprietary attachment to the word, audiologist. Physicians have the same kinds of problems, osteopathic physicians, chiropractic physicians, etc.

I thought one of the aims of our Society was to further fields of hearing by being beyond that sort of garbage and attempting to work together, not at cross purposes with one or another special interest groups. I can't really see that "real audiologists" have an identity crisis at hand and if the official groups having to do with hearing and speech are going to react to everything a hearing aid dealer does, then we do, indeed, have problems.

In brief, I don't think we ought to change the name of the Society. We have a considerable amount invested in it as it is.

Dix Ward (Past President): The issue seems to be fairly simple. The term "audiologist" evidently means, at least in the USA, a person who is certified by ASHA as having been exposed to certain didactic and practical courses of instruction and who is therefore qualified to measure all aspects of the hearing process. I doubt that there is anything that can be done to modify this situation. The question, then, is whether the term "audiology" is to be only "what audiologists do," which is what the name-changers subscribe to, or whether it is to mean "the body of knowledge concerning the hearing process," which is what its roots imply—and indeed what it meant at the time of the formation of the International Society of Audiology a couple of decades ago.

I oppose changing our name, for several reasons. One is that I refuse to grant that membership in Society X automatically implies that all members are Xists. For example, how many of you are members of the National Geographic Society? Are you therefore a geographer? Another reason is that I get irritated at a country trying to impose its will on the rest of the world—even if only in matters definitional. If I were to support a change here, then consistency would demand that I propose a change in the International Society as well, even though they have had the name far longer than an "audiologist USA" has even existed. The final reason is that I don't like any of the alternatives that have so far been proposed. The only one I would vote for would be the "American Association for the Scientific Study of the Audi-

tory Process", which clearly states our true objectives but is so long that I doubt that others would support it.

Laura Ann Wilber: Although at one time it was strongly believed that conceptually audiology was a discipline which involved many aspects of hearing and was theoretically primarily concerned with the study of hearing, over the years this rather limited academic interpretation has become less wholeheartedly accepted. People who are not really concerned with the study of hearing, but only in one limited area of contact with hearing impaired persons have chosen to call themselves audiologists and some people have used membership in associations such as ours, that contain the name audiology in its title, to call themselves audiologists. They have said that by virtue of being members of the Society they should be considered audiologists and, therefore, could perform all functions carried out by any audiologist. As one who practices audiology in a clinic, participates in audiological research, and continues to study the problems of hearing and hearing assessment, I have not felt that that view was appropriate.

I have seen how State Governments can become confused over interpretation of the word audiologist and can be led to believe that anyone who has ever used a tuning fork, who has ever pushed a button on a screening audiometer, or even who might never have caused sounds to be emitted from audiometers for the purpose of assessing hearing might be the same as one who had full knowledge of and facility with many types of evaluation procedure.

Just as I doubt seriously that physicians would wish to join an organization called a Society of Doctors, and would not want such a society to speak for them, since doctors could encompass persons with Ph.D.'s, Ed.D.'s, LL.D.'s, as well as M.D.'s, so do I also have doubts about belonging to a society which calls itself an audiology society, but which has persons who are not versed in the many aspects of audiology as it functions in clinics, in academia, and in research.

Although I sincerely hope that at some future time the name of our society will no longer be an issue, at this point in time I feel it is. Therefore I strongly urge that we change the name of our society from American Audiology Society, to American Auditory Society.



Editorial

(Cont'd from page 2)

States remind me of the New Yorker's view of the U.S. Isn't it rather provincial to hold the view that we (U.S.) should restrict the meaning of the word when the rest of the world has accepted and promoted its very broad definition? Consider, a moment, the words otology and audiology. Oto refers to the ear and audio refers to hearing. Audio comes from audire (to hear). These words then have two distinct meanings. Since otology refers to the ear in toto and hearing is then subsumed under the ear it would appear that audiology should be subsumed as the part of otology that deals with hearing or the function of the ear.

Consequently there should be no confusion between an otologist and an audiologist. But what do we do about the hearing researcher who studies hearing and the clinician who studies hearing to determine the presence of pathology? What of the anatomist who studies the architecture of the ear or the pathologist who studies abnormalities in this architecture?

In my early fantasies about a society my principle thoughts were directed toward an organization that would produce cross fertilization of thought applied toward integrating the broad multidisciplinary nature of audiology as defined by those who shared in conceiving and birthing the discipline called "audiology."

It is apparent from some of the responses Corti's Organ has received that my attempt to keep audiology at the high level originally intended by its forefathers has not been well received. Consequently, although I feel a name change is wrong, I shall bow to Humpty Dumpty, (in this case a membership vote), if it decides that audiology should be restrict-

ed to include only those trained to measure and evaluate hearing for clinical purposes.

Aram Gerber

Gerber

[Continued from page 1]

tric audiology-speech pathology. Susan Gray presented a paper on the preschool screening of speech, language and hearing. Irving Shapiro presented a paper concerning his experiences with CROS hearing aids on children. Charles Croft presented a paper on conductive hearing loss in patients with velopharyngeal insufficiency. Marion Downs presented a paper on the educational and social implications of conductive hearing loss. Maurice Mendell, Sanford Gerber, and Don Hood presented a panel discussion on central audiometry. The November papers in audiology-speech pathology included a presentation by Fred Bess concerning tone delayed auditory feedback in young children, a paper by Mary Pannbacker, on indications and contraindications for speech therapy in cleft palate, a paper presented by Daniel M. Schwab on the use of Politzer technique for treating middle ear atelectasis and serous otitis media in children and a paper by Quinn C. Beery, on Eustachian tube ventilatory function testing in children. The convention was held at noon on November 18th.

Since all of the attendees spent so much of their time enjoying the world renowned New Orleans cuisine, all were certain to come home overweight.

Next year's convention of the Society will be in Chicago.

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New Name for AAS?

[continued from page 1]

approved a resolution indicating their preference that ASHA be the official organization of professionally trained audiologists. The Task Force approved the following resolution:

"Because of the need to provide a singular and unified thrust in matters on the national level which have relevance to the future provision of quality services to the hearing impaired, the Audiology Task Force feels that the American Speech and Hearing Association should be the sole national organization responsible for the maintenance of those legal and governmental activities which serve to clarify and define the roles and responsibilities of the professional audiologist."

Proponents of the AAS name change argue that if the stated

aims of AAS were to "increase knowledge of audiological and promote the science of audiology" there would be no question about the AAS name. However, nowhere are the terms "audiology" or "hearing tests" to be found in the AAS constitution—except in the Society name! The By-Laws of the organization state the purpose is: "to increase knowledge of human hearing, promote correction of hearing and habilitation and rehabilitation of the hearing impaired individual and to end it shall co-ordinate and disseminate information, particularly through the holding of regular meetings, and the publication of reports by members."

The current AAS membership is about 900 members of which approximately 70 per cent are audiologists by training.

Jerry L. Nor...

Article and Book Reviews

"Acoustic Impedance & Admittance—The Measurement of Middle Ear Function"

Alan S. Feldman and Laura A. Wilber, Eds. Baltimore: The Williams and Wilkins Company, 383 pgs., 1976, approximately \$24.00.

The intent of this new textbook is to provide fundamental information about acoustic impedance measurement for the beginner; however, the experienced impedance user also will find it extremely useful to have all this information available in one book. Feldman and Wilber have gathered a broad spectrum of contributors from the United States and Europe to write on basic measurement techniques and advanced mathematical considerations of impedance and admittance.

Feldman and Wilber contributed five of the fourteen chapters including the Introduction, Anatomy and Physiology of the Middle Ear, Tympanometry, Acoustic Reflex Measurement, and the Middle Ear Battery. Shallop prepared an excellent Historical Development chapter; Lamb and Dunkel wrote on Impedance Measurement with Children; medically related chapters include Eustachian Tube Evaluation by Holmquist and Pathologies and Middle Ear Function by Terkildsen; and excellent discussion is included of the Dynamic Characteristics of the Intra-Aural Muscle Reflex by Erick Borg; Djupesland is included with a thorough discussion of Non-acoustic Reflex Measurement; more technical chapters by Zwislocki - The Acoustic Middle Ear Function, and Van Camp and Cretin discuss Principles of Acoustic Impedance and Admittance; an interesting chapter on applications of impedance measurement to areas of speech pathology by McCall completes the text. The editors also included two appendices, one on equipment calibration standards under preparation by an ANSI Working Group and one list of names and addresses of impedance meter manufacturers.

The Williams and Wilkins Company has done an excellent job in establishing an easily readable format for the text. I do feel that some of the text figures are less than expected. For example, Feldman's tympanograms in Chapter 6 are of an infinite variety of style and reproduction and Wilber's middle ear anatomy drawings in Chapter 3 could have been better.

The strength of the text is reflected in the editor's attempts to bring together the complex worlds of impedance and admittance. Clinically oriented readers should gain a great deal of understanding about mhos,

ohms, cubic centimeters of compliance, and, of course, impedance.

J.L.N.

"Hearing Disorders"
Little, Brown and Co., N.Y.
\$12.50.

EDITOR: Jerry L. Northern
REVIEWER:
Don W. Worthington

According to the preface of this book it is apparent that the editor has made an attempt to put together a group of tutorial essays on the state of the art with regard to the current status of hearing impairment. In contrast, most other books on this subject have presented a summary of research studies or a review of clinical procedures. The editor states that this book was put together to provide relevant information from a wide variety of specialists on "the current status of basic auditory science and the clinical arts." The text is broken down into five separate parts: Part I describes the clinical evaluation of hearing; Part II discusses the hearing process; Part III discusses the medical aspects of hearing loss; Part IV reviews otologic-audiologic habilitation and rehabilitation; and Part V discusses Future Directions. This review will attempt to provide a brief summary of each major section and to highlight the contributions offered by the authors.

The Clinical Evaluation of Hearing

In general, the five major chapters in this section provide an excellent overview of the clinical evaluation of the patient with hearing impairment and/or vestibular problems. Three of the five chapters are extremely easy to follow and combine a useful review of the "basics" as well as an emphasis of the trends in the clinical evaluation. Dr. Northern's chapter on Impedance Audiometry provides an excellent overview of the comprehensive and significant role that impedance audiometry has come to play. In this reviewer's mind, Dr. Northern maintains an excellent balance between theory, historical background and present clinical interpretation of impedance results.

Dr. Feldman's chapter on diagnostic audiology proves an excellent synopsis of how the various audiological tests can be subdivided into categories for attempting to specify the site of lesion. Dr. Feldman has highlighted those site-of-lesion tests which have presently been shown to have the highest predictability for time invested.

Dr. Norris' chapter on ENG is in a logical sequential manner and gives a brief, but com-

prehensive overview of the area of electronystagmography. This chapter would be particularly good for medical students and residents who do not have time or want to take time to get more deeply involved in the evaluation of the vertiginous patient.

In Part I there are two chapters that this reviewer found to be disappointing. The first is the chapter on otologic hearing examination by Dr. Sheehy and the other is the chapter on the audiologic evaluation by Dr. Keith. A reading of Sheehy's chapter would tend to make one believe that the only information the otologists can add to the evaluation of bearing is that information provided by tuning forks. His description of the tuning fork tests and their interpretation is excellent. However, in my opinion he has emphasized this area to the exclusion of other important otologic aspects of the hearing examination. Dr. Keith's chapter on the audiologic evaluation attempts to present a number of rather complicated and difficult-to-understand concepts, such as intra-aural attenuation, the occlusion effect, and the proper utilization of masking. In his attempt to cover these areas and to keep his discussion brief he has provided the situation where a little information can be dangerous. I asked several medical residents to read this particular chapter and they found this chapter to be very confusing, especially the description of masking and its application.

II. The Hearing Process

In Part II of this text, the hearing process is broken down and presented in stages. It starts with the physics of sound, then proceeds to cover the anatomy and physiology of the middle ear, inner ear, and central auditory processes. The initial chapter of this section called "Physics of Sound" is excellent as a review. However, it is probably too brief and too condensed for the reader with little or no background in these areas.

Chapter VII, "Mechanisms of the Middle Ear," by Dr. David M. Lipscomb is one of the best-written chapters on middle ear anatomy and physiology that I have ever read. The material is well organized, follows a logical sequence, and is beneficial in helping one to understand the exact nature of the middle ear.

Chapter VIII, "Physiology of the Inner Ear," by Dr. John Ryan and Dr. Peter Dallos again is a well-prepared comprehensive overview. A great deal of complex material is covered, but very briefly, making the chapter a good overview of this area.

Chapter 9 on "Central Auditory Aspects," by Dr. George E. Lynn

and John Gilroy is interesting reading but does not present the same degree of sophistication found in the other chapters in this section. These latter authors do present some interesting case studies, however, and it is unfortunate that the organization of this chapter was not handled more effectively.

III. Medical Aspects of Hearing Loss

Section III is not all-inclusive with respect to etiology of hearing loss, but certainly presents some very pertinent facts with regard to a significant variety of the potential causes of hearing loss. I was particularly impressed with the chapter on ototoxicity by Dr. Bergstrom and Ms. Patricia Thompson. The chapter not only provides a complete review of the effects of ototoxic drugs on the body systems, but also presents information regarding the type of hearing loss one might expect. The other chapters in this section provide an excellent review with regard to the etiological factors that are covered. These chapters should be read and reviewed carefully by all specialists associated with hearing impairment and the hearing impaired.

IV. Habilitation and Rehabilitation

Upon reading and re-reading this section on Habilitation and Rehabilitation, it continues to be evident that there is indeed a paucity or lack of information with regard to aural rehabilitation. Please do not misunderstand, the information that is presented in this section by all the authors is pertinent and well done. However, it is difficult to report on an area where little is known or practiced. The chapter by Marion Downs is designed to highlight the effect a fluctuating hearing loss caused by otitis media can have on the overall development of a child, specifically receptive language development. Hopefully, the medical practitioners, pediatricians and otolaryngologists will read this chapter carefully and note the key issues which are described and discussed. Dr. Stewart has highlighted the role the various professionals should play in the care and management of the hearing impaired child. If each of the specialists involved with the auditorially handicapped child would fulfill his role as described in this chapter, we could soon revolutionize the child's medical care and education. Dr. Binnie's chapter on Relevant Aural Rehabilitation suggested that professionals, specifically audiologists, should include more definitive measures in developing a complete program in

aural rehabilitation. Some of the measures he suggests are the utilization of auditory and auditory-visual profiles, the use of distinctive feature analysis, and the establishment of a lip-reading profile. At the present time there are probably less than a handful of centers in this country that are utilizing any of these techniques in helping to outline or define an aural rehabilitation program.

Dr. Teter's chapter on Clinical Considerations of Hearing Aids presents first a good basic overview of hearing aid terminology and second, a description of the various types of hearing aids. Certain portions of this chapter reflect his personal biases, as demonstrated by his statements regarding the use of in-the-ear hearing aids and hearing aids for children. I should point out that Dr. Teter emphasizes one extremely important point. That is, **more information rather than less is required when fitting hearing aids on children.**

V. Future Directions

Of all the major sections of this book, the section dealing with future directions is probably the least impressive. There are some strong points, however, e.g., Dr. Simmons presents an excellent overview of the potential that acupuncture holds for the possible treatment of hearing loss. Dr. Vernon, et al. and Dr's. Brackmann and House do an excellent job in reviewing the areas of implantable hearing aids and direct stimulation of the auditory nerve. In short, these chapters present excellent overviews of what has been done in the past with regard to their specific areas, and all three indicate the need for further work in the future. This section seems to be moving along extremely well until one reaches the concluding chapter in the text, the chapter entitled, "The Future Research Needs of Audiology," by Dr. J. Donald Harris. Suddenly the theme of future directions seems to come to a standstill. Dr. Harris' chapter would best be titled, "A Review of the State of the Art" rather than "The Future Research Needs of Audiology."

Summary

Dr. Northern has successfully met his goal of collecting relevant information from a wide variety of specialists on the current status of basic auditory science and the clinical arts. This text does indeed provide a comprehensive review of clinical evaluation, treatment, and care. If there is any area that appears particularly weak, it is the area of exploring future considerations.

[Continued on page 6]



Group scene of skiers: A group of enthusiastic snow buffs who attended last year's Colorado Medical Audiology Workshop at Vail, Colorado. Members of the group are [standing, left to right] Larry Olson, Bobbie Finlayson, Mike Seilo, Loren Webb, and Dave Sheehan; [kneeling at left] Dwight Webb; [seated, left to right] Diane Steenerson, Duane Crawford and Carol McRandle.

Article and Book Reviews

[Continued from page 5]

ations. The only areas of major omission which are evident are discussions of electrocochleography and brain stem audiometry. These two major topics are mentioned in one or two locations in the text but never discussed.

I highly recommend this book as a text for all ENT and pediatric residents. I suggest that it would contain pertinent information which could easily be reviewed prior to their taking professional board examinations. I further suggest it as an excellent review source for all audiologists, and in fact, if I were teaching a course in medical audiology, I would certainly use a major portion of this text as reference material.

"Of Acceptable Risk - Science and the Determination of Safety"

William W. Lowrance.
Published by William Kaufman, Inc., Los Altos, Calif., 1976.

This book should be mandatory home work for anyone connected with OSHA, and particularly for those making regulations for noise control. The author explores the nature and measurement of health hazards, and in the process defines the underlying concept of safety itself. Although he emphasizes the contributions of scientists and technicians, he also considers the general features of the social context within which safety decisions are made.

Why is that one group of eminent experts say that exposure to a certain hazard is safe, while another group of authori-

ties, equally reputable, urges that exposure to the same thing should be restricted because it is unsafe? At what points do debates such as that over noise stop being scientific and objective and start being political and subjective? How can anyone gauge the public's willingness to accept risk? Just what sort of a decision making tool is this notion of "safety?"

These are the questions the author addresses himself to, with real examples of current interest to highlight each point. He first defines "safety" as a "judgement of the acceptability of risk", and proceeds to develop the key terms "acceptable" and "risk" in detail. For example, in assessing risk, he lists the reasons for making measurement of a hazard: (1)To define the conditions of exposure; (2)To identify the adverse effects; (3)To relate exposure with effect; (4)To estimate overall risk.

Of these measures, one of the least understood methods turns out to be public opinion of acceptability of the risk. "Public referenda have been applied in only a few instances, mostly where public interest is intense and where people experience the hazard in an immediate, personal way, as with noise. People's subjective rating of noises can be analyzed, as can lawsuits and annoyance complaints. Such analyses can correlate annoyance with factors of socioeconomic status, fear, importance of the noisy activities, perception of fair treatment, and the extent to which the noise can be controlled or reduced".

But even in the public's perceptions of the extent of risk there lie factors that may be infinitely variable. One is that our opinions of what is ac-

ceptable depend on the degree to which we are free to opt for or decline the risk. "We are loathe to let others do unto us what we happily do to ourselves." The array of such variables influencing safety judgements is long and well developed by the author.

In some hazards it is the impossibility of knowing the true nature of the risks that is most upsetting: an "anguishing over uncertainty itself". Such is the case in the opposition to the SST, where the dictum "if in doubt, don't" has prevailed. Whether there are purely technical solutions to such problems remains to be seen, of course. Some problems are attended by great uncertainty or strong political overtones, and become as much a political activity as a scientific one.

One solution is for scientists to convert an "arrogation of wisdom" into a "stewardship of wisdom". First, they can include critical, articulate laymen in their policy-making group. Second, they can place on record their sources of conflict of interest or bias. Third, they can identify which components are scientific facts and which are value judgements. Fourth, they can disclose in detail the bases of their appraisals. Fifth, they can reveal the degree of certainty with which the various parts of the decisions are known; and sixth, they can express their findings in clear terms, free of technical jargon.

These are the kinds of admonitions that all scientists should welcome, whatever their endeavors. An important book, this, to clean some of the cob webs from our over-worked minds.

—M.P.D.

Eleventh Otology-Audiology Vail Workshop Announced

The 11th Colorado Otology-Audiology Workshop promises to uphold the long tradition of combining outstanding scientific teaching sessions, social conviviality and winter fun! Twelve scientific sessions and ten practicum presentations have been scheduled featuring a faculty of 35 speakers.

The theme of the conference is again "The Ear". New faculty participants include Richard Bobbin, and Douglas Webster of the Kresge Hearing Lab. of the South and Louisiana State University Medical Center. Dr. Bobbin has recently uncovered a drug, aminooxyacetic acid, which seems to protect the ear against noise exposure and will speak on the possible biochemical nature of noise-induced hearing loss. Dr. Webster has recently noted brainstem degeneration in animals with contrived conductive hearing loss and will speak on the relationship of peripheral hearing loss to central auditory anatomy. From the medical point of view, Derald Brackmann from the Otologic Foundation in Los Angeles, will speak on electrical response audiometry with acoustic tumor patients as well as an update on the status of cochlear implants. Burton Jaffe, from Temple University in Philadelphia will present material on ENG and Diagnosis in the dizzy patient, and audiologic diagnosis in acoustic tumors. John Shea of Memphis, will be the Workshop Special Guest and present lectures on treatment of fluctuant hearing loss, experience with Proplast in reconstruction of chronic ears, and technique/results of the TORP prosthesis.

Additional new faculty include Bill Rintelmann of the University of Pennsylvania School of Medicine and W. Dix Ward of the

University of Minnesota Medical School. Dr. Rintelmann will speak on the problems of over-amplification with hearing aids, and research with time compressed speech. Dr. Ward's presentation will relate to auditory adaptation and the "safe-noise dose."

Returning faculty members include: Ray Battin, Houston, Texas; LaVonne Bergstrom, University of California at Los Angeles; Charles Berlin, Louisiana State University Medical Center; F. Owen Black, Eye and Ear Hospital, Pittsburgh; Peter Dallos, Northwestern University; Alan Feldman, SUNY Upstate Medical Center at Syracuse; Garth Hemenway, Harbor General Hospital; Lars-Goran Johnsson, University of Michigan Medical School; David Lim, Ohio State University; David Lipscomb, University of Tennessee; Geary McCandless, University of Utah Medical Center; F. Blair Simmons, Stanford Medical School; and Paul Ward, University of California at Los Angeles.

Facts from the Feds

The Bureau of Community Health Services, in a grant to Ohio State University, is convening a select panel in January, 1977 to assess guidance material and develop recommendations relating to Health Services for testing and treating preschool children with hearing impairments. The participants will include state health agencies' representatives as well as experts in

Medicine and Audiology.

The Bureau of Community Health Services has awarded funds to Vanderbilt University (Dr. Earl Hartford) to conduct a national conference on Impedance Audiometry in June, 1977.

Don Harrington

[See page 10 for announcement]

European Tour . . .

[Continued from page 1]

by the size of the churches, its beautiful doors, its statues such as the world famous statue of David, in the Gallery of the Academy, sculptured from one solid piece of marble by Michelangelo himself. The statue towers majestically in the presence of six other great statues by the famous sculpture and artist. Among some other sites common to the visitors of the International Congress were the famous Ponte Vecchio Bridge with its many gold shops and pedestrian traffic only, the Uffizi Museum, with one of the most valuable art collections in the world, the famous bronze door by Ghiberti called the "Gate of Paradise" and across the street rises the Duomo, Brunelleschi's immense and daring dome. Another landmark was the great Franciscan Church of Santa Croce, one of the most imposing monuments of Gothic Architecture, with many frescoes by Giotto. Also in the church are the tombs of famous Italians: Michelangelo, Machiavelli, Galileo, Rossini, Dante, Leonardo de Vinci, and others. A leather

school was located within Santa Croce where young men would make and sell their famous leather purses, wallets, and memorabilia to the wide-eyed tourists including this member. In short, to know Florence is to love her in spite of her longevity. The XIII International Congress of Audiology could not have selected a more appropriate site for mixing science with culture and not the least of which was street shopping.

Roger M. Angelelli
Mercy Hospital - Pittsburgh

Gerber . .

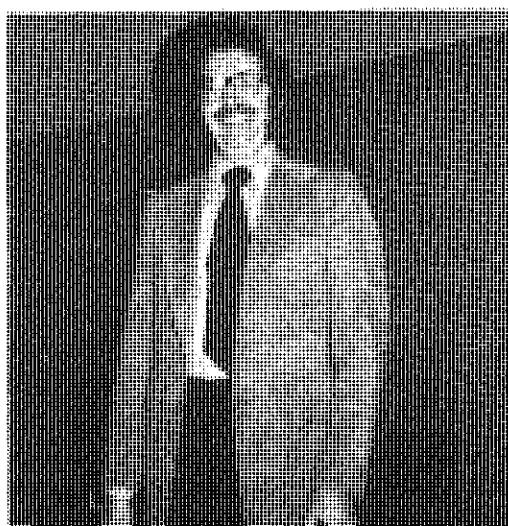
[Continued from page 4]

immediately prior to the ASHA convention which is November 18-21. Inquiries relative to the Chicago convention, as well as membership information should be directed to Basharat Jazbi, M.D., Secretary-Treasurer, SEN-TAC, Chief, Section of Otolaryngology, The Children's Mercy Hospital, 24th at Gillham Road, Kansas City, MO 64108.

AAS Members At American Speech And Hearing Association



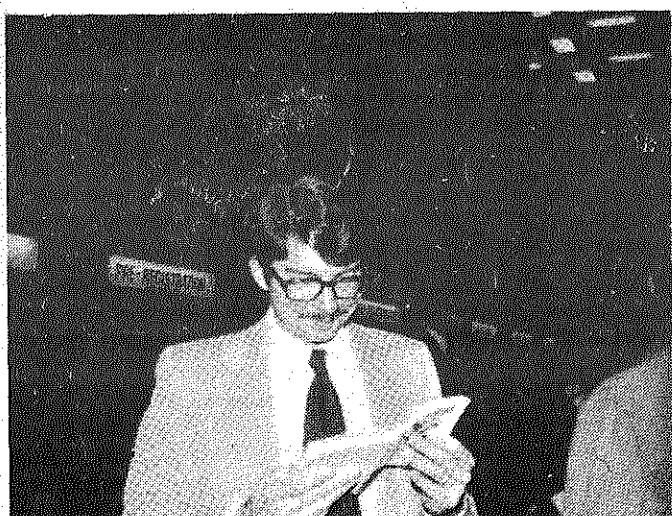
Leo Doerfler and friend.



Ralph Naunton at a committee meeting.



President-elect Blair Simmons with Don Harrington.



Ye Associate Editor of Corti's Organ, Ross Roeser



Carol Ehrlich and Robert Goldstein.

Tremmel, Hill Get BHM Awards

Washington, D.C., (November 8, 1976) -- Clarence B. Hill, president of Hill's Hearing Aid Service in Oklahoma City, Oklahoma, and DuWayne Tremmel, president of Better Hearing Aids, Inc., in Marshfield, Wisconsin, have received 1976 Better Hearing Month Achievement Awards from the Better Hearing Institute. The awards were presented by BHI President Joseph C. Lucke at the recent National Hearing Aid Society conference in Chicago.

Lucke commended Hill and Tremmel for their "outstanding information and education efforts on behalf of the millions of hearing-impaired Americans during National Better Hearing Month." "Thanks to you and others like you," he added, "this year's campaign was one of the most successful in history."

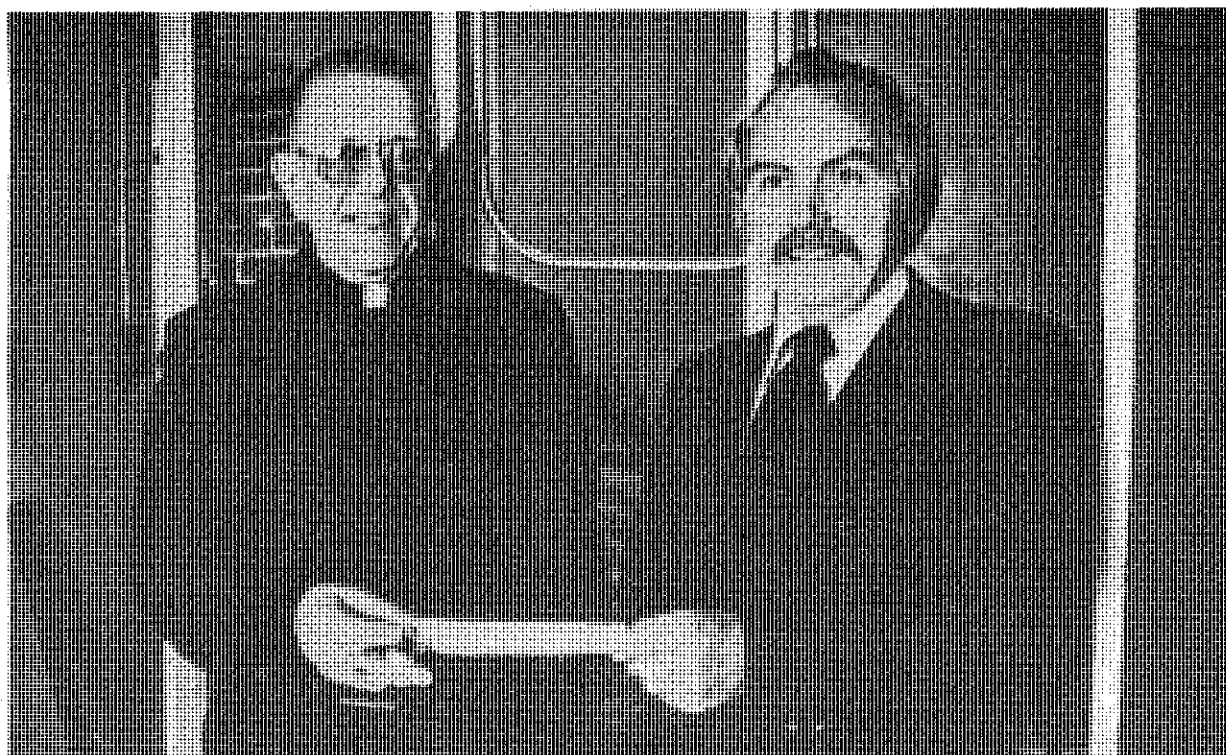
Also honored for their Better Hearing Month efforts were runners-up Louise Olsen of Arrowhead Hearing Aid Center, Duluth, Minnesota, and William Syers Jr. of Davenport Hearing Aid Center, Inc., Davenport, Iowa.

The Better Hearing Institute, Washington, D.C. is a nonprofit educational organization dedicated to informing the hearing impaired, their families and friends, and the general public about hearing loss and available hearing help. Better Hearing Achievement Awards are presented annually by the Institute to NHAS Public Affairs Committee members who are most active and effective during Better Hearing Month.

School Receives Grant From Hearing Aid Foundation

A grant of \$1000 was made this year to St. Rita's School for the Deaf, Cincinnati, Ohio, by the Hearing Aid Foundation. St. Rita's School for the Deaf is a long established school that has provided excellent help to deaf and severely hearing impaired children. Hearing Aid Foundation is a non-profit organization providing grants to charitable organizations dedicated to aiding the hearing impaired. Its grants are made possible by contributions from hearing aid specialists, manufacturers and suppliers and by concerned individuals.

The photograph shows Father Klenke, director of St. Rita's school, receiving a check from Stanley K. Foster (right), President of the Ohio Hearing Aid Dealers Association, who made the presentation of the grant on behalf of the Hearing Aid Foundation.



Father Klenke and Stanley K. Foster (Right)

Calendar of Events

1977

FEBRUARY

20-23 Ear Surgery Course, J. Brown Farrior, M.D., Tampa, Fla.

MARCH

5-12 Medical Audiology Workshop, Vail, Colorado. For Information write to: Box B210, 4200 E. 9th Avenue, Denver, Colorado 80262.

13-19 11th World Congress of Oto-Rhino-Laryngology, Buenos Aires, Argentina. For information write: Dr. Alfredo Cordero, Secy., Av. Rocque S. Pena 1110-2° Piso, Buenos Aires.

14-17 NOISEXPO '77, The National Noise and Vibration Control Conference and Exhibition, Holiday Inn, O'Hare/Kennedy Chicago. Technical papers, films and other presentations are solicited: NOISEXPO '77, 27101 E. Oviatt Road, Bay Village, Ohio 44140.

APRIL

14-16 16th Annual Electronystagmography Course, New Orleans. Contact Wallace Rubin, M.D., 3333 Kingman Street, Metairie, Louisiana 70002.

MAY

9-11 1977 IEEE International Conference on Acoustics, Speech Signal Processing, Hartford, Connecticut. Write to Harvey Silverman, IBM-T.J. Watson Research Center, P.O. Box 218, Yorktown Heights, New York 10598.

25-29 White House Conference on Handicapped Individuals, Washington Hilton Hotel, Washington, D.C. Write to: Jack F. Smith, White House Conference on Handicapped Individuals, 1832 M Street, W., Suite 801, Washington, D.C. 20036

JUNE

7-10 Acoustical Society of America, State College, Pennsylvania.

20-22 National Symposium on Impedance Screening for Children, Vanderbilt University, Nashville, Tenn. Contact Earl Harford, Division of Hearing and Speech Sciences, Vanderbilt University, Nashville, Tenn., 37212. (See below for announcement).

JULY

4-9 Ninth International Congress on Acoustics, Madrid, Spain.

AUGUST

15-18 Symposium of the International Electric Response Audiometry Study Group, Hebrew University, Jerusalem, Israel. For information write to: Prof. H. Sohmer, ERA Organizing Committee, Medical School, P.O.B. 1172, Jerusalem, Israel.

OCTOBER

31-Nov. 2 Evoked Electrical Activity in the Auditory Nervous System, Chicago, Ill. Write to: Ralph Naunton, M.D., Dept. Otolaryngology, University of Chicago, Chicago, Ill. (See page 9 for program.)

NOVEMBER

18-21 American Speech and Hearing Association, Chicago, Illinois.

DECEMBER

12 American Audiology Society, Miami Beach, Florida

13-16 Acoustical Society of America Meeting, Miami Beach, Florida.

REQUEST FOR 1977 DUES

—SECOND NOTICE—

IF YOU HAVE NOT PAID 1977 MEMBERSHIP

DUES, PLEASE DO SO IMMEDIATELY.

NAME: _____

DATE: _____

[Fill in Only If You Want Your
Address Changed]

Send Check or Money Order To:

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235
Attention: Ross J. Roeser, Ph.D.

[\$20.00 dues; \$13.00 is for the journal, and \$7.00 is for
membership in the Society]

Call for Papers

VANDERBILT

A national Symposium on Impedance Screening for Children: Current Status for Detection of Middle Ear Disease will be held at Vanderbilt University, Nashville, TN, June 20-22, 1977. The Program Committee is inviting abstracts of investigations on this subject. Those accepted for presentation will have expenses paid. Submit 1 to 2 page abstract on unpublished and/or current research to: Dr. Earl Harford, Division of Hearing and Speech Sciences; School of Medicine; Vanderbilt University; Nashville, Tennessee 37212. Deadline is February 21, 1977, for receipt of abstracts.



Naunton Announces International Symposium

An exciting conference is being scheduled at the University of Chicago by Ralph Naunton, head of the otolaryngology department. The full projected program will study in depth the possibilities of stimulating and measuring the auditory nervous system electrically, as follows:

EVOKED ELECTRICAL ACTIVITY IN THE AUDITORY NERVOUS SYSTEM

A University of Chicago Symposium

To be held at the Center for Continuing Education

University of Chicago, Chicago, Illinois, U.S.A.

October 31-November 2, 1977

Monday, A.M.

Welcoming Remarks

Anatomy Chairman: R. Lorente de No'

1. Ultrastructure of the Cochlear Duct C.A. Smith
2. Afferent Innervation H. Spöndlin
3. Efferent Innervation W.B. Warr

Coffee

Physiology Chairman: J.M. Goldberg

4. Electrical Equivalents to the Bekesy Traveling Wave in the Mammalian Cochlea D.H. Eldredge
2. Hair Cells (Round Table Discussion) J.M. Goldberg (Chairman), M.L. Bennett, P. Dallos, (J.Fex), A. Flock, T.F. Weiss.

Lunch

Monday, P.M.

Physiology Continued

5. Hair Cells (Round Table Discussion Continued)
6. Cochlear Electrophysiology P. Dallos

Coffee

7. Facts and Illusions Related to the Methods for Recording Whole-Nerve Action Potentials D.H. Eldredge
8. Auditory Nerve Responses N.Y.S. Kiang

Adjourn

Monday Evening

Electrococleography [I] Chairman: G. Salomon

9. Recording Techniques S. Zerlin
10. Stimulus Response Relations J.J. Eggermont
11. Behavioral Threshold Comparisons R.F. Naunton

Tuesday, A.M.

Electrococleography [II] Chairman: F.B. Simmons

12. Adult Clinical Diagnosis I. H.A. Beagley
13. Adult Clinical Diagnosis II. J.M. Aran
14. CM in Clinical Diagnosis S. Zerlin
15. ECoG Diagnosis (Round Table) J.M. Aran, H.A. Beagley, J.J. Eggermont, R.F. Naunton, S. Zerlin.

Coffee

Inner Ear Prostheses Chairman: N.Y.S. Kiang

16. Significance of Inner Ear Pathology J.R. Lindsay
17. Instrumentation F.B. Simmons
18. Psychoacoustic Considerations R.C. Bilger
19. Value of Implants F.O. Black

Lunch

Tuesday, P.M.

Brainstem Chairman: J.E. Rose

20. Auditory Fibers and Primary Cochlear Nuclei E.S. Kane
21. Central Auditory Pathways (J.M. Harrison)
22. Physiology of Brainstem Auditory Centers (C. Tsuchitany)

Coffee

23. Basic and Clinical Aspects of Brainstem Recording in Humans (Round Table) H. Davis (Chairman), R. Galambos, G.M. Gerken, A. Starr, K. Terkildsen, A.R. D. Thornton

Adjourn

Wednesday, A.M.

Cortex Chairman: R.A. Butler

24. Anatomy I.T. Diamond
25. Physiology J. Brugge
26. Distribution on the Scalp of Sound-Evoked Responses W. Goff
27. Clinical Aspects of Evoked Responses G. Salomon
28. Evoked Responses in Children of Uncertain Diagnosis. I. Rapin and M.M. Cohen

Coffee

29. Symposium Summary and Fore-view H. Davis

Adjourn

ANSI Specs. Defined

SUMMARY

American National Standard for
Specification of Hearing Aid
Characteristics

Courtesy of Technical Marketing
Group

Zenith Hearing Instrument Corp.

Definition of Some Terms:

Saturation sound pressure level for 90dB input sound pressure level. The sound pressure level developed in a 2 cm³ earphone coupler when the input sound pressure level at the microphone sound entrance on the hearing aid is 90dB SPL with the gain control of the hearing aid full-on. The abbreviation for this term is SSPL90.

High-frequency-average saturation sound pressure level. The average of 1000, 1600 and 2500Hz values of SSPL90. The abbreviation for the term is HF-average SSPL90.

Note: The prefix "HF" is used to differentiate this quantity from the "output" which uses 500, 1000 and 2000Hz for averaging.

High frequency-average full-on gain. The average of the 1000, 1600 and 2500Hz values of full-on gain. The abbreviation for the term is HF-average full-on gain.

Reference test gain control position. The setting of the hearing aid gain control so that the average of the earphone coupler sound pressure levels at 1000, 1600 and 2500Hz, with a pure-tone input sound pressure level of 60dB is 17 dB plus 1dB less than the HF-average SSPL90, or, if the gain available will not permit this, and for AVC aids, the full-on gain control position of the hearing aid.

Recommended Measurements

SSPL90 curve - With the gain control full-on and with basic settings of controls, record or otherwise develop a curve of coupler sound pressure level versus frequency over the range 200-5000Hz, using a constant input sound pressure level of 90dB.

HF-average SSPL90. Average the 1000, 1600 and 2500Hz SSPL90 values.

Full-on gain curve. Full-on gain shall be measured with the gain control set to its full-on position and with a sinusoidal input sound pressure level of 60dB, or, if necessary to maintain linear input-output conditions, with an input sound pressure level of 50dB. For AGC aids, the input sound pressure level shall be 50dB.

HF-average full-on gain. Average the 1000, 1600 and 2500Hz full-on gain values.

Frequency response curve. With the gain control in the reference test position, and with

an input sound pressure level of 60dB, record or otherwise develop the frequency response curve over the range 200-5000Hz or a lesser range determined by limits 20dB below the average of the 1000, 1600 and 2500Hz response levels. For AGC aids and input sound pressure level of 50dB is to be employed.

Harmonic distortion. With the gain control in the reference test position and with an input sound pressure level of 70dB, measure and record the total harmonic distortion in the coupler output for input frequencies of 500, 800 and 1600Hz.

In the event the response curve rises 12dB or more between any distortion test frequency and its second harmonic, distortion tests at that test frequency may be omitted.

Equivalent input noise level (L). With the gain control in the test reference position determine the average of the coupler sound pressure levels at 1000, 1600, and 2500 Hz for an input sound pressure level of 60dB. (Lave). Remove the acoustic signal and record the sound pressure level in the coupler caused by inherent noise (L2). Then Ln equals L2 - (Lave - 60) dB.

Battery current. With the gain control in the reference test position, measure the battery current with a pure-tone 1000Hz input signal at a sound pressure level of 65dB.

Coupler sound pressure level with induction coil. With the gain control full-on and the hearing aid set to the "T" (telephone input) Mode, the hearing aid is placed in an alternating magnetic field having a frequency of 1000 Hz and a magnetic field strength of 10m A/m and oriented to produce the greatest coupler sound pressure level.

Automatic gain control hearing aids. The following tests apply to AGC aids:

Input-output characteristics. Using a pure tone test frequency of 2000 Hz, measure and plot the coupler sound pressure level for input sound pressure levels from 50 to 90dB, in 10dB steps.

Dynamic AGC characteristics. With the gain control full-on and using a square wave modulated pure tone input signal of 2000 Hz determine the attack time defined as the time between an abrupt increase from 55 to 80 dB and the point where the output has stabilized to within 2dB of the steady state value for the 80dB input. The release time is defined as the interval between the abrupt drop from 80 to 55 dB and the point where the output has stabilized to within 2dB of the steady state value for the 55dB input.

SYMPOSIUM

CENTRAL AUDITORY DYSFUNCTION

MAY 19 - 20, 1977

SPONSORED BY: DIVISION OF AUDIOLOGY SPEECH PATHOLOGY
UNIVERSITY OF CINCINNATI MEDICAL CENTER

GUEST FACULTY: DANIEL BEASLEY MARILYN PINHEIRO
CHARLOTTE DEMPSEY JACK WILLEFORD
JACK KATZ SYLVIA RICHARDSON
GEORGE LYNN

AND OTHERS

FOR DETAILS ON REGISTRATION CONTACT:

ROBERT W. KEITH
DIVISION OF AUDIOLOGY AND SPEECH PATHOLOGY
UNIVERSITY OF CINCINNATI MEDICAL CENTER
231 BETHESDA
CINCINNATI, OHIO 45267
(513) 872-4241

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Here's how it works:
First there's a warranty that runs **two full years**—
that's double the length of most warranties in
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asked, change-your-mind return policy. Plus
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complete details, give us a call toll-free
(800)631-7965 or drop us a line.
Siemens Hearing Instruments, Inc.,
685 Liberty Ave., Union, New Jersey 07083.



SIEMENS

Tracoustics Honors . . .

Brian E. Walden, Ph.D., currently a Captain in the Medical Service Corps of the U.S. Army, is the recipient of the 1976 Outstanding Military Audiologist award. Tracoustics, Inc. of Austin, Texas provided a beautiful bronze award to the Military Audiology-Speech Pathology Society (MASPS) to honor their outstanding member. Charlie Anderson, President of Tracoustics, Inc. indicated that the award will become an annual event.

Dr. Walden was selected for his commitment to audiologic research for the benefit of hearing handicapped military personnel. The award was presented by Mr. Don Musick of Tracoustics, Inc. Major Roy Sedge, Ph.D., current President of the Military Audiology-Speech Pathology Society, summarized Dr. Walden's contributions as follows:

"Over the past five years, CPT Brian Walden, serving as a researcher, clinician and military advisor, provided the single most important document to foster the

Army hearing conservation program entitled "The Prevalence of Hearing Loss Within Selected U.S. Army Branches." In addition, CPT Walden designed the largest clinical auditory research laboratory within the U.S. Army located at Walter Reed Army Medical Center. Research in this laboratory has resulted in a new modular aural rehabilitation program in operation at the U.S. Army Audiology and Speech Pathology Center in the Forest Glen section of WRAMC. Dr. Walden is currently involved in numerous research efforts including the development of a speech discrimination test to predict communication difficulties from military noise-induced hearing loss patients."

CPT Brian Walden is currently assigned to Walter Reed Army Medical Center as Auditory Research Director. He will soon complete his active duty obligation, but remain in his current position, and continue his efforts, as a civilian.



Outstanding Military Audiologist Award, 1976
Don Musick of Tracoustics [left] Cpt. Brian E. Walden, MSC, Ph.D. [right]

BHI Speakers Bureau

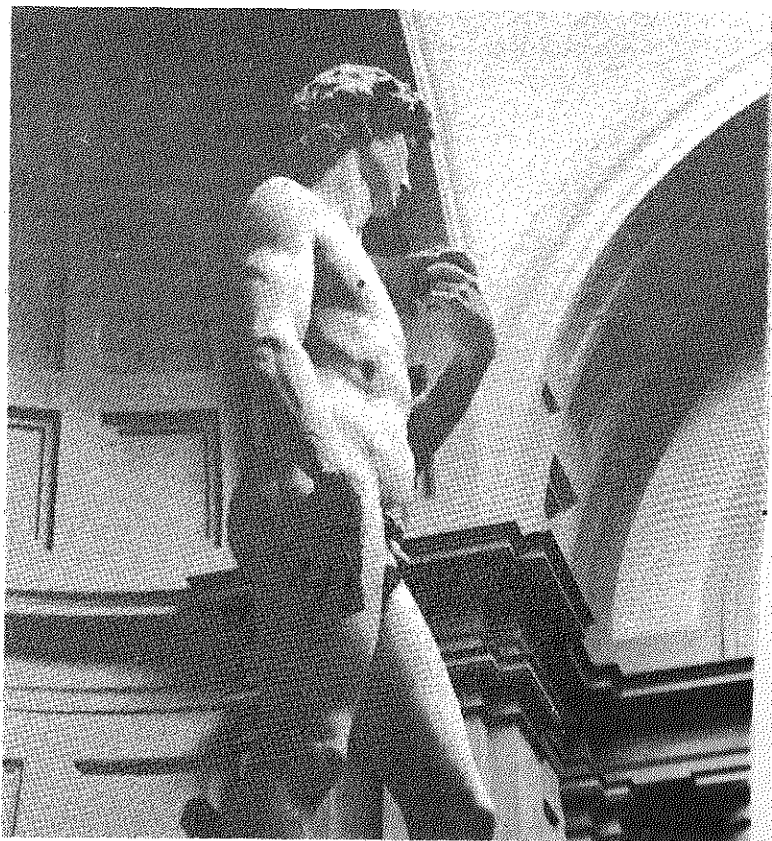
WASHINGTON* D.C.* (November 1, 1976)— "Silence is Lonely," a moving and informative new slide/cassette presentation now available from the Better Hearing Institute, focuses on hearing loss in the golden years. The presentation, for showing by hearing field representatives to local civic, social, and fraternal organizations, will help to provide encouraging hearing help information to those who need it. It also can be used as a model from which to develop customized speakers bureau productions.

Utilizing a case history approach, "Silence is Lonely" explores the personal and emotional problems associated with hearing handicaps and emphasizes all types of hearing help—medical, surgical, and amplification. Featured in the presentation is actress Nanette Fabray, who overcame her own hearing disorder. Ms. Fabray encourages senior Americans with hearing loss to admit they have a hearing problem and to seek help. In

addition, she discusses the magnitude of hearing impairments, prevention and warning signs. BHI Advisory Board Chairman and ear surgeon, Dr. Charles Gross also appears in the presentation to briefly explain the hearing process and types and causes of hearing disorders.

"Silence is Lonely" is self-contained for easy usage. Slides are advanced automatically by a tape with inaudible magnetic impulses or they can be manually projected by following script cues. Each set includes a 15 minute cassette, 80 slides in a carousel tray, a slide-keyed script, and helpful suggestions and how-to instructions. Order from BHI, 1430 K Street, N.W., Suite 200, Washington, D.C. 20005. Cost: \$49.95.

The Better Hearing Institute, Washington, D.C., is a non-profit educational organization dedicated to informing the hearing impaired, their families and friends, and the general public about hearing loss and available hearing help.



Michelangelo's "David" was one of the magnificent sights viewed by members who went on the AAS European Study Tour. [Courtesy of Roger M. Angelelli].

BALLOT ON NAME CHANGE

TO: Ross Roeser, Secretary
American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

Name: _____
(Optional)

_____ I do not favor a name change.
_____ I do favor a name change.

My choice for the name to be submitted for possible constitutional change is:

- | | |
|--|---|
| _____ American Hearing Society | _____ National Auditory Society |
| _____ The National Association for Hearing | _____ American Ear Society |
| _____ American Association for Hearing | _____ National Ear Society |
| _____ American Hearing Association | _____ National Ear Association |
| _____ American Society for Hearing | _____ American Society for Hearing |
| _____ American Auditory Society | _____ American Association for the Study of Hearing |
| _____ American Auditory Association | _____ American Audition Society |
| _____ National Auditory Association | _____ American Society of Audition. |
- _____ Other _____

...regarding the wash-
proposed trade regulations for
the hearing aid industry brought
out the fact that hearing aid
...regarding the future direc-
tions of the audiology profes-
sion. The Task Force, including a
number of AAS members,
generate resolu-

[Continued on page 4]

Name _____ Date _____

Home Address _____ **City** _____

State _____ Zip _____ Phone _____

Professional Address _____ City _____

State _____ Zip _____ Phone _____

Education

Institution	Location	Degree/ Year
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INSTITUTION		
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--	--	--

Sponsoring Members

[1] Name _____

Print or Type

Signature

Institution or Company _____

[2] Name _____

Print or Type

Signature

Institution or Company _____

This membership application must be supported by signed statements from two active members verifying the qualifications of the applicant and payment of the membership fee [\$20.00] to cover dues for the current year. When complete, return to:

Ross J. Roeser, Ph.D.
Secretary-Treasurer
American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

AAS Members at SENTAC

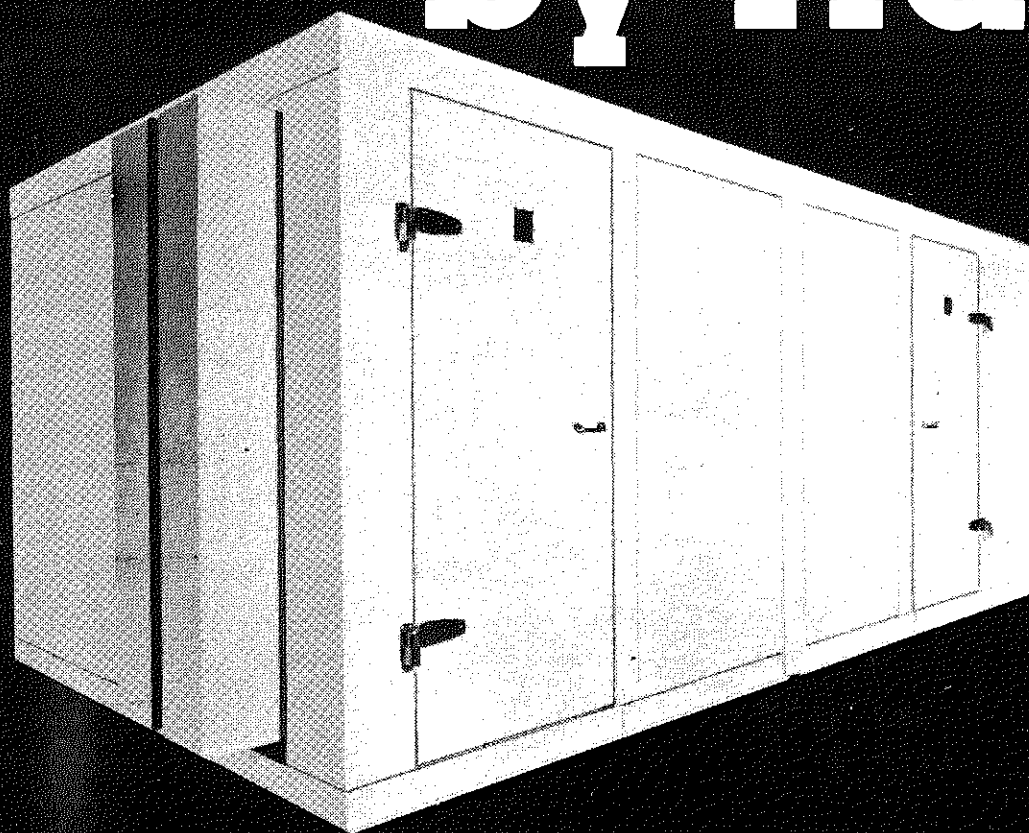


Program Chairman Mike Seidemann



The Schwartzes'— Pediatrician and Audiologist

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(512) 444-1961

1977 Directory

Complete in This Issue

Pages 5-10.

Name Change

Will Be Voted

On. See Story

Page 1.

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

THIRD CLASS

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society

Vol. 2, No. 2

April, 1977

Proposal for By-Law Change-of-Name Finalized- 'American Audiology Society' Wins

The results of the balloting on a possible name change for AAS are in. A majority of the members voting favored a revision in the name. The votes were as follows:

1. Do NOT favor name change 62;
2. DO favor name change 82;
- 2 ... American Hearing Society

VOTES

1. ... National Association for Hearing;
2. ... American Association for Hearing;
1. ... American Hearing Association;
3. ... American Auditory Association;
3. ... National Auditory Society;
6. ... American Association for Study of Hearing;
2. ... American Audition Society
2. American Society of Audition

63. ... American Auditory Society
14. ... Other. (Several suggested

"American Otology Society").

In view of this mandate, we submit to the membership the following proposal for a By-Law change. BE IT PROPOSED:

THAT CHAPTER I, ARTICLE I, WHICH PRESENTLY READS, "AN AMERICAN AUDIOLOGY SOCIETY SHALL BE CONSTITUTED UNDER THIS NAME" BE CHANGED TO READ: "THE NAME OF THIS SOCIETY SHALL BE THE AMERICAN AUDITORY SOCIETY."

The constitution provides that a proposed By-Law change must be submitted to the membership six months before the annual meeting at which the members vote on the proposal. Seventy percent of

the members must be present or respond to a mail ballot at that time, and a three-quarters vote is necessary to amend.

A First— Union Provides Hearing Aids

For the first time in history, a union has extended its health coverage to provide hearing aids for its members. United Auto Workers has received commitments from the Ford Motor Co., Chrysler, General Motors and Ford/Canada to provide hearing aids for all those covered under the health care program. Coverage includes retirees, dependents and surviving spouses, and active employees with one year of seniority plus their dependents.

Payments will be made to "participating providers" only, including hearing aid dealers, audiologists and physicians who qualify as participating providers.

The initial prescription recommending a hearing evaluation must be paid for by the member. A "medical hearing specialist" (Board certified otolaryngologist), must make this recommendation. Once this is done, a participating doctor or audiologist conducts an audiometric test and prescribes a specific model of hearing aid. These services are paid for by the plan.

The plan also pays for the filling of the hearing aid prescription by a hearing aid dealer who is a participant. Follow-up visits to doctor or audiologist are pro-

Call For Papers Pomerantz Outlines 1977 AAS Meeting

Miami Beach will be the exciting setting for the 1977 annual meeting of the AAS. Harris Pomerantz, program chairman, is planning scientific presentations on **The Effects of Pressure Changes in The Auditory System**. In addition he has planned for members to make personal investigations on pressure changes under water.

Members are requested to submit abstracts of papers on the general theme **EFFECTS OF PRESSURE CHANGES IN THE AUDITORY SYSTEM**. Papers will be of 10 to 12 minutes duration and will be presented during the morning session of the annual meeting. The Raymond Carhart Memorial Lecture will be presented in the afternoon session.

Papers relating to diving and high altitude auditory system physiology are particularly desired for presentation, but papers on other topics are also requested.

During the weekend preceding

the annual meeting some of the effects of increased pressure on the auditory system will be investigated during a diving trip to John Pennkamp Reep State Park, a Florida underwater state park encompassing a magnificent living coral reef off Key Largo, Florida.

It should be noted that the annual AAS meeting on Monday 12 December, precedes the 13-16 December Tuesday-Friday meeting of the Acoustical Society of American at the Carillon Hotel.

Transportation for the diving trip will be arranged. The executive committee meeting will be scheduled to avoid conflict with the reef trip.

Abstracts of contributed papers following the Acoustical Society of American format, should be submitted to Harris I. Pomerantz, M.S., Section of Otolaryngology, University of South Florida College of Medicine, 13000 No. 30th Street, Tampa, Florida 33612.

A Special Report To Corti's Organ on the Evaluation of Implanted Auditory Prosthesis Page 12

vided to determine the effectiveness of the aid. Coverage is provided for hearing aids every 36 months.

The new benefits will be effective October 1, 1977.

Among the victims of the Canary Island plane disaster were the mother and father of our president-elect, Blair Simmons. The members of the Society send their deepest condolences to Blair.

News About Members

Merle Lawrence, director of Kresge Hearing Research Institute, has been appointed a member of the National Advisory Neurological and Communication Disorders and Stroke Council of the National Institutes of Health.

Dennis L. Landesman was named one of California's Five Outstanding Young Men for 1976. The award was presented to him for his activities in establishing a free summer camp for 300 deaf children and for a hearing aid loaner bank for needy deaf children.

BOYS TOWN

The staff of Boys Town Institute has finally moved into its new quarters and begins an exciting clinical career with 36 staff members.

The directors of the Institute are: Patrick E. Brookhouser, M.D., Director, Boys Town Institute; Noel D. Matkin, Ph.D., Director, Language and Learning Center; Don W. Worthington, Ph.D., Director, Audiology and Speech Pathology; Charles S. Watson, Ph.D., Director Human

Communications Research Laboratories; Jack R. McCullough, M.P.A., Director, Administration and Support Services.

Corti's Organ takes this opportunity to wish a long life and success to the Institute and its directors.

Congratulations can be sent to:

The Boys Town Institute
Father Flanagan's Boy's Home
Boys Town, Nebraska 68010.

Meet The Nominees For The
AAS Executive Committee
Pages 3-4.

CORTI'S ORGAN is a quarterly publication of the American Audiology Society, printed in Dallas, Texas.

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Yanick & Ross Plan Instrument Conference

Paul Yanick and Mark Ross have put together a workshop conference on Hearing Instrument Technology Signal Processing June 4-5, 1977 in Clark, New Jersey. Stephen Freifield, M.D., will be one of the featured speakers at the meeting.

The purpose of the workshop is to provide for the demonstration of new procedures and electro-technology, and to provide opportunity for discussions of case histories among group participants. The workshop will include the following topics:

Signal Processing:

A. Test procedures for the measurement of equal loudness pressures;

B. Various electroacoustic adjustments used in processing;

C. Review of actual case histories.

D. Application of the electroacoustic parameters of hearing aid response to the sensorineural ear.

E. Practical experience with signal processing.

The meeting is sponsored by The HEAR Foundation.

For information write to:
HEAR Foundation
392 Springfield Avenue
Summit, New Jersey 07901

Sataloff-Glorig Institutes Announced

Former AAS President Aram Glorig and otologist Joseph Sataloff will again direct the two University of Maine Institutes on Occupational Hearing Loss and Hearing Conservation. These well-known courses have been the most popular of any in the country with physicians and nurses interested in occupational hearing problems.

The 25th annual Institute in Occupational Hearing Loss will be held June 27-July 1, 1977, at the University of Maine at Orono (Bangor). The Institute is designed for industrial physicians, safety engineer, hygienists, otolaryngologists, health management executives and administrative personnel. Designed to permit certification in audiometric proficiency, it awards 27 credits in PRA Category 1 of AMA for physicians. Covers total field of conservation of hearing programs, medico-legal and compensation aspects, and OSHA developments. Lectures and laboratories are combined with practical field trip to couple theory and implementation. Tuition is \$275 and Room and Board is \$25 per day.

The 14th annual Industrial Hearing Conservation Institute is

June 27-June 30, also at the University of Maine. The facilities of the University of Maine provide excellent accommodations for the participants. The institute is concerned with responsibilities of industrial nurses and those actively interested in hearing testing performance and record keeping. Participants eligible for certification by the Council for Accredi-

tation in Occupational Hearing Conservation. It awards 2.6 CEU's by the Maine State Nurses Association. Tuition is \$235 and Room and Board is \$25 per day.

For descriptive brochure and application write or phone: UMO Coordinator, 1721 Pine Street, Philadelphia, PA 19103 - (215) 735-0205.

LETTERS TO THE EDITORS

Dear Editors:

After reading the sensitive reaction of the vision founding prime source, ex-officio comments, as well as present leadership visions, my impression is that the name AAS should be utilized to its fullest original intention.

If the only problem arising, for the name change hysteria, is some kind of a sanction acceptance for the hearing aid dealers who may represent themselves as AUDIOLOGISTS due to the AUDIOLOGY content of the name—ask the hearing aid handler to pledge against the subject designation or to be asked to leave the society.

The time has come when the profession of audiology must define the functions and responsibilities of the handler of hearing instruments; the medical profession has already done this. At this time, you may find a myriad of experience ready to help form this vital hearing health team; that Lloyd S. Bowling, Ed.D., George Washington University, speaks of.

Paul J. Frantell

Dear Editors:

On the matter of name change, we could retain American Audiology Society, limit full membership to "audiologists" and offer associate membership to otologists; or change the name to American Audiology and Otology Society, limit full membership to "audiologists" and "otologists" and offer associate membership to hearing aid dealers; or change to American Audiology, Otology and Hearing Aid Dealers Association with ear mold fabricators as associate members; or....

Adoption of American Auditory Society might be the most acceptable compromise unless we want to face the issue squarely and restrict membership to individuals with academic and scientific credentials entitling them recognition "in Audiology—the science of hearing." This may strike some as arbitrary, but aren't all groups, societies, associations parochial?

—Laszlo Stein

Dear Editors:

Little did Ray Carhart and I realize what controversy there would be when we urged the use of the term AUDIOLOGY. Some of the members of THE AUDIOLOGY SOCIETY will remember my unsuccessful efforts in the 1950s when I insisted on an official definition of AUDIOLOGY; more than the one which was first used in the medical dictionary as "the science of hearing." I tried to get a consensus of what the term should include. At least one joint committee of the two societies most involved worked long hours trying to agree on a proper definition and an indication of the specialty's content. Warnings were then expressed of the possible legal implications of letting the term dangle without proper official definition which could be the basis for all future considerations.

However, time went by and now we have not only the legal hassles in the various state laws, but Uncle Sam himself is breathing on us mightily because of our inter-society controversy. Sometimes I wish the word had never been resurrected from the 1930s, but at the time it did seem to properly indicate a special professional endeavor. And in spite of the perversity of us humans, including me, great service has been rendered to those with hearing defects.

As I contemplate the comments in the current ORGAN OF CORTI, I realize the value of the potent arguments both for name change and no change. All the suggested names will evoke criticism from some quarters, so I humbly suggest that we avoid any controversial name and call ourselves:

THE CARHART SOCIETY
FOR PROGRESS IN HUMAN
HEARING.

Not only will this name avoid more trouble but we will thereby do great honor to the finest AUDIOLOGIST OF US ALL.

—Norton Canfield

[Editor's note: Dr. Canfield's present address is: 49 State Street, Guilford, Conn. 06437]

Editorial

The action of the AAS in proposing a name change represents microcosm of Democracy-in-Action. Everyone in AAS is expressing his opinion freely, without acrimony, but with a lively interest. In fact, the membership has been so pleasant about it all that it's been really fun to work on.

It's quite evident that regardless of what the outcome of the final voting is the result will be accepted with good will by the opposition. It seems to us that this vote is bringing out the strengths of AAS as nothing else could. Despite its disparate beliefs and occupations, the organization is welded together by a firm and loving interest in the auditory phenomena of the ear. No temporary differences of opinion will ever produce a schism in the single-purposed group.

It's nice to belong to this kind of organization—sort of restores one's belief in the rationality of mankind!

—MPD-RJR



Dick Scott [left], Frank Brister [right], and newly acquired member George Osborne [middle] enjoying bus ride between Mannheim and Erlangen.



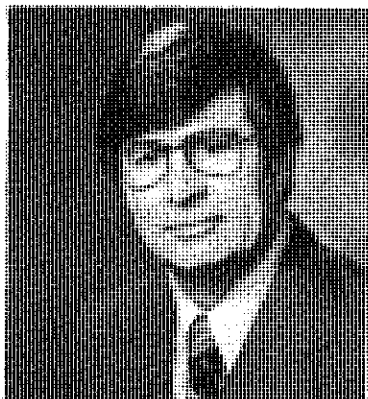
Gretchen Syfert stands in front of Seifert Horgerote [hearing aid] dispensary in Nuremberg, Germany. Maybe a long lost relative-in-law?

THE INTERROGATORY

In July of this year an election will be held to replace seven members of the Executive Committee of the American Audiology Society. In this issue of Corti's Organ we have asked each candidate nominated for the office to provide the Membership of the Society with some basic biographic information, and to provide their thoughts regarding the future direction of the Society.



Allen G. Berchowitz, Ph.D., 1959, New York University; Director of Audiological and Speech Services, Manhattan Eye, Ear and Throat Hospital. Address: 39 Gramercy Park, N.Y., N.Y. 10010
The American Audiology Society (my choice as a name change) should focus upon the multidisciplinary sharing of information and research in the field of audition. It should direct itself towards a professional collaboration in the areas of audiology, otology and acoustics. This goal orientation would eliminate the dissension and divisiveness currently arising between the various disciplines.



James R. Curran, MS, 1962, University of Wisconsin; Director, Auditory Research Program; Marco Hearing Instruments, Inc. Minneapolis, Minn.

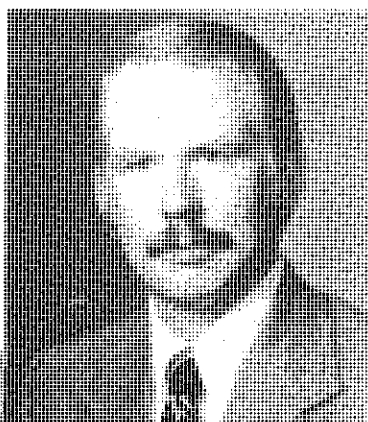
I am in favor of a name change for the Society, for it appears that presently there is too much room for confusion and misunderstanding regarding our purpose.

In a time, however, when so many decisions are being made by others about all aspects of hearing health care, it is conceivable that pressures may be put on the Society to take official stances concerning various politically sensitive issues. We should, therefore, support a policy which firmly resists adopting politically oriented positions during these times of transition. But we should actively encourage open and free discussion of issues in our publications and to facilitate understanding of the issues and to aid in the decision making

process, allowing all points of view to be expressed.

It appears to me that our main concern in the next few years should be to strengthen our image and position as a scientifically oriented body, and we should strive to promote and emphasize any programs or processes which specifically enhance this aspect of the Society.

—James R. Curran



William G. Ely, Bachelor of Science, 1963, Purdue University; Vice President, Research and Development for Maico Hearing Instruments, Inc.; Maico Hearing Instruments, Incorporated, 7375 Bush Lake Road, Minneapolis, Minnesota 55435

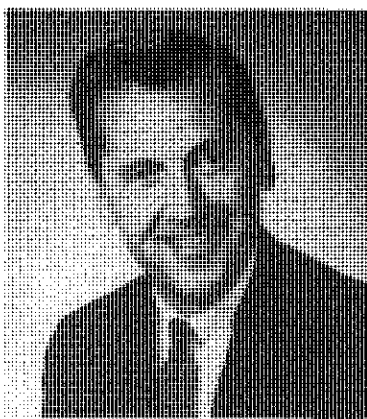
I see the American Audiology Society as an extremely important multidisciplinary organization where people with a common interest in the human hearing process can interact to increase their knowledge of hearing, hearing loss, hearing habilitation and rehabilitation. As a society made up of degreed persons with professional interest in human hearing, it should not attempt to represent the professional interests of any one group or academic discipline. I believe that the Society must foster not only written technical information exchange but also provide a forum where members can meet to learn from each other. It is important now and in the foreseeable future for the American Audiology Society, or whatever the membership decides to call the organization, to bring together audiologists, medical doctors, acousticians, engineers, and the many other disciplines who share an interest in human hearing.

[No Picture]

Alan J. Gill, M.D., 1962, State University of New York; Private practice, Otolaryngology. 1305 Post Road, Fairfield, Connecticut 06430.

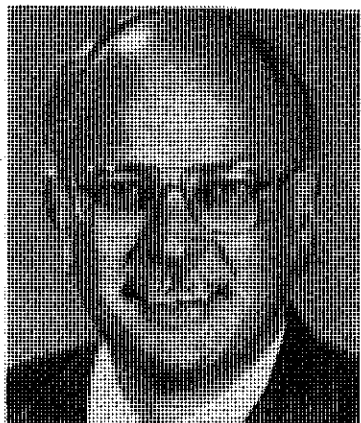
No scientific society, regardless of its size or purported purposes, can hope to achieve significant progress without the eventual application of its studies being interpreted into practical, day to day applications.

As a privately practicing otolaryngologist, particularly interested in audiology, it would be my hope and aim as an Executive Committee member of this Society to help guide our work into such avenues, in order to provide the best, the most up to date, and the most reliable information in the diagnosis, care and treatment of our patients.



A. Bruce Graham, Ph.D., 1953, Northwestern University. Chief, Division of Audiology, Speech and Language Pathology at Henry Ford Hospital. Henry Ford Hospital, 2799 West Grand Boulevard, Detroit, Michigan 48202.

At the first organizational meeting in which any number of people were present in Dallas, I became fascinated by the opportunity to have an organization which could really sit down and share ideas from all of those involved with hearing problems. We have so many organizations primarily concerned with basic research testing procedures but very little seems to be done about the very real problem of the hard of hearing individual himself. It struck me then as it still does that it would be most worthwhile to have a team of individuals who are concerned with the best possible diagnostic procedures to plan for medical, surgical and educational rehabilitation of the patients to discuss those problems of adjusting to the world of deaf and hard of hearing, to assist in counselling the hearing impaired so they can make the most of whatever their limitation might be. This may involve amplification, it may involve special auditory training, lipreading, but it is truly involved around those with hearing problems.



Earl Harford, Ph.D., 1958, Northwestern University; Professor of Audiology and Director of the Division of Hearing and Speech Sciences, School of Medicine, Vanderbilt University; Director, Bill Wilkerson Hearing and Speech Center, 1114 19th Avenue, South, Nashville, Tennessee 37212

The American Audiology Society was established for the purpose of increasing the knowledge of human hearing, promoting conservation of hearing and fostering habilitation and rehabilitation of persons with hearing impairment. This is the only organization of its size in the U.S. with these objectives as its foundation. This Society offers a

forum for those who identify with these objectives, regardless of country of residence and specific area of professional or scientific discipline. The Society is unique in the sense that its focus is limited to human hearing and yet is unlimited in its composition of members. It consists of persons with different credentials, roles and expertise. The Society serves as a vehicle for these persons to merge in a common cause for the good of the hearing impaired. Anyone with a degree from a recognized institution and a professional interest in human hearing is eligible for membership. This open door policy fosters healthy interdisciplinary interaction which must be considered an ideal requisite to the advancement of knowledge in hearing science and rehabilitation. A single profession cannot effectively deal with the enormous complexities of human hearing and its disorders. The American Audiology Society has a bright future. To realize the potential of the American Audiology Society, each member must assume responsibility to contribute in some manner. These contributions can take many shapes, e.g., research in any of its forms, questions, application of shared and learned ideas, teaching, challenges to others, but most important a constructive involvement in the goals of the Society.

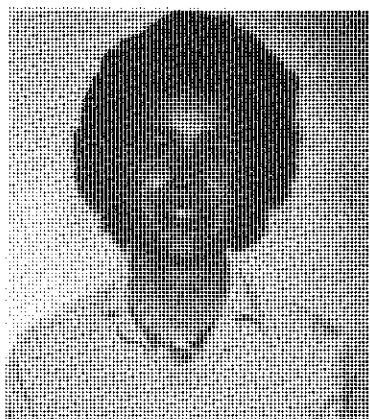


Chauncey Hewitt, BBA, 1956, Hofstra University. President, The Vicon Instrument Company, 828 Wooten Road, Colorado Springs, Co. 80901.

When I first considered membership in the AAS, I was primarily motivated by a desire to see progressive and contemporary thinking individuals break with the polarizing effects of the various disciplines to promote the necessary investigations to increase our knowledge of human hearing. I felt then, and feel even more strongly now, that a close inter-disciplinary exchange is essential if we... anyone concerned with the future of persons with hearing impairments... are to produce a cross fertilization of thought and activity to solve a common problem.

We are approaching an era where multi-disciplinary activities must be provided because the hearing impaired community is crying for them and the various governments are sensitive to those cries. If we, as an organization, do not break down the interdisciplinary barriers, the necessary services will reach the hearing impaired in a less ef-

fective and uncoordinated manner.



Susanne Kos, M.S., 1975, North Texas State University. Clinical Audiologist, University of Texas at Dallas Callier Center for Communication Disorders, 1966 Inwood Road, Dallas, Texas 75235.

As one of the original members of the American Audiology Society, I am proud to be part of an emerging organization whose aim has been to promote a perception of unity among the varied facets represented by our membership. The conception of a multidisciplinary society has afforded us a unique opportunity to share, and through the journal series as a forum for continuing education, to disseminate current philosophies and developments in our related fields of endeavor. Hopefully, this organization will continue to prosper with our expertise and ideas forged into a single effort to better serve the hearing impaired populations in all aspects of diagnosis and rehabilitation.



Mark Lawrence, Ph.D., 1944, Princeton University. Professor of Otolaryngology and Director of the Kresge Hearing Research Institute, Department of Otorhinolaryngology, University of Michigan Medical School, University of Michigan Medical School, Ann Arbor, Michigan 48109.

In the late 1940s, when the word "Audiology" was being widely promoted it was being widely included everyone whose activities involved the ear and hearing: otologists, audiometric technicians, biologists, physicists, etc. This was all spelled out in a little book titled *Audiology* published in 1949 by Norton Canfield, M.D. In his forward he said: "Although the science of hearing is not new, the term 'Audiology' expresses a new concept. It includes all of the separate professional abilities which contribute to this rapidly progressing specialty."

But since that time, paralleling, and as a consequence of, the growth of ASHA the term 'Audio-

THE INTERROGATORY

(Cont. From Page 3)

logy" has come to designate a profession, much respected and requiring certain prescribed qualifications. So now the study of hearing involves the audiologist and other specialties as well. That is why I would like to see a name change for this organization.

In the future development of this society there should be no suggestion that one's educational background governs the group's interest. Rather, I would hope, it is the common interest, hearing, that governs the membership and activities. Thus, an audiologist is only one strong part of the organization, and there are others consisting of bioengineers, neurophysiologists, biophysicists, otologists, etc., all with the common goal of understanding hearing, deafness, and we should add the balance system.

We cannot all be expert in all fields so this organization should provide the forum where different specialty backgrounds can focus on a common area to provide a cross-fertilized understanding of the mutual interest with which all are concerned.



Fred Linthicum, M.D., 1946, University of Southern California School of Medicine. Member of Otologic Medical Group, Inc.; Director of Education and Temporal Bone Laboratories, Ear Research Institute; Clinical Professor of Otolaryngology, University of Southern California School of Medicine. 2122 West Third Street, Los Angeles, CA 90057.

The American Audiology Society performs a very important function in producing a closer liaison among the audiologists, otolaryngologists, and others interested in the preservation and improvement of communication problems. The journal, *Corti's Organ*, and the meetings bring together people with various backgrounds so they can discuss mutual problems. It is not rare these days that one discipline concerned with hearing is unaware of what is going on in the other. These publications and the meetings serve to distribute this information.



Samuel F. Lybarger, B.S., 1930, Carnegie-Mellon University. Self-employed as acoustical consultant. 101 Oakwood Rd., McMurray, Pa. 15317.

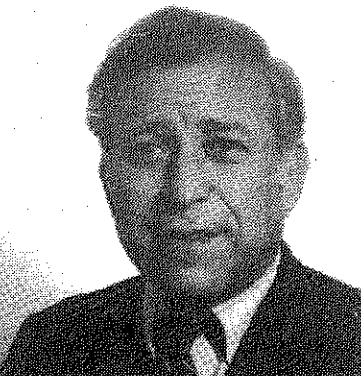
The American Audiology Society fills a very important need in bringing together the various disciplines involved in assisting those with hearing impairment. It can bring together the medical, audiological, acoustical, electronics, dispensing and other fields in a way that each can respect the other and can benefit from the experience of others. This should be the primary objective of the society.

The Society has made an excellent start in the quality and scope of its two publications and they should be supported to the fullest extent.

With respect to meetings, I feel that a problem exists. We need to study ways in which greater attendance can be achieved. Perhaps the idea of regional meetings should be explored.

We are fortunate in having an excellent management at our headquarter's office.

With the real need for the existence of a society with the objectives of AAS and the good start the society has made, I foresee for it a successful and meaningful future.

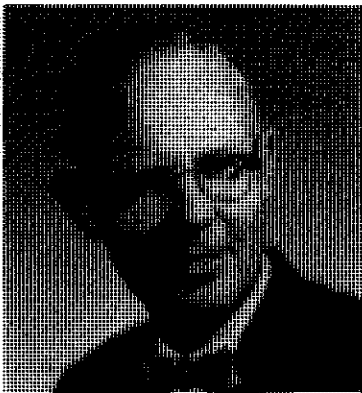


Harris Pomerantz, M.Sc., 1954, Syracuse University. Private practice in Audiology, Tampa, Florida, and Lakeland, Florida. Also clinical instructor in surgery, University of South Florida, Tampa, Florida. 515 Bay Street, Tampa, Fla. 33606.

The aims of the American Audiology Society relating to increasing knowledge of human hearing, promoting conservation of hearing and fostering habilitation and rehabilitation of persons with hearing impairments by coordinating and disseminating information, are most worthy and many groups subscribe to them. Nowhere else however, are these aims the primary concerns of any group whose membership runs the gamut of concerned professionals from all groups focusing hearing and from all levels of interest from basic sciences through diagnosis and treatments to prosthesis and governmental regulation.

Of particular concern to me is the fractionalization and polarization of efforts and thinking brought on by our faulty perceptions and confused imagery of roles and economic impact on each other. I perceive the AAS as a forum to enhance cooperation and dispel myths in the arena of hearing services.

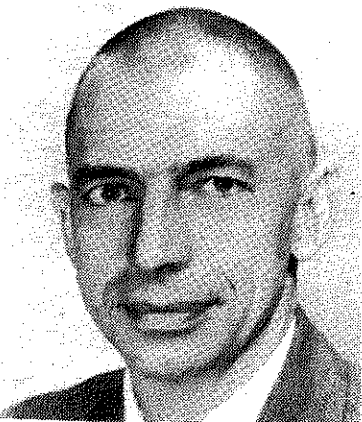
It is to help in continuing the effectiveness of the American Audiology Society, by such writing and representation as I may contribute, that I stand for election to the Executive Committee.



Loring W. Pratt, M.D., 1943, Johns Hopkins University School of Medicine, Chief, Department of Otolaryngology, Mid-Maine Medical Center, Waterville, Maine. 325B. Kennedy Memorial Drive, Waterville, Maine 04901 [office]

The American Audiology Society, by virtue of the diverse composition of its membership who possess a common interest in Audiology, is in a unique position to foster cooperation and develop both understanding and harmony among various disciplines. The development of programs designed to increase our knowledge of hearing, its problems, and methods of conservation and rehabilitation by utilizing input from this diverse group should result in more effective utilization of our talents, for the ultimate benefit of the patient.

The American Audiology Society should keep these as their goals and endeavor to spread this message among Otolaryngologists and Audiologists with the aim of encouraging all with a common interest in problems associated with hearing and its deficits to work in harmony for a common purpose.



J. Buckminster Ranney, Ph.D., 1957, Ohio State University. Chief, Scientific Evaluation Branch, National Institute of Neurological and Communicative Disorders and Stroke, National Institutes of Health. NIH NINCDS SEB, Federal Building, Room 9C-10, 7550 Wisconsin Avenue, Bethesda, Maryland, 20014.

The American Audiology Society has established itself as a forum for the exchange of ideas, viewpoints, and concerns in a spirit which is not constrained by the artificial barriers of discipline. The continuing purpose of the Society is to foster the personal and intellectual exchange and interchange among those persons concerned with hearing impairments. A viable future for the Society demands that energies not be dissipated with petty concerns, e.g., name changes; rather the effort of the member-

ship and the officers should be directed to furthering dialogues which encourage an increasing number of persons to put aside insularity for a common good.



Michael F. Siedemann, Ph.D., 1973, Florida State University, Coordinator of Audiology, Associate Professor of Audiology and Speech Pathology, Louisiana State University Medical Center, 1100 Florida Avenue, Building 163, New Orleans, Louisiana 70119

It appears to me that the American Audiology Society has thus far performed an excellent job in achieving most of the aims of the Society designated in the Statutes. The exchange of information at the meetings and in publications has been commendable for a society in its youth.

There is one area addressed in Article 2 of the Statutes that I feel warrants an increased concentration of effort by the Society. The area to which I refer is promotion of the conservation of hearing. In the near future, each of the disciplines represented within our society must come forward to a place of leadership in the promotion of hearing conservation. At the time of this writing (prior to the promulgation of new OSHA regulations), it seems that the likelihood of requiring audiological involvement in industrial hearing conservation programs is poor. While the vast majority of industrial hearing conservation will be undertaken by technicians and industrial physicians, audiologists, and otolaryngologists must serve as consultants to such programs. The application of our knowledge and skills in the realm of hearing is a necessary component in any successful hearing conservation program.

In the future, therefore, I would like to see increased involvement in this area by our society.



John C. Sinclair, Ph.D., 1962, Illinois Institute of Technology. Director of Engineering Research & Development, HC Electronics, Inc. 250 Camino Alto, Mill Valley, California 94941

As an Engineer in a company whose products are solely related to the Hearing Health Care field, I am particularly desirous of affiliating with related professional societies.

I especially endorse the aims of

the American Audiology Society with respect to increasing knowledge of human hearing and the promotion of hearing conservation, habilitation and rehabilitation.



Wayne J. Stabb, Ph.D., 1971, Michigan State University. Director of Education, Telex Communications, Inc., 9600 Aldrich Avenue South, Minneapolis, Minnesota, 55420.

The American Audiology Society should continue the aims as expressed in Article 2 of the AAS Statutes. It should provide a non-political independent medium for interaction by its multi-disciplinary membership and continue to pursue the variety of membership consistent with the goals of AAS.

AAS should actively continue to pursue recognition as the official representative to the International Audiology Society. The United States should be represented by an organization where the entire membership has a legitimate interest in audiological pursuits. AAS is the only United State organization which has a membership and goals consistent with other international audiology society members.

AAS should investigate establishing official liaison with membership background areas represented whenever feasible. This would be in addition to the Executive Committee representation in dealings with third parties which already exists.



W. Dixon Ward, Ph.D., 1953, Harvard. Professor, University of Minnesota. Depts of Communication Disorders, Otolaryngology, Environmental Health, and Psychology. 2630 University One S.E., Minneapolis, Minnesota 55414.

The Society should seek to advance knowledge of the audiology process on the part of its members, those who need assistance in problems of hearing, and the general public. It should have nothing whatsoever to do with questions of monopolies of service, distribution of fees, public aggrandizement.

American Audiology Society

Directory

The following persons were listed as current members of AAS as of March 1, 1977.

Alphabetical Listing

ABER, WILLIAM

Audiology Dept.
Mountainside Hospital
Montclair, N.J. 07042
ADELMAN, SHARON
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Canada

AHAUS, WILLIAM H.

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AHRENS, ROBERT P.
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Walter Reed Army Med. Ctr.
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ALLUISE, MARY JANE

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Virginia Beach, VA 23455
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ANDERSON, MARCIA LEE
275 Middleneck Rd.
Gredt Neck, NY 11023

ANDERSON, ANNE MARY

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ANDERSON, VIRGINIA S.
St. Vincent's Infirmary
Markham & University
Little Rock, AR 72201

ANDERSON, CHARLIE D.

Tracoustics, Inc.
P.O. Box 3610
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ANGELLI, ROGER M.
Chairman, Dir. of Audiology
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May 24

Refresher course in Occupational Hearing Conservation; Fee: \$65.00. Oak Brook, Ill. CAOHC accredited. Contact: R.J. Connelly, Audiometric Associates, 7326 West Harrison Street, Forest Park, Illinois 60130.

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Science Abroad

Editor: W. Dixon Ward

(With this issue we begin a new section featuring reviews of outstanding articles from foreign journals. Our accomplished linguist and ex-president, Dix Ward, has graciously agreed to supply the reviews.)

Dieroff, H.G.: "Larmschwerhörigkeit" Leitfaden der Larmhorschadenverhütung in der Industrie. Johann Ambrosius Barth, Leipzig, 1975. 312 pp., 254 fig., 17 tab.

Ever since the appearance in 1963 of Professor Dieroff's learned Habilitationsschrift, Die Larmschwerhörigkeit in der Industrie, many of us have urged him to expand it to a full-length book suitable for a classroom text on this timely and important subject. He has now done so, and the result can only be described as a classic in the best sense of the word.

After a short introduction, the presentation begins with an excellent 20-page section on the physical measurement of sound contributed by Professor W. Reichardt of Dresden. Though highly concentrated, the important facts relating to the measurement and specification of steady and impulsive noises are clearly expressed, and although the chapter goes a bit beyond pure physical acoustics (e.g., presenting risk criteria and age corrections for audiometric data), it serves as a most adequate basis for the rest of the volume.

Next Dieroff, in just 55 pages,

presents a masterful account of audiometric theory and practice as they bear on the problem of the differential diagnosis of noise-induced hearing loss, beginning with audiometric zero and artificial ears, and ending with the detection of malingering. Standardized tests for sensory losses are catalogued and described with impeccable thoroughness, including many that are relatively unfamiliar to English-speaking audiologists, such as noise audiometry and the tests of Keitz, of Langenbeck, and of Feldmann. The analysis is as up-to-date as one can reasonably expect in this age of burgeoning experimentation, although I must confess that I winced to see an old graph of mine on contralateral remote masking (CRM) that illustrated—or so I thought at the time—the action of the middle-ear muscles, an opinion that had to be abandoned when it became clear that CRM is little affected by conditions that are known to render the muscles inoperative.

The major portion of the text, the next 150 pages, covers succinctly but clearly the literature on temporary and permanent effects of noise, physiological and psychophysical, as determined both in the laboratory and in the field. Although special emphasis is given to tying together the dozens of studies done by Dieroff and his colleagues and students in Jena, the entire world literature is meticulously integrated.

Their own studies include noise and hearing-loss measurements in a large range of steady and impact-noise environments; 70 spectra comprise an Appendix, and details of audiometric surveys are also included. My only major criticism here is that in my opinion, an undeserved degree of credence is given to the hoary concept of the "critical intensity" of a sound for producing damage, as contrasted to some kind of "critical exposure" that takes into account both intensity and duration; on the other hand, one must admit that it is a notion that is still firmly entrenched in the thinking of many persons (including, but not restricted to, laymen).

The text concludes with a short section of the problem of assessment of handicap associated with hearing loss, followed by the Appendix mentioned earlier and by 18 pages of references (ca. 500) that comprise the literature synthesized.

Physically as well as technically, the book is of top quality, with only a few minor typographical errors such as a reversal of male and female presbycusis curves on p. 23.

In summary, we are fortunate that a scholar of Professor Dieroff's competence has taken the time to produce this excellent book on noise-induced hearing loss. It is to be hoped that it will soon be translated into English.

W. Dixon Ward
Hearing Research Laboratory
University of Minnesota
Minneapolis, Minnesota

Meeting

Announcement —Call for Papers

SENTAC (The Society for Ear, Nose and Throat Advances in Children) will meet in Chicago, Illinois at the Children's Memorial Hospital and the Continental Plaza Hotel October 29-30-31, 1977 (Sat.-Sun.-Mon).

The participation of those interested in pediatrics, audiology, speech pathology and otolaryngology is solicited. Please submit abstracts (in quintuplicate) to: Gabriel F. Tucker, Jr., M.D., Program Chairman, The Children's Memorial Hospital, 2300 Children's Plaza, Chicago, Illinois 60614.

Deadline for receipt of abstracts is June 15, 1977.

Fellowship Awards NINCDS Announces

The Communicative Disorders Program of the National Institute of Neurological and Communicative Disorders and Stroke will make National Research Service Individual Fellowship Awards in the area of Audiology to:

Derek E. Dunn
Dewey W. Grantham
Nancy K. Squires

National Research Service Institutional Fellowship Awards in the NINCDS Communicative Disorders Program will be made to: Louis Braidia
Massachusetts Institute of Technology
Gerald Canter
Northwestern University
Lois Elliott
Northwestern University
Joseph Hawkins
University of Michigan

Michael Paparella
University of Minnesota
William Peake
Massachusetts Institute of Technology

A CLASSIC OF TEMPORAL BONE PATHOLOGY

A meeting featuring
Dr. John Lindsay
and
Dr. Imre Friedmann

Will be held May 21st at the University of Colorado Medical Center. These world-famed experts of temporal bone pathology will talk on interesting cases from their files.

If interested write:
Dr. Bruce Jafek
University of Colorado Medical Center
Denver, Colorado 80220

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MOLLERUD, THEODORE E.
MULLARKY, MARILYN R.
NEHR, MICHAEL WILLIAM
RITCHIE, BETTY
SAUER, RICHARD C.
SCIARRA, PASCHAL A.
SHAW, JAMES
STEFONIK, WILLIAM J.

WISCONSIN

THURLOW, WILLARD R.
WIERSEMA, GREGORY N.
WILEY, TERRY L.

WYOMING

HARMON, ROBERT R.

447 North 3rd St.
Cheney, WA 99004

Eye & Ear Hospital
230 Lothrop St.
Pittsburgh, PA 15213

SPECIAL REPORT

Report on Evaluation of Subjects Presently Fitted With Implanted Auditory Prosthesis

The, "Do they work or don't they work" controversy over electrical auditory implants finally made it through to the, "let's find out" stage. In July, 1975, a competent group of investigators at the Pittsburgh Eye and Ear Hospital began an in-depth evaluation of 13 persons wearing single-channel electrical auditory prostheses. That investigation was completed in January 1976, and the summarized results were reported in October, during the AAOO meetings. The written report for this NIH Contract No1-Ns-5-2331 consists of a 256 page volume and a 198 page appendix. Inside these pages is enough solid data on what these persons hear (with or without the devices) to keep anyone busy for the better part of a week. In fact, the most impressive feature of this study is the amount of work both the experimenters and the subjects devoted to the task. Each patient spent 5 full days in evaluation.

Their report is basically favorable toward the usefulness of the prosthesis for some but not all of the subjects. The data with which to make your own judgment is there in abundance. Unfortunately, the text is about as neutral as it is possible to construct, using English. I would have enjoyed a few opinions scattered around. When the word, significant, is used, they mean exactly that, and usually with the probability ratio close by. It was also clear in these numbers on a few occasions that their subjects were guilty of loading their test responses in favor of the "prosthesis on" condition. Most of us would call that, cheating. They called it a "statistically negative correlation."

The subjects: The deafness of 3 was associated with otosclerosis; 2 were drug-induced; one was leuetic. Seven had no clearly established cause for their deafness. Two were prelingually deaf. Eight had vestibular symptoms beforehand, and of the 10 tested before their implants, all had ENG abnormalities. Because most of the subjects had diminished or absent caloric responses prior to their implant procedures, the effects of the implant surgery itself were impossible to determine. Conventional audiometry showed all but one patient to have profound bilateral hearing losses, without any ability to perceive monosyllabic words. One subject had a 3-frequency average of 78 dB in his unimplanted ear and scored 68% on PBK words. Most

of the subjects either lived or attempted to live in the hearing community and none of them have attempted to integrate with the deaf population.

An impressive battery of neuropsychological tests were administered. Eleven subjects were "roughly within the limits of normal." Two showed definite signs of "organic brain syndrome" and results suggested that these two individuals were likely to have difficulty with classifying stimuli as "same" or "different," etc.

The prostheses: There were two types of stimulators. The 11 subjects implanted by William House had stimulators which produced two electrical waveforms in the cochlea—a steady 16-18 kHz background "carrier" whenever the device was "on", and a superimposed analog "acoustic" waveform which corresponded to whatever the microphone "picked up" from the environment. This environmental signal amplitude-modulated the 16-18 kHz carrier. The variability amongst individual prostheses caused interpretive problems which only really stand out as problems after several re-readings of the full report. Part of the difficulty, for both subjects and experimenters, were the six stimulus adjustments the subjects occasionally decided to modify in the electronics package. These controls were labeled, "sensitivity, carrier frequency, carrier level, modulation limit, symmetry, and percent modulation." Changing these adjustments had a significant effect on subject performance. (I can sympathize with the subjects' problem of trying for a clearer signal. I had my own frustrations and successes in tuning the "cat's whisker on my crystal-set radio when I was eleven.)

The fact that these subjects did adjust their devices *ad libitum* made it impossible to know the characteristics of the electrical stimulus in the cochlea. Furthermore, all the devices themselves differed, some in important ways. Probably the most important of these was the sound input level at which non-linearity became extreme or overmodulation began. Six devices were measured at subject-set gains. Overmodulation began at 50 dB at the lower extreme and at about 75 dB SPL at the upper extreme. It also varied with frequency. Thus, an acoustic signal exceeding these levels, and depending on its frequency, would not necessarily be preserved at the elec-

trode tip in a consistent manner. For example, it is possible that some loud sounds seemed weaker than soft sounds. (These non-linearities also could have caused some confusion about which frequencies/pitches the subjects actually heard and which—usually higher frequencies—were actually the distortion products of the electronics.) In my opinion, the variable performance of these devices (and their distortion products) made it almost impossible for me to know what the real stimulus was in some of the psychophysical experiments.

The stimulating devices used by the 2 Robin Michelson-implanted subjects were not described in this publication. He (Michelson) tells me that one subject's device was coupled to the implanted coil by the audio stimulus itself. The gain across frequencies was adjusted for a more-or-less flat perceptual threshold and included an AGC circuit. The other device was radiofrequency coupled to the implanted coil. The audio signal amplitude modulated this carrier. An internal diode circuit removed the r.f. carrier from the electrode stimulus.

Hearing with the prosthesis: Most subjects adjusted the gain of their devices to thresholds around 50-60 dB SPL. The range was 30 to 90 dB across the 125 to 8000 Hz range in some few instances. (Keep in mind that no pitch discrimination is required to do this, just the awareness of the test sound.) Their Speech Awareness Thresholds were in this same range, and these were 30-40 dB more sensitive than with the prosthesis off. As expected, none were able to score beyond chance during classical Speech Detection Threshold tests or discrimination tests using PBK words.

Studies of the range between threshold, "comfortable" and "uncomfortable loudness" did produce some surprises. The average range from comfortable to uncomfortable in the "prosthesis off" condition was 6.5 dB. With the prosthesis "on" it was 11 dB. The data with the prosthesis off was skewed a little by 2 subjects whose "uncomfortable level" was a few dB less intense than their "comfortable" sound level, and by 2 whose ranges (in the correct direction) were 1 and 2 dB. With the device "on", the subject with a 1 dB tolerance range gave a 20 dB range. Remarkable. Even more remarkable was the subjects' remarkable range, from a minimum of 10 to a maximum of 54 dB. The median was 39 dB. Recall that the maximum dynamic range for an electrical stimulus is in the vicinity of 15 dB. In trying to make sense from this data the authors stress (I think correctly) that it is an error to assume the stimulators vary in direct proportion to the intensity of the sound field. In fact, the stimulators (especially the carrier modulated type) compress acoustic inputs into a very narrow range of electrical outputs. "...the designers of these units have encoded changes in intensity [loudness] in such a

way that the subject is very confused about both loudness and pitch." (p. 106).

Once out from under the constraints of these conventional audiometric tests, things become a little more exciting. Here, I will describe only three tests in enough detail to make the results meaningful.

Recognition of environmental sounds: Twenty-seven (of 50) prerecorded environmental sounds were used because these 27 sounds were all recognized by a panel of 10 normal hearing adults. The subjects were given sets of 4 pictures from the initial set of 50 sounds. One of these 4 was the to-be-identified test sound. "...as a group, the subjects obtained significantly higher scores in the test for ability to identify common environmental sounds when their prostheses were activated than they did when they were off." (56.9% on, 36.1% off). Two subjects scored a highly significant 0% correct with the prosthesis off whereas random chance predicted 25% correct. Of the 11 subjects, 5 performed significantly above chance levels with their prostheses activated and only at chance levels when it was off. (One of my between-the-lines readings of this report seems verified here. Some subjects seemed prejudiced in favor of yielding "good" scores with their device and "poor" scores without them. Fortunately this kind of enthusiasm did not prevail among most subjects.)

Lipreading skills: The Craig Lipreading Inventory was the test instrument used—33 words and 24 sentences—in both live voice and TV tape modes. A total of 10 tests were used—no sound, sound with prosthesis off, on, etc. When averaged across all tests, the mean score with the prosthesis was 87% and without it, 79%. I am not familiar with the Craig Test, but it seems clear, especially in the live voice mode, that it was too easy for most subjects. After some discussion and statistics, the authors conclude that for 8 subjects the prosthesis did not affect lip reading scores. Three showed better scores with the prosthesis, but not at statistically significant levels. Two subjects' results were the subject of some discussion, without clear conclusions. Thus, I am left with the impression that the prosthesis might have helped a bit but was not impressive, and that the investigators wished in retrospect they had used a more difficult instrument to measure lip-reading ability in these obviously talented subjects.

Subjects' speech intelligibility: Two speech samples each for the prosthesis "on" and "off" conditions were recorded during their week-long evaluation. The material for these monologues differed from subject to subject, according to their interests and abilities. These tapes were randomized and audited afterwards by 10 normal-hearing adults who had not been involved with other subject evaluations. The listeners were asked to rate intelligibility of a 0 to 100% scale. "...the mean

intelligibility ratings for speech samples obtained with the prosthesis was activated were significantly higher than those obtained when the prosthesis was off ($F=26.12$; $df=1.9$; $p=0.0$). The mean intelligibility rating for the prosthesis-activated condition was 67.0% and that for the prosthesis-off condition was 60.0%. The reliability of the judgments was 0.98." (p. 202) Improvement-with-prosthesis came from 4 subjects. Those very good scores without prosthesis had little room to prove with it on, and those had "extremely poor" speech not improve with the aid of a stimulator.

Psychoacoustics: The results of the foregoing three studies are clear. The results of the psychophysical measurements are not as easily interpreted as was not comfortably assured by many of the graphs and figures really displayed what their figures advertised. The investigators had similar anxieties. The problem seems to have been of two possibilities: 13 different types of implanted ears or 13 different stimulators with minor and minor differences between them. Picture, for example, trying to design a two-day experiment on pure audition in which each "middle ear" and "cochlea" responds differently, even sometimes backwards to what might expect. Having reached a SPL of, say 65 dB, for example, additional increments of intensity have a 50/50 chance of causing a decrease in loudness. Changes might truly be pitch changes, or a loudness confusion, or a non-linearity in the electronics. Also keep in mind this type of "hearing testing" is innately boring.

The basic design of all experiments on abstract sound quality such as pitch and loudness "detect the one stimulus (or that is different)." While this is a good approach in normal (linear) sensory systems, it leaves a hole in the evaluation of a linear system. This design cannot identify the nature of the quality judged different from the other three. If, for example, an experimenter varies the frequency of the test sound, the subject cannot be assured that the subject made his same-different judgment by a pitch change instead of a loudness or envelope cue. Still, I doubt if the session could have been constructed much differently within the constraints and the subjects' vetoes. The one-choice-in-four design got results.

The subjects did surprisingly well in both pitch and loudness discriminations at low frequencies, 125 and 250 Hz, and deteriorated (at differing rates) at these frequencies. Occasionally some discriminations were possible at 2,000 but these were unusual. I found it difficult to believe that the 125 Hz discriminations were normal for 8 (of 13) subjects, and were within or normal for 6 subjects at 250 Hz. The fact that 3 subjects still

[Continued on page 14]

**CORTI'S ORGAN IS SORRY
TO LEARN OF THE DEATH
OF MEMBER THOMAS B. APPLETON
AND SENDS CONDOLENCES TO HIS WIDOW**

FDA Rule Encourages Hearing Aid Use

New Food and Drug Administration regulations for labeling of hearing aids and conditions for their sale will increase consumer confidence and encourage more people to get hearing aids, according to John Blake, Executive Director of the Hearing Aid Industry Conference, a Washington, D.C.-based trade association which represents hearing aid manufacturers. The rule, effective August 15, 1977, will provide for a medical evaluation prior to the purchase of a hearing aid, with a right of waiver for fully informed adults over 18. The rule requires a brochure to accompany each hearing aid, which will explain the health-related aspects of obtaining a hearing aid, the care and use of the aid, and where to get it serviced.

Blake stated that the rule will not be easy for all manufacturers to implement, but "we are confident that industry members will make every effort to quickly adhere to the new requirements."

"While we are not convinced

that all the requirements are necessary," says Blake, "we do think that FDA, has been fair and realistic about the vast need for more attention to the problems of the hearing impaired. There are a lot of people who could hear better with a hearing aid, and we feel that this regulation will encourage them to get hearing help."

The Commissioner of FDA has recognized the major role that personal motivation plays in getting assistance for hearing problems and has also indicated that some selling practices and techniques used by the industry have helped to strengthen motivation to buy a hearing aid. The medical evaluation is simply to assure that medically treatable conditions that may affect hearing are identified and treated before a hearing aid is purchased.

In commenting on industry's reaction to the rule, Blake stated "This rule is the result of a long and complex dialog between industry, professional and consum-

er groups and the government on medical care for hearing problems and the purchase of hearing aids. The rule establishes, for the first time, a definitive role for the doctors, the audiologist, and the hearing aid dispenser in providing hearing health care and sets forth industry requirements for dissemination of uniform consumer information on hearing aids. FDA has acknowledged that hearing aids are not dangerous devices and that the number of people who will in fact require medical or surgical treatment is relatively small in comparison to the number of individuals who may benefit from amplification."

Blake continued, "There are millions of people who have never done anything about their hearing impairment. It is the industry's belief that in working with government through this comprehensive consumer regulation, we will be able to encourage those people to enrich their lives through the use of a hearing aid."

Article and Book Reviews

NORTHERN, JERRY L. [Ed.]
"Selected Readings in Impedance Audiometry." Dobbs Ferry, New York: American Electromedics Corporation [1976]. 389 pp.

Reviewed by **Thomas P. White**, Assistant Professor, Div. of Communicative Disorders and Sciences, State Univ. of NY at Buffalo.

Selected Readings in Impedance Audiometry is an important contribution to the study of the development and application of electro-acoustic impedance technique. Dr. Jerry Northern has selected and edited forty-six journal publications, by both researchers and clinicians, which have been instrumental in the ex-

traordinarily rapid acceptance of this clinical procedure. Such a compilation can be difficult because controversy will arise as to the significance of any particular work. However, in this volume, there is little room for criticism in that most are widely accepted as landmark papers in impedance development. The papers are divided into seven sections with each devoted to a different aspect of electro-acoustic impedance.

Section I, "Introduction to Impedance Audiometry," contains ten articles concerned with the bases of impedance measurements and its applications. Section II, "Tympanometry," consists of seven papers dealing with tympanometric measures and inherent variables such as the effect of probe tone frequency. Sections III (six papers) and IV (eight papers) cover "The Nature of the Acoustic Reflex" and "Clinical Applications" respectively. Information is presented on the anatomy of the stapedial reflex arc and applications of reflex testing in assessing central disorders and the prediction of sensori-neural hearing loss.

These two sections are supplemented by Section VI, "Non-acoustic Stimulation of Middle Ear Muscles." The four articles in this section complete the topic of the use of the middle ear muscle reflex measurement in assessing middle ear and inner ear integrity. In Section V, four publications are presented which discuss the importance of impedance measurement in "Eustachian Tube Evaluation." Finally, the four articles in section VII, deal with the role of "Impedance as a Screening Technique."

This book certainly is important to the academician. An individual teaching a graduate course in audiology which covers the topic of impedance will find this volume indispensable. Since most graduate work is to some extent research oriented, "Selected Readings..." will enable efficient use of student time and provide a useful supplement to the teaching of impedance audiometry. Dr. Northern's book is also extremely valuable to the clinician. Many of the papers are clinical in nature and consequently present much normative data that can be used as a reference for clinical work. With the remarkably rapid development of impedance audiometry, the value of this book cannot be overemphasized.

PROGRAM:

Central Auditory Dysfunction May 19-20

GUEST FACULTY

Daniel S. Beasley, Ph.D.
Memphis State University

Mary Rose Costello, Ph.D.
Henry Ford Hospital, Detroit

Charlotte Dempsey, M.A.
West Chester State College
West Chester, Pennsylvania

Drake D. Duane, M.D.
Mayo Clinic

Jack Katz, Ph.D.
State University of New York at Buffalo

Robert W. Keith, Ph.D.
University of Cincinnati Medical Center

George E. Lynn, Ph.D.
Wayne State University, Detroit

Marilyn L. Pinheiro, Ph.D.
Medical College of Ohio at Toledo

Sylvia O. Richardson, M.D.
Cincinnati Center for Developmental Disorders, Children's Hospital Medical Center

Jack Willeford, Ph.D.
Colorado State University

FEE

\$80.00 (includes lunch on Thursday and Friday)

\$20.00—The first 100 students will be enrolled for \$20.00 but registration form and check MUST be accompanied by a letter from faculty advisor stating that the student is a registered, full-time student during Spring Qtr., 1977. Fee includes lunch on Thursday and Friday.

PROGRAM

May 19

8:15 REGISTRATION
8:45 Welcome/Introduction: KEITH
9:00 DUANE: Central Auditory Dysfunction: A Neurologist's Point of view.
10:30 INTERMISSION
10:45 WILLEFORD: Test Battery Approach; Binaural Fusion; Binaural Separation; Filtered Speech; Alternate Speech Perception Tests
11:45 LUNCH
1:00 KEITH: Synthetic Sentence Identification Test
2:00 KATZ: Staggered Spondaic Word Test
3:00 INTERMISSION
3:15 BEASLEY: Compressed Speech
4:15 QUESTIONS/ ANSWERS

MAY 20

9:00 LYNN: Evaluation of Central Auditory Dysfunction in Adults with Neurological Disorders
10:00 PINHEIRO: Tests of Central Auditory Function in Children with Learning Disabilities
11:00 INTERMISSION
11:15 COSTELLO: Evaluation of Central Auditory Function with Children Using the Flower-Costello Test
12:00 LUNCH
1:00 RICHARDSON: Communicating Results of Central Auditory Test with Other Professionals
1:40 GUEST PANEL: Practical Considerations of Central Auditory Tests
3:00 INTERMISSION
3:15 PANEL: Opportunity for Comments from Guest Faculty Q/A from Audience.

For further details and registration information contact:

Robert W. Keith, Ph.D.
Division of Audiology and Speech Pathology
University of Cincinnati College of Medicine
231 Bethesda Avenue
Cincinnati, Ohio 45267
Telephone: (513) 872-4241

PURPOSE

To provide a forum for a meaningful exchange of information and ideas on the current diagnostic approach to problems of central auditory dysfunction.

Emphasis will be on behavioral testing with special reference to clinically-useful diagnostic procedures. We want the audience to leave the symposium with a better understanding of the present status of testing for central auditory dysfunction in children with learning disabilities and adults with lesions of the central auditory nervous system. We also hope that the audience will have some insight into the direction and role of central auditory testing in the future.

The Symposium will be held in Kresge Auditorium at the University of Cincinnati College of Medicine.

SYMPOSIUM ON IMPEDANCE SCREENING FOR CHILDREN

Current Status for Detection of Middle Ear Disease

June 20-22, 1977

Division of Hearing and Speech Sciences
Vanderbilt University School of Medicine
Nashville, Tennessee
Monday, June 20

Opening: Earl R. Harford, Ph.D., Vanderbilt University School of Medicine
Don A. Harrington, Ph.D., Bureau of Maternal and Child Health, HEW

PROGRAM

I. MIDDLE EAR DISEASE IN CHILDREN

"Epidemiology and Natural History of Middle Ear Disease"
Jerome O. Klein, M.D., Harvard Medical School

"Morbidity of Middle Ear Disease"
Charles D. Bluestone, M.D., University of Pittsburgh School of Medicine

"Methods of Identification for Middle Ear Disease"
Gunnar Liden, M.D., University of Goteborg, Sweden

Summary and Charge: Fred H. Bess, Ph.D., Vanderbilt University School of Medicine

II. INFANTS

Moderator and Discussion Leader
Jerome O. Klein, M.D., Harvard Medical School

Present State of the Art
Robert Margolis, Ph.D., University of California, Los Angeles

Contributed Papers:

"Impedance Measures in Infants from Birth to Six Months"
Geary A. McCandless, Ph.D., University of Utah School of Medicine

"Tympanometric Screening of Normal and Intensive Care Unit Newborns: Accuracy and Validity"
Janet M. Zarnoch, M.A. and Thomas Balkany, M.D.
University of Colorado Medical Center

"Diagnosis of Middle Ear Effusion in Young Infants with Otoscopy and Tympanometry"
Timothy J. Reichart, M.D., Keith H. Riding, M.D., Beth L. Cohn, and Charles D. Bluestone, M.D., University of Pittsburgh School of Medicine

"Acoustic Impedance/Admittance Measurements in Infants Below Seven Months of Age"
Daniel M. Schwartz, Ph.D., Walter Reed Army Medical Center
Richard H. Schwartz, M.D., Vienna, Virginia

"Validity of Impedance Audiometry"
Joanne Swogger Rosenberg, M.A., Arnold King Brennan, M.D., Philadelphia, Pennsylvania
Philip E. Rosenberg, Ph.D., Temple University School of Medicine

III. PRESCHOOL AGE CHILDREN

Moderator and Discussion Leader, Earl R. Harford, Ph.D., Vanderbilt University School of Medicine

Present State of the Art
Jack Paradise, M.D., University of Pittsburgh School of Medicine

Contributed Papers:

"The Effects of Age, Sex, Race, and Other Variables on Middle Ear Pressures in Preschool Children"
Norma T. Hopkinson, Ph.D., University of Pittsburgh School of Medicine

"Comparison of Tympanometry and Otoscopy in Establishing Pass/Fail Referral Criteria"
Ross J. Roeser, Ph.D., Jim Soh, M.D., D. Creig Dunckel, M.S., University of Texas at Dallas
Richard Adams, M.D., Dallas Independent School District

"Variability in Tympanometric Pattern in Children Below Five Years of Age"
Daniel M. Schwartz, Ph.D., Walter Reed Army Medical Center
Richard H. Schwartz, M.D. and Paul E. Schweisthal, M.D., Vienna, Virginia

"Impedance Audiometric Screening in Otorhinolaryngologic and Pediatric Practice"
Daniel F. Konkle, Ph.D., William Potsic, M.D., and William F. Rintelmann, Ph.D., University of Pennsylvania School of Medicine

"Contralateral-Ipsilateral Acoustic Reflex Thresholds in Preschool Children"
Barbara K. Skinner, M.S., and Thomas W. Norris, Ph.D., University of Nebraska Medical Center
Robert E. Jirsa, Ph.D., University of Nebraska, Omaha

Reception and Banquet

Tuesday, June 21

IV. SCHOOL AGE CHILDREN

Moderator and Discussion Leader, Charles D. Bluestone, M.D., University of Pittsburgh School of Medicine

Present State of the Art
Denzil Brooks, M.Sc., Manchester, England

Contributed Papers:

"Impedance in a School Screening Program"
B. Urban, Ph.D., Montgomery County Health Department
Rockville, Maryland

"The Clinical Significance of Reduced Middle Ear Pressure in School Children"
Ulf Renvall, M.D., and Gunnar Liden, M.D., Sahlgrenska Hospital, University of Goteborg, Sweden

"Impedance Audiometry for Screening Middle Ear Disease in School Children"
Gunnar Liden, M.D. and Ulf Renvall, M.D., Sahlgrenska Hospital, University of Goteborg, Sweden

"Impedance Audiometry for Identification of Conductive Component in School Children"
Earl R. Harford, Ph.D., Vanderbilt University School of Medicine
Jennifer Fox, M.A., Nashville, Tennessee
Jack Clemis, M.D., Northwestern University School of Medicine

"A Changed Concept of 'Screening'"
Joanne Swogger Rosenberg, M.A., Arnold King Brennan, M.D., Philadelphia, Pennsylvania
Philip E. Rosenberg, Ph.D., Temple University School of Medicine

V. SPECIAL POPULATIONS

Moderator and Discussion Leader
Fred H. Bess, Ph.D., Vanderbilt University School of Medicine

Present State of the Art
Jerry L. Northern, Ph.D., University of Colorado Medical Center

Contributed Papers:

"The Use of Tympanometry for Screening Developmental Disabled Children"
Samuel R. Bashore, M.A., Department of Health, Commonwealth of Pennsylvania

"An Acoustic Impedance Screening Program with an American Indian Population"
Jeannette Seloover Johnson, Ph.D., Southwestern Hearing, Speech and Language Associates, Albuquerque, New Mexico
Betty Springer Watrous, M.S., Indian Health Service Communications Disorder Unit
Albuquerque, New Mexico

"A Comparison of Three Screening Techniques in Economically Disadvantaged Children"
Michael F. Seidemann, Ph.D., Louisiana State University Medical Center

"Tympanometric and Otologic Evaluation of Students from the Western Pennsylvania School for the Deaf"
Timothy J. Reichert, M.D., Robert Findlay, Ph.D., Keith H. Riding, M.D. and Sylvan E. Stool, M.D., University of Pittsburgh School of Medicine

[Continued on Page 15]

Special Report

[Continued from Page 12]

normal-range pitch discriminations at 500 Hz is consistent with nothing short of miracle status. But then, a near miracle is what we are hoping for anyway with prosthesis research. "...Statistically, the most consistent finding in these frequency discrimination experiments is that subjects tested with auditory prostheses discriminate frequency differences quite well in the vicinity of 125 Hz. When signal frequency is raised to 250 Hz, however, many of the subjects begin to have difficulty with frequency discrimination; and their difficulties increase when frequency is raised further." (p. 159).

Speech-like sounds: One-half octave glissandos with base frequencies of 250, 500, and occasionally 1000 and 2000 Hz were distinguishable at better than chance levels about two-thirds of the time when the glide ended with a tone pulse but only rarely when the stimulus began. On a few occasions an octave glissando could be detected when the half-octave could not. When tested, the implanted ear performed about the same. Computer-generated synthetic speech sounds were tried, one glottal pulse and one-formant vowel-like sound. Three subjects scored better than chance on all comparisons. For others fell below chance on one comparison. The subjects experienced the most difficulty with comparisons between formants with adjacent frequencies. They were, on the whole, able to discriminate 3 sets of vowel pairs about two-thirds of the time given.

The investigators commented further on the perplexing success the subjects demonstrated with speech sound discriminations in a single channel of electrical stimulation. They felt that stimulators themselves produced speech-like signals in such a way that clear temporal, rather than spectral cues, were available. Further, for the vowel-like sounds, there were intensity differences between some of the pairs.

Vestibular effects: A computer-controlled transducer system was used in the evaluation of the subjects postural stability (an elegant extension of the classic Romberg Test). All subjects showed abnormal posture control which increased during visual deprivation. With the prosthesis in quiet, 7 subjects had further increases in postural instability. Four had a further increase in stability when tested in a noisy background, and 3 improved their stability in this background. Electrical stimulation is not limited to the auditory system.

There is much more material in the report than mentioned in this review, including recommendations for future research. This is an excellent job and a good example of how to do research under difficult circumstances in limited time.

—F. Blair Simmons

(1) Robert C. Bilger, Ph.D., Owen Black, M.D., Eugene Myers, M.D., Norma T. Hopkinson, Ph.D., Arthur Vega, Ph.D., Richard V. Wolf

Symposium . . .

[Continued from Page 12]

VI. IMPEDANCE/ADMITTANCE FUNDAMENTAL AND ADVANCED WORKSHOPS FOR PARTICIPANTS

Wednesday, June 22

VII. TASK FORCE REPORTS

"Recommended Guidelines for Screening Neonates and Infants"

Jerome O. Klein, M.D.
Harvard Medical School

"Recommended Guidelines for Screening Preschool Age Children"

Earl R. Harford, Ph.D.
Vanderbilt University School of Medicine

"Recommended Guidelines for Screening School Age Children"

Charles D. Bluestone, M.D.
University of Pittsburgh School of Medicine

"Recommended Guidelines for Screening Special Population"

Fred H. Bess, Ph.D.
Vanderbilt University School of Medicine

OPEN DISCUSSION

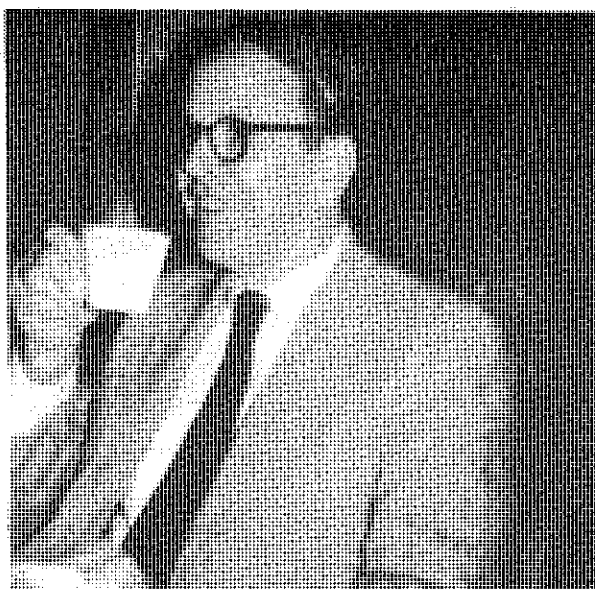
ADDITIONAL PARTICIPANTS

Alan Feldman, Ph.D.
Peggy Ferry, M.D.
Michael E. Glasscock, III, M.D.
V.M. Howie, M.D.
James Jerger, Ph.D.
David Karzon, M.D.
Robert Keith, Ph.D.
Gale Miller, M.D.

Kenneth Rogers, M.D.
Philip E. Rosenberg, Ph.D.
Robert Rubin, M.D.
Jay Sanders, Ph.D.
Sarah Sell, M.D.
Ben H. Senturia, M.D.
Payl Shurin, M.D.
Laura Wilber, Ph.D.



President-elect Blair Simmons showing his fast skiing skills at Vail.



New Chairman of the Committee on Equilibrium and Hearing Conservation of the O and O, Frau Catlin. At a recent Public Health conference in Columbus, Ohio.



David Lim, Collette Ramsey and Owen Black on top of the world at the Vail Conference.

Calendar of Events

1977

APRIL 14-16

16th Annual Electronystagmography Course, New Orleans. Contact Wallace Rubin, M.D., 3333 Kingman Street, Metairie, Louisiana 70002.

APRIL 14-15

School for Impedance Measurements—American Electromedics, San Juan PR

MAY 7-10

Canadian Speech and Hearing Association annual convention. Empress Hotel, Victoria, B.C. Write to: Ms. Marion Stark, # 303-500 Rithet Street, Victoria, B.C. V8V 1E3.

MAY 9-11

1977 IEE International Conference on Acoustics, Speech Signal Processing, Hartford, Connecticut. Write to: Harvey Silverman, IBM-T.J. Watson Research Center, P.O. Box 218, Yorktown Heights, New York 10598.

MAY 19-20

Symposium on Central Auditory Dysfunction, University of Cincinnati Medical Center. Write to Robert W. Keith, Division of Audiology and Speech Pathology, University of Cincinnati College of Medicine, 231 Bethesda Avenue, Cincinnati, Ohio 45267.

MAY 25-29

White House Conference on Handicapped Individuals, Washington Hilton Hotel, Washington, D.C. Write to: Jack F. Smith, White House Conference on Handicapped Individuals, 1832 M Street, W., Suite 801, Washington, D.C. 20036.

MAY 26-27

School for Impedance Measurement—American Electromedics, Bogota, Columbia.

JUNE 4-5

Conference on "Advances in Hearing Instrument Technology Signal Processing", Ramada Inn, Clark, New Jersey. Sponsored by the HEAR Foundation. Write to: HEAR Foundation, 392 Springfield Avenue, Summit, New Jersey.

JUNE 7-10

Acoustical Society of America, State College, Pennsylvania.

JUNE 20-22

National Symposium on Impedance Screening for Children, Vanderbilt University, Nashville, Tenn. Contact Earl Harford, Division of Hearing and Speech Sciences, Vanderbilt University, Nashville, Tenn., 37212.

JUNE 23-24

School for Impedance Measurement—American Electromedics, St. Louis, Mo.

JUNE 27-JULY 1

Univ. of Maine Institutes on Occupational Hearing Loss and Hearing Conservation. Write to UMO-coordinator, 1721 Pine St., Philadelphia, Pa. 19103. Div. of Audiology & Speech Pathology, Univ. of Cent. Med. Ctr., 234 Goodman St. A-125, Cincinnati, 45267.

JULY 4-9

Ninth International Congress on Acoustics, Madrid, Spain.

AUGUST 8-12

Doreen Pollack Acoupedic Workshop, Denver, CO. Write to: Porter Memorial Hospital, 2525 So. Downing, Denver, CO 80210.

AUGUST 15-18

Symposium of the International Electric Response Audiometry Study Group, Hebrew University, Jerusalem, Israel. For information write to: Prof. H. Sohmer, ERA Organizing Committee, Medical School, P.O.B. 1172, Jerusalem, Israel.

OCTOBER 29-31

Annual Meeting of SENTAC (Society for Ear, Nose and Throat Advances in Children), Children's Memorial Hospital and the Continental Plaza Hotel, Chicago, Ill. Write to: Gabriel F. Tucker, Jr., M.D., Children's Memorial Hospital, 2300 Children's Plaza, Chicago, Ill. 60614.

OCTOBER 31-NOVEMBER 2

Evoked Electrical Activity in the Auditory Nervous System, Chicago, Ill. Write to: Ralph Naunton, M.D., Department of Otolaryngology, University of Chicago, Chicago, Ill.

NOVEMBER 2-5

American Speech and Hearing Association, Chicago, Illinois.

NOVEMBER 6-12

"Surgical Anatomy and Techniques of the Temporal Bone" course. Eye and Ear Hospital, Pittsburgh. Write to: Ralph J. Caparlosa, M.D., 3600 Forbes Avenue, Pittsburgh, Pennsylvania 15213.

DECEMBER 12

American Audiology Society, Miami Beach, Florida

DECEMBER 13-16

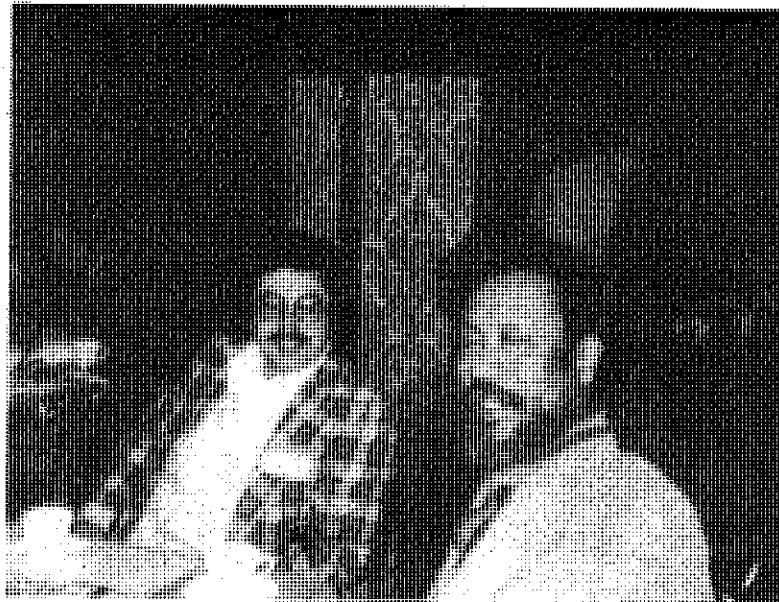
Acoustical Society of America Meeting, Miami Beach, Florida.



Collette Ramsey, founder of the Deafness Research Foundation at Mid-Vail with immediate past President, Dix Ward.



AAS President Geary McCaudless with three of his five Hot-doggin' sons, Raymond, Phillip and Allan, ready to take off at Vail.



Sandy Gerber and Vern Stroud at the Columbus Public Health conference.

'We Overcame Hearing Loss'

Thirteen prominent Americans from different walks of life tell how they overcame their own hearing problems in Better Hearing Institute's exciting new edition of "We Overcame Hearing Loss."

Included are photos and personally signed success stories of personalities in football, television, boxing, movies, politics, theater, music, business—people like Academy Award-winning Best Actor Art Carney, comedian Norm Crosby, actress Nanette Fabray, Governor George Wallace, singer Johnnie Ray, football star Larry Brown, and more.

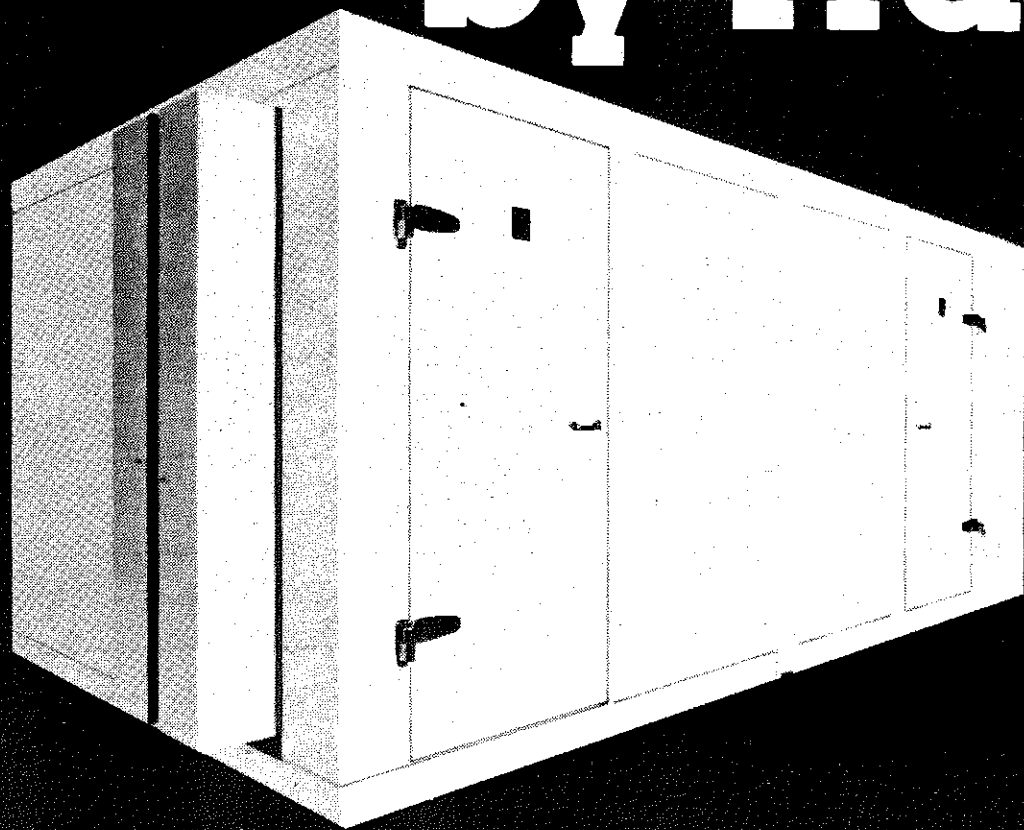
Each acknowledges his or her own hearing loss and encourages

others who suspect a problem to seek help.

"We Overcame Hearing Loss" will help to inform and inspire the hearing impaired, their families and friends. Copies can be distributed at Better Hearing and Speech Month events, in waiting rooms, at speaking engagements, or by mail. (1430 K Street N.W., Suite 200, Washington, D.C. 20005).

Better Hearing Institute is a nonprofit educational organization dedicated to informing and educating consumers and the general public about hearing and speech problems and where to go for help.

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Some Pediatric Audiologists look at cognitive sequelae of serous otitis, in THE INTERROGATORY
See page 3

Program of
The 1977 AAS Meeting
Page 5

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

THIRD CLASS

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society

Vol. 2, No. 3

October, 1977

Noise Report Solves Issues

OSHA need no longer concern itself with problems of noise measurement. The ultimate description of noise sources has been cogently reported by a scientist at the University of Minnesota in Chemistry (Vol. 50,

No. 6).

The researcher has made exhaustive sound spectrographic analyses of various foods, arriving at a cognitive system for classifying the parameters of Crispiness. Devotees of Snap,

Crackle, Pop will rejoice to find the upper spectrum of noisy-crispy / quite-not-crispy specified:

- Wet-crisp is exemplified by the crunch of celery or green peppers, caused by a fluid under pressure called turgor which explodes expansively under the force of the tooth bite. An arithmetic ratio exists between the amount of turgor and the sound pressure of the crunch.

- Dry-crisp is found in crackers, whose brittle air-filled cells bend and break. "The shattered fragments snap back to position, generating vibrations that build up into a sound pressure wave."

- Chip-crisp occurs in the common potato chips, only a few cells thick. The curvature of the chip results in repeated fractures when bitten into, producing a multitude of sound sources. The unexpectedly high intensity of sound thus generated gives a consummate ecstasy to aficionados.

Eat your heart out, OSHA!

Central Auditory Dysfunction

On May 19 and 20, 1977, approximately 250 registrants attended a Symposium on Central Auditory Dysfunction that was hosted by the Division of Audiology and Speech Pathology, University of Cincinnati Medical Center. The symposium was sponsored in part by the National Foundation March of Dimes. A guest faculty of 14 persons shared their knowledge and experiences in central auditory testing during the two-day conference.

The first part of the symposium dealt primarily with discussion of tests and test batteries. The different speakers presented various tests that have been devised and described their implications for use. Jack Willeford presented the Colorado State University Willeford Test Battery, Robert W. Keith shared the Jergers' material on the Synthetic Sentence Identification Test, Jack Katz explained the Staggered Spondaic Word Test, Daniel Beasley discussed time altered speech tests and Mary Tose Costello reviewed the use of the Flowers-Costello test of central auditory abilities.

The application of these and other tests on children and adults was the subject of the next part of the conference. Marilyn Pinheiro spoke on the use of a test battery with learning-disabled children and George Lynn reviewed the evaluation of central auditory dysfunction in adults with neurologic problems.

The next segment of the symposium dealt with the physician's

view of the tests. Dr. Drake Duane talked about a neurologist's point of view of central auditory dysfunction and Dr. Sylvia Richardson spoke on communicating results of central auditory tests with other professionals.

The final segment of the symposium was a panel discussion on practical considerations of central auditory tests. This panel discussion was headed by Charlotte Dempsey. Travis Milliken, Emily White and Richard Sweitzer reported on their experience with central tests in private practice settings and in a multidisciplinary children's hospital. After each day there was time set aside for the guest panel to further discuss issues and to deal with questions from the audience.

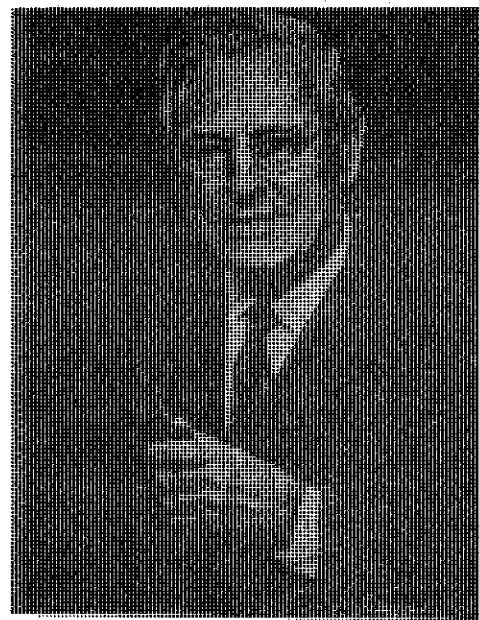
The proceedings from the symposium are being published by Grune and Stratton and are expected to be in print by October, 1977. The book called Central Auditory Dysfunction is edited by Robert W. Keith. It includes a chapter from each of the guest faculty, as well as a transcript of the panel discussions and question and answer sessions.

Speakers at the symposium pointed out the great need for normative data for tests of central auditory dysfunction and a better understanding of how the data can be applied in the remediation process. The Division of Audiology and Speech Pathology at the University of Cincinnati Medical Center is considering the possibility of follow-up symposium to deal with the area of remediation.

AAS to Honor Hallowell Davis

The 1977 AAS Carhart Memorial Lectureship Award has been given to Hallowell Davis, M.D., who will present the lecture in Miami at the December 12th meeting. No more appropriate recipient could be selected for this award than Dr. Davis. He exemplifies the high principles of scientific inquiry that Ray Carhart also represented. He was a friend and often-time associate of Ray Carhart in many endeavors. He was one of the early workers, like Ray Carhart, in studying human hearing and its problems.

During the past few years Dr. Davis has received a great number of recognitions and awards for his long-term and continued productivity in the field. By accepting the Carhart Memorial Lectureship Dr. Davis does honor to this new and burgeoning American Audiology Society. For registration form see page two.



Dr. Hallowell Davis
(Reprinted from Hearing and Davis, 1976, with permission from Dr. Davis)

Exec. Committee Election Results

With the ballots from the recent election counted we are happy to announce that the following members will be appointed to the AAS Executive Committee for a four year term beginning in January, 1978.

A Bruce Graham, Ph.D., 1953, Northwestern University. Chief, Division of Audiology, Speech and Language Pathology at Henry Ford Hospital. Henry Ford Hospital, 2799 West Grand Boulevard, Detroit, Michigan 48202.

Earl Harford, Ph.D., 1958, Northwestern University; Professor of Audiology and Director of the Division of Hearing and Speech Sciences, School of Medicine, Vanderbilt University; Director, Bill Wilkerson Hearing

and Speech Center, 1114 19th Avenue, South, Nashville, Tennessee 37212

Susanne Kos, M.S., 1975, North Texas State University. Clinical Audiologist, University of Texas at Dallas Callier Center for Communication Disorders, 1966 Inwood Road, Dallas, Texas 75235.

Merle Lawrence, Ph.D., 1941 Princeton University, Professor of Otolaryngology and Director of the Kresge Hearing Research Institute, Department of Otorhinolaryngology, University of Michigan Medical School. University of Michigan Medical School, Ann Arbor, Michigan 48109.

Fred Linthicum, M.D., 1946, University of Southern California School of Medicine. Member of

Otologic Medical Group, Inc.; Director of Education and Temporal Bone Laboratories, Ear Research Institute; Clinical Professor of Otolaryngology, University of Southern California School of Medicine, 2122 West Third Street, Los Angeles, CA 90057.

Samuel F. Lybarger, B.S., 1930, Carnegie-Mellon University, Self-employed as acoustical consultant. 101 Oakwood Rd., McMurray, Pa. 15317.

W. Dixon Ward, Ph.D., 1953, Harvard. Professor, University of Minnesota. Depts. of Communication Disorders, Otolaryngology, Environmental Health, and Psychology. 2630 University One S.E., Minneapolis, Minnesota 55414.

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Laura Ann Wilber, Ph.D.

Ex Officio:

J. Donald Harris, Ph.D.
Marion Downs, M.A.

Editorial

An ad hoc committee headed by Dix Ward is reviewing a new Constitution and By-Laws for the AAS. This is always an onerous task, and Dix is to be congratulated for finding the energy to address himself to it. One of his best working members has been Sam Lybarger, who has also devoted a great deal of effort to the job. He has come up with a detailed critique that may make the document a sound one that will endure the future changes inherent in any dynamic group. The rest of us dunderheads on the committee haven't been much help.

The membership should also know that the name change resolution will be submitted at the same time the new constitution is presented. This delay will give us all time to reflect on whether we prefer the term Audiology or the term Auditory as representative of what we do as a group.

As the ad says, Audiologists do it in sound rooms! MPD-RJR

Notice - The Executive Committee has approved a \$5.00 increase in 1978 membership dues.

For some decades the fitting of hearing aids has been the exclusive province of dealers working either quite independently or more usually as representatives of major manufacturers. Founders or other personnel of these companies (one thinks of Fred Kranz, of the late Leland Watson, and others) often worked closely with otologists to develop models to fill demonstrated needs. This association between physicians and hearing aid dealers became and persists today as the most common system of hearing aid prescription and delivery.

Not too long ago it was possible for anyone with a good character reference and some financial resources to set up a hearing aid dealership with no professional training or expertise whatever. Hundreds of men and women have under this system become excellent hearing aid specialists by way of a variety of types of on-the-job training through professional hearing aid dealers association conventions, short courses, and magazines, through manufacturers' training materials and factory visits and always (in common with us all) through profiting from countless mistakes on past clients. There was always, of course, some highly visible fraction using advertising methods of at least doubtful ethics and whose "hard sell" approach did a disservice to many persons, and a fraction whose level of knowledge of hearing and the possible effects of amplification was abysmal.

Today the situation has improved greatly. Should a hearing-impaired person choose to obtain the services of a certified member of the National Hearing Aid Society, that dealer would at least be no neophyte but would have had a minimum of 2 yrs supervised practice in fitting hearing aids and have passed a national examination. Many states have certification which tends to weed out the incompetent and unethical. Although many dealers who could perhaps be shown incompetent are "grandfathered" in at the moment, this proportion will decrease steadily. Today there are many avenues, including a 2-yr college Associate degree, by which a person can learn hearing aid dispensing or can pursue continuing education.

Despite these developments, the current state of affairs is far less than desirable. Many laymen, recalling past incidents or meeting new evidence, hold hearing aid dealers in suspicion. Too many a hearing-impaired person is improperly fitted, either because the ideal aid for that person has not yet been invented, or because the dispenser has an imperfect knowledge of (1) the state of the client's hearing and/or (2) the best prosthesis within those many options currently available.

The relation between the ear doctor (otologist or otolaryngologist) and the hearing aid dealer has often been of great benefit to the patient, and no other member of the hearing health delivery team could have contributed significantly. But in many cases the services of a third professional,

usually an audiologist, has been, or would have been, vital:

(1) Frequently a hearing-impaired patient is told by an ear doctor that his hearing loss is uncorrectable because it is a "nerve loss." In all too many cases the physician states that the patient might try a hearing aid but that most likely it would not help; the physician might even predict that a hearing aid would not help. This kind of advice, without a full audiological workup, is unfortunate and reflects the fact that many physicians are simply not aware of the real advances which have been made in audiological examination and in current hearing aid technology. In such cases of hard-to-fit clients, consultation would be vital between the physician and an audiologist well versed in all aspects of audiological testing and hearing aid evaluation. Modern professional audiological literature contains numerous cases of one of the newer prosthetic systems enabling a person to communicate who was unable to profit from one or more earlier models.

(2) Frequently also, a large fraction of hearing-impaired persons need more, perhaps far more, than simply a good prosthesis such as a competent hearing aid dealer might provide. With children of all ages from neonates to teen-agers it is clear that habilitation and rehabilitation techniques must build upon, but go far beyond, provision for appropriate amplification. The special audiological needs of geriatric patients in addition to amplification are being emphasized. For some adults with sensorineural loss very special requirements may need to be met to allow reasonable communications. Even for adults with no over-riding problems except diminished hearing it is frequently necessary to do more than simply encourage the client to wear the aid and not tuck it away in a drawer, as any salesperson might do.

We are approaching here the question of the limits of training and expertise of the hearing aid dealer. He is by FTC regulation now expected to direct his client to an ear doctor if he detects any of certain "medical alert" symptoms. But there is still an area of "audiologic alert" symptoms on the detection of which the dealer should be expected to direct his client to an audiologist certified in the management of communicative disorders due to hearing impairments.

It seems clear then that audiologists have carved out for themselves an advisable and in many cases an indispensable role in creating or revising communication skills in the hearing-impaired person of any age.

One difficult question in this emerging picture of the physician-audiologist-dispenser team is the relation of the newest member, the audiologist, to the other two. Some audiologists in medical settings are contributing substantially to medical diagnosis, the exclusive province of the physician. It is, however, possible to speak of a communicative dysfunction arising from hypacu-

sis, with diagnosis and treatment the province of the audiologist; in this case a prosthesis may be simply one of the tools in the audiologist's bag. Some audiologists in private settings, often in association with physicians, may undergo the same training and adopt the same financial posture as the traditional commercial hearing aid dealer and seek a license themselves to dispense prostheses. Some audiologists in public settings may perform hearing aid evaluations and either refer their patient to a commercial dealer or dispense aids under the aegis of their clinic.

In these diverse settings, some strains among members of the hearing health delivery team are inevitable. The physician is uneasy at the audiologist entering the area of diagnosis of any sort. The audiologist may attempt to direct very precisely the fitting of a prosthesis by the dealer even though he may never have fitted a hearing aid and his "hearing aid evaluation" is marked by uncertainty. As Pollack (1975, P. 145) says "If you were to bring 10 clinical audiologists together to discuss the hearing aid selection procedures they use with adults, you would inevitably hear 10 different approaches... Unfortunately, with the present state of the art and the clinical tools available, no one procedure may be superior to the others."

There are, however, some signs of hope on the emerging scene. After far too long a time, ASHA has seen that clinical audiologists, in order to best serve certain clients and even whole subpopulations, must involve themselves in actually tailoring prostheses to individual ears in

the traditional manner of commercial hearing aid dealers. Fortunately this service, with its precious ingredient, feedback, is no longer seen by ASHA as crass commercialism but as a vital professional activity which enhances rather than detracts from the professional image of audiology. On an even broader scale national governmental bodies have held lengthy public debates on the prosthesis and its delivery system, and cool heads are pointing to the advisability - the necessity of cooperation among all members of the team. It is no longer tolerable for factions to wobble about images and egos. Roles are rapidly changing now and will change in the future, but these changes will significantly help the hearing-impaired if those involved keep the real problems in focus. There is still much to be learned about evaluation of candidates for hearing aids, and in the techniques of fitting. Moreover, the industry is creating new principles and models at a breathtaking pace. Still 82 per cent of those who need a hearing aid are not wearing one and remain in a world of less than maximum communications. It is encouraging to see the many scientists, engineers, and professional persons of all sorts who have now become concerned, and these will ignore with justified contempt the personalities, prejudices, egos, or images which should in any way compromise the help desperately needed by so many.

REFERENCES

Pollack, M.C. (Ed.). Amplification for the Hearing-Impaired. In: Intr. by Raymond Carhart. N.Y.: Grune and Stratton, 1975.

Gerber Home Destroyed by Fire

The Santa Barbara fire caught the home of Sandy Gerber, SENTAC prexy, and gutted it completely. What was once a beautiful new house, burned to the ground by the fire that ravaged a large residential area of Santa Barbara.

Fortunately Sandy, his wife and

children, were away from home but his wife came back in time to see it reduced to ashes. Ironically they had just recently built the house and moved in. But Sandy adopts a fatalistic attitude and seem quite unruffled by the experience. He left for a trip to Israel a week after the fire.

News About Members & Others

Alice Berkowitz has accepted the newly created position of Regional Director of Professional Services with Audiotone, Inc. She leaves a position as Director of Audiological and Speech Services at Manhattan Eye, Ear and Throat Hospital in New York City.

Harvey Firestone, Lt. (J.G.), U.S. Coast Guard, has established a Hearing Conservation program

for the Coast Guard. He is making a film to educate commanding officers about the program.

Gilbert Herer is newly elected President of the Maryland Speech and Hearing Association for 1977-78, and was appointed for a three-year term to the Noise Control Advisory Board of Montgomery County, Maryland.

PRE-REGISTRATION FOR MEETING AND REEF TRIP

To: Harris Pomeranz
515 Bay Street
Tampa, Florida 33606

I will attend the meeting December 12.

Reserve _____ places for the Reef Trip Sunday, December 11.

I vote for an additional day on the Reef Saturday, December 10.

Name _____

Address _____

THE INTERROGATORY

Corti's Organ has invited a group of knowledgeable Audiologists to address themselves to the question:

"What are the implications for hearing problems in infants and children with recurrent serous otitis media, and how do you handle them?"

Anne Seltz, CCC-A, Audiologist, St. Louis Park Medical Center, Minneapolis.

Because of auditory input human infants and children acquire healthy language and speech. Because of adequate BINAURAL auditory input humans learn to define spacial relationships. Because of NON-VARIABLE hearing humans develop a stable and precise auditory processing competency. Reduced auditory input due to hearing loss, monaural or binaural, interferes with the human communication process. Less than normal intelligence, less than normal social and emotional development, and less than normal health negatively affect a person's use of auditory input. Communication and listening needs vary with age, educational status, employment environment, social environment and personality.

The Down's Syndrome young child with chronic middle ear disease and probable continued reduced hearing over time in combination with expected reduced intellectual function cannot tolerate reduced hearing to as great a degree and for as long a time as can a bright, emotionally stable, assertive ten-year-old child who has the ability to define changes in his auditory input. The nine-month-old child passing through a very critical language acquisition period cannot tolerate two months of reduced hearing without an effect on that developmental process. A young adult working in a nonverbal environment with minimal verbal social behaviors can tolerate reduced hearing for longer periods of time than can a fulltime mother, a verbal sales clerk, or a courtroom stenographer. A primary physician whose major professional communication is on a one-to-one basis can tolerate a greater degree of hearing loss for a longer time than can a classroom teacher or a student in a classroom.

Any adult can tolerate a greater degree of hearing loss for a period of time than can any child of any age because any child is acquiring speech, language, and general knowledge while any adult has usually completed those processes.

Multiply-handicapped children are in greater need of good auditory input than are persons without disabilities and they should receive the most aggressive medical and audiological intervention.

As an audiologist in a multi-disciplinary health care setting with 100 physicians including three otolaryngologists, ten family practice physicians, ten pediatricians, three allergists, and two pediatric nurse associates, I receive many varied requests for evaluation of children. In addition,

I receive requests for evaluations from school personnel, parents, and other health care professionals outside this Center. By far the majority of children I see have middle ear dysfunction, history of middle ear dysfunction, or history of delayed speech and language development. I define monaural hearing status, child's ability to use auditory system for purposes of communication and speech and language development, the stability of this hearing ability over time, the child's ability to tolerate reduced hearing for a period of time without significant effect, the ability of the family to compensate for any amount of reduced hearing by bringing child closer and talking louder, and interpret my data and recommendations to the parents and involved health care professionals and/or school personnel.

If medical management cannot maintain healthy ears or near normal hearing I recommend amplification to the family as a viable option. I do not agree with the opinion that medical management must precede audiological intervention with use of amplification. The variables of duration of hearing loss, pattern of hearing loss, variability of hearing loss, age of child, and ability to tolerate reduced hearing must be considered by the audiologist. If medical management of middle ear disease requires more than two months of medication and/or surgical intervention and chances for maintaining normal hearing with this regime are not excellent, then audiological management with amplification will be considered. Too often audiological management is not requested until the physician has successfully eradicated the disease process. In some cases this can be months and years. The audiologist can be aggressive in defining the need for normal hearing in the pediatric population, can monitor hearing over time in the chronic population, can provide on-going consultation and counseling to parents of this population, can make appropriate referrals to speech pathologists for evaluation, preventive counseling and treatment, and can aggressively use amplification when that is a viable alternative or additive for maintaining near normal hearing binaurally.

In order to access these variables the audiologist needs to become involved in primary care of middle ear disease by providing guidelines to primary physicians and by seeing all children under the age of 8 in the ENT office. Audiometricians can see the adults. In my office audiometricians do not see children because they can only measure. Most otolaryngologists do not profess to be knowledgeable in child development, speech and language development, management of the acoustic environment, and do not communicate as effectively with parents and schools and speech pathologists about these subjects as do audiologists.

Audiologists are uniquely prepared to evaluate the effect of any degree of hearing loss on a particular child or a particular

age in a particular environment with a particular history. They are uniquely prepared to evaluate the effect of hearing loss in conjunction with other disabilities. The cooperative decision making and treatment by the audiologist and the physician can be especially effective in management of the infant and child with otitis media for purposes of maintaining near normal binaural hearing.

Thomas J. Fria Director, Audiology, Children's Hospital of Pittsburgh.

The implications of hearing loss in infants and children with recurrent serous otitis media can be significant when viewed in the context of eventual speech and language acquisition. Although the hearing loss associated with serous otitis media can be considered mild and in most cases, transient, the situation for recurrent serous otitis media is somewhat different. Recurrent serous otitis media results in fluctuating mild conductive hearing loss throughout several months of the child's life. Most frequently this bout of recurrent otitis media occurs between the ages of 2 and 8 years, at a time when speech and language acquisition is quite active.

Consequently a fluctuating mild conductive hearing loss in a time of active speech and language acquisition can have serious implications for the child involved. At the very least, he or she may face confusion when attempting to use subtle auditory information for language concept formation and accurate articulation patterns.

Documentation of the effects of fluctuating conductive hearing loss on the acquisition of speech and language has until recently been unavailable. Very few organized studies of these effects have transpired. In 1969, Holm and Kunze studied the effects of serous otitis media on language and speech development and found that children with chronic otitis media were significantly deficient in tasks requiring reception and integration of auditory information. They were also deficient in the production of verbal responses. The authors found deficiencies which covered a large range of linguistic skills. For example, articulation of speech sound in single words, receptive vocabulary as measured by the Peabody Picture Vocabulary Test, the use of analogies (both visual and verbal), grammatical structures and the ability to repeat digital sequences.

In 1977, Needleman and Menyuk studied the effects of fluctuating conductive hearing loss on a single facet of language: the comprehension and production of aspects of the phonologic system. Subjects with history of recurrent serous otitis media were found to be deficient in total phonologic performance, production of phonemes in words, and connective speech, and the use of combinations of phonemes in word endings. Hence, the 3 to 8 year old children studied by

Needleman and Menyuk were found to have significantly deficient phonologic abilities when compared to suitable controls. The authors point out that such phonologic abilities are prerequisites for learning to read and that deficiencies in this area can perhaps account for the educational retardation observed in children with recurrent otitis media.

As additional organized investigations of the effects of serous otitis media on language acquisition are performed it will no doubt become increasingly apparent that mild transitory hearing loss secondary to recurrent otitis media can have serious implications for the children involved. Once we recognize that such implications exist, we must go a step further in the management of these children. For example, all individuals involved in the education of the child should be informed of the deleterious effects a mild conductive hearing loss can have on the development of the child. Such individuals would include parents, educators and professionals. The concerned individuals must be made aware of the need to carefully monitor the degree of hearing loss throughout the course of recurrent serous otitis and in some way they must establish an environmental flexibility which can align itself with the child's needs during the course of the disease.

One possible role for the audiologist is that of patient advocate. In other words, he or she should be concerned with the regular and accurate monitoring of hearing levels in the child with recurrent otitis media and he or she should work actively to establish a liaison with the individuals concerned with the child's education. In summary, I can only say that we must all recognize that the mild conductive hearing loss associated with serous otitis media can no longer be overlooked as having implications for the child's eventual language development. This is particularly true in the case of recurrent serous otitis media and appropriate measures must be incorporated by all individuals concerned with the child's welfare.

R. Ray Battin, Director The Battin Clinic, Houston, Texas:

Howie, Downs, and others documented lower verbal intelligence in children with a history of recurrent otitis media during infancy and the primary years. Clinically, we have been documenting the test profiles and behavior of children with learning problems with a history of early and recurrent Serous Otitis Media. These children were labeled by their teachers as troublemakers, daydreamers, and non-cooperative. They were described as inattentive, distractible, and as having short attention spans. Testing revealed these children had difficulty processing information received through hearing. They had not developed the ability to selectively attend and could not function when competing noises were present. As a result they were unduly punished by the open

concept school program. If in the traditional classroom, they failed to get the teachers instructions unless seated on the front row. They did poorly in classroom activity that demanded group participation or in rooms with a high noise level.

Failure to develop auditory retention and storage skills prohibited these children from hanging on to information long enough to process it. Since reading is primarily an auditory skill, reading level is significantly depressed.

Failure to develop the ability to auditorily synthesize or close out the message further impedes the ability to process the incoming message and these children acquire the label of refusing to conform, smart alecs, can't follow directions.

As a result of these auditory language processing deficits, these children not only are in trouble in school, but with their peer group as well.

If we look at statistics some amazing similarities occur. The National Academy of Sciences reports an incidence of 30 percent with normal or above intelligence have a language/ learning disability. One out of ten students nearing the end of high school cannot perform basic, everyday reading tasks. Freeman has found juvenile delinquents trace their initial acts of crime back to when they dropped out of school because they were slower than

[Cont. on Page 6]

News Release

The Board of Directors of Environmental Hearing and Vision Consultants, Ltd. of Syracuse, New York, has announced the formation of Environmental Health Screening Services, Inc. The president of Environmental Hearing and Vision Consultants, Ltd., Dr. Alan Feldman, notes that the new division will provide full health screening services, on-site, through the use of a mobile clinic. Mr. Walter Curry, Program Director, stated that this new service received its impetus from the acquisition of a multi-year contract with a large northeastern utility company. The contract calls for the provision of a wide range of OSHA required health screening services to a large number of the utility's employees.

The mobile clinic, staffed by professionals, will offer chest x-rays, pulmonary function tests, EKG, blood profiles, urinalysis, vital signs, and other special services as may be required. Initial plans are for the Syracuse based consulting firm to offer this new service in the northeast. According to Mr. Curry, the incentive for developing a complete health screening program arose from inquiries from present clients who already have Hearing Conservation Programs operated by Environmental Hearing and Vision Consultants, Ltd. The need to provide on-site health screening is growing as Federal health standards are developed to meet a wide variety of industrial hazards.

Corti's Editor Honored by SENTAC

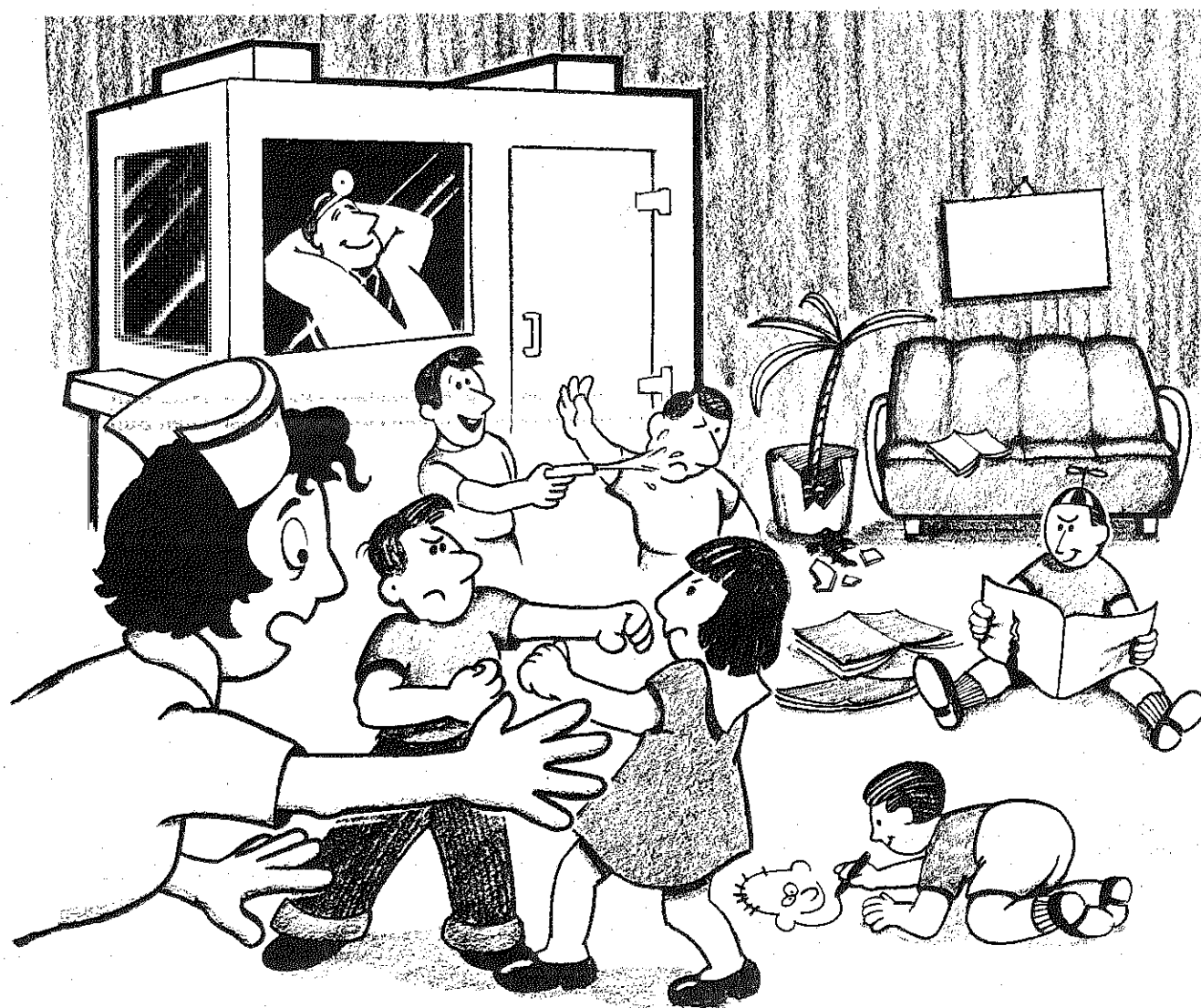
The Society for Ear, Nose and Throat Advances in Children (SENTAC) has chosen Ye Editor Marion Downs as its first Honor Guest at the 1977 annual meeting in Chicago, October 29-November 1. Downs will give the Honor address at the society's banquet October 29, presenting a talk on "Childhood — Son et Lumière".

The main program of the meeting will include the following: Meningitis: A Case for Multidisciplinary Management (Papaz); Otologic and Audiometric Findings in Cystic Fibrosis (Abramson, Franco); Pediatric Epistaxis (Jafek, Wong, Balkany); Voice Speech and Language Habilitation in Young Children Without Laryngeal Function (Kaslon, Grabo, Ruben); Unilateral Sensorineural Hearing Loss in Child-

ren (Bergstrom, Shallit); Hearing and Speech Assessment in Noonan's Syndrome (Gerber, Hopkins); Rubinstein-Taybi Syndrome — Otolaryngic Manifestations, A Case Report of Respiratory Obstruction (Isaacson, Remoanczuk, Potsic); Bacterial Meningitis & Hearing Loss, A Prospective Pilot Study (Berlow, Caldarelli); Effects of Noise on Children's Speech Perception (Elliot); The Effects of Noise on Young Children (Bess, Finlayson); Central Auditory Testing with Children: One Audiologist's Experiences (Del Polito); Misfirings of F.M. Auditory Training Systems (Hood, Boyden). Current Developments in Physiological Measures of Hearing in Children — Laszlo Stein, Ph.D., Moderator. Auditory Screening with High-Risk Neo-

nates: A Four-Year Study (Meyer); Utilizing Early Evoked Response to Screen Hearing in Newborns (Hamilton); Acoustic Reflex Measures for the Prediction of Hearing Sensitivity in Retarded Children (Zarnoch); Recent Developments in Electrophysiological Testing (Ear) (Mendel); Stridor in the Neonates, Infants and Child (Holinger); Tracheotomy in Infants (Wong); Neonatal Tracheotomy (Seid); Pediatric Endoscopy Use of the Storz-Hopkins System (Reichert); Traumatic Pseudodiverticulum in the Neonate (Gibson). Study of Pharyngeal Airway in the Children with Obstructive Hypersomnia Sleep-Apnea Syndrome Secondary to Adenoidal and Tonsillar Hypertrophy (Borowiecki); Otolaryngologic

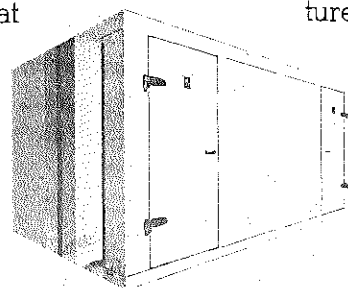
Aspects of Immune Deficiency States (Kimmelman, Potsic, Caleb, South); The Nasopharyngeal Culture: A Reappraisal of its Usefulness in Otitis Media (Schwartz, Rodriguez, Mann, Khan, Ross); Nasopharyngeal Obstruction: Diagnosis and Management (Levine, Batza); Hearing Loss in Children of a Pre-industrial Society (Deutch); Vestibular Responses in Infants: Trends Over Time and Correlation with Gestational Maturity and Weight at Birth (L. and A. Eviatar); Electroacoustic Tympanometric Measures Obtained with Children (Chermark, Luchini). ENT - Speech Voice Panel, Doctors Richardson (moderator), Hart, Cotton, Scott and Pannbacker. Didactic Panel-Eustachian Tube Testing (Seidemann and Seiffert).



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12th Annual Colorado Otology-Audiology Faculty Announced

March 5-11

Ray Battin
Houston, Texas

LaVonne Bergstrom
University of California at Los Angeles

Charles Berlin
Louisiana State University Medical Center

F. Owen Black
Eye & Ear Hospital, Pittsburgh

Richard Bobbin
Louisiana State University Medical Center

David Hanson
NIH, Bethesda

W. Garth Hemenway
Harbor General Hospital, Los Angeles

Jorgen Holmquist
University of Goteborg, Sweden

Burton Jaffe
Boston Children's Hospital Medical Center

David Lim
Ohio State University

Gunnar Liden
University of Goteborg, Sweden

David Lipscomb
University of Tennessee

George Lynn
Wayne State University

Geary McCandless
University of Utah Medical Center

Mary Meikle
University of Oregon Health Sciences Center

Josef Miller
University of Washington

Tauno Palva
University of Helsinki, Finland

James Parkin
University of Utah Medical Center

Michael Paparella
University of Minnesota

Michael Pollack
Pomona, California
Jay Sanders
The Bill Wilkerson Hearing & Speech Center

F. Blair Simmons
Stanford Medical School

Jack Vernon
University of Oregon Health Sciences Center

Paul Ward
University of California at Los Angeles

Douglas Webster
Louisiana State University Medical Center

Book Reviews

CARMEN, RICHARD. OUR ENDANGERED HEARING: UNDERSTANDING AND COPING WITH HEARING LOSS. Emmaus, Pa.: Rodale Press, Inc. (1977). 224pp. \$7.95.

Reviewed by Todd H. Porter, Director of Audiology, Houston Ear, Nose and Throat Hospital Clinic, Houston, Texas.

In **OUR ENDANGERED HEARING**, Audiologist Richard Carmen has provided the hearing-impaired with a well-written, factual and easy-to-read discussion of many aspects of hearing loss. The initial chapters deal with the incidence of hearing loss, the psychological impact of hearing loss and the effects of hearing loss on communication ability. Many of the myths associated with hearing loss are dispelled and the author provides the reader with an insightful discussion of the everyday problems encountered by the hearing-impaired as well as offering practical advice on coping with a hearing loss. An entire chapter is devoted to a convincing, although in the opinion of this reviewer somewhat over-stated, indictment of environmental noise exposure as the major cause of hearing loss in today's society. The statistics presented are, however, alarming.

In other segments, the mechanism of hearing is discussed along with the various causes of hearing loss, types of hearing loss and treatments available for certain types of hearing disorders. Much of the remainder of the text deals directly with the practical consid-

erations involved in hearing aids - how to choose an aid, the procedures that should be followed in obtaining an aid, the social and psychological ramifications of wearing an aid, what may be realistically expected from an aid, the costs involved, etc. The author also offers practical consumer protection advice and goes to great lengths to warn against sales abuses that may be avoided by otological and audiological consultation and evaluation prior to the purchase of a hearing aid.

Special features include a question/answer section with many common (and some not-so-common) questions regarding hearing loss and a presentation of several case histories relating personal experiences with hearing loss. The appendices offer sources of information relating to hearing loss, noise abatement, consumer protection, hearing aids, telephone and television aids, and a listing of potentially ototoxic drugs.

OUR ENDANGERED HEARING should be very helpful in assisting the hearing-impaired to understand the problems associated with their hearing loss as well as coping with their hearing loss. It should also be particularly helpful for the family and other associates of persons with hearing loss, and I would not hesitate to recommend it to my patients. In addition, Audiologists and others involved either directly or indirectly with the profession of Audiology will find this book beneficial in counseling the hearing-impaired and their families.

AMERICAN AUDIOLOGY SOCIETY

1977 Annual Meeting

12 December 1977

Carillon Hotel

Miami Beach, Florida

8:00 a.m. - 12:30 p.m. Executive Committee Meeting
12:30 - 12:35 p.m. Introduction and Award Pres. Geary McCandless
12:35 - 2:00 p.m. Second Annual Raymond Carhart Memorial Lecture
Hallowell Davis, M.D.

"We present status of Electric Response Audiometry"

2:00 - 2:15 p.m. Coffee Break
2:15 - 3:30 p.m. Invited Papers
3:35 - 5:18 p.m. Contributed Papers
5:19 pm - 'til Brief Business Meeting
8:30 p.m. - 'til Dinner with Hallowell Davis

Program Chairman: Harris L. Pomerantz, 515 Bay Street, Tampa, Florida 33606

INVITED PAPERS

2:15 - 2:40 p.m. Altitude Effects on the Aviator. Donald C. Gasaway, U.S.A.F. School of Aerospace Medicine Brooks Air Force base, Texas
2:40 - 3:05 p.m. Diving Hazards: Round Window Membrane Rupture A Cause of Sudden Deafness. Frederick W. Pullen Miami, Florida
3:05 - 3:30 p.m. Congenital Mixed Deafness; Perilymphatic Hydrops. J. Brown Farrior, Tampa, Florida.

CONTRIBUTED PAPERS

3:35 - 3:47 p.m. Use of a Central Auditory Processing Test Battery in Evaluating Residual effects of Decompression Sickness. Gerald Miltenberger, Vincent Caruso, Manning Correia, J. Thom Love, and Paul Winkelmann, Galveston, Texas.
3:48-4:00 p.m. Eustachian Tube Testing Normative Data in Children. Michael F. Seidemann, and Gregg Givens, New Orleans, Louisiana.
4:01-4:13 p.m. A Systematic Study of the Effects of Direction and Amount of Pressure in Eustachian Tube Testing in Adults. Michael F. Seidemann, Gregg Givens, and Melinda Seifert, New Orleans, Louisiana
4:14 - 4:26 p.m. Audiologic and Metabolic Findings in Patients with Fluctuant Hearing Loss. Paul Yanick, Jr., and Stephen Freifield, Summit, New Jersey.
4:27 - 4:39 p.m. Comparisons Among Auditory Reaction Time, Loudness and Certain Characteristics of the Acoustic Reflex. Lynne Marshall, and John F. Brandt, Lawrence, Kansas.
4:40 - 4:52 p.m. The Effect of Pressure on Pure Tone Thresholds. Thomas W. Norris, Robert E. Jirsa, and Barbara K. Skinner, Omaha, Nebraska.
4:53-5:05 p.m. Development of a modified Speech Discrimination Test. Glen Bull, Linda Kirwin, Roger Ruth, and Zahrl Schoeny.
5:06 - 5:18 p.m. The Effects of Asymptotic Noise Exposure on a Battery of Tests. Gordon Blenvenue, Thomas Bennett, Adam Anthony, and Paul Michael, University Park, Pennsylvania.

Gallaudet College Opens Extension Center in Midwest

Washington, D.C. -- Gallaudet College, the world's only accredited liberal arts college for deaf students, has established an Extension Center far from its campus in Washington, D.C. In cooperation with Johnson County Community College in Overland Park, Kansas, a suburb of Kansas City, the Center for Continuing Education of the national college for the deaf is extending the services which it can provide to deaf individuals, their families, and professionals who work with deaf people to the five state midwest region of Kansas, Missouri, Oklahoma, Iowa, and Nebraska.

Explaining this move to open the Midwest Regional Extension Center at Johnson County Community College (JCCC), Dr. Thomas Mayes, dean of Gallaudet's Center for Continuing Education said, "Requests for the exportation of services from Gallaudet College came from institutions and agencies in many parts of the country and in increasing numbers, but because of the location of Gallaudet in the nation's capital the Eastern seaboard area received the greatest

attention. Johnson County Community College, located in the geographic center of the five-state midwest region, has an exemplary postsecondary program for the hearing impaired and has demonstrated a desire to expand its services for the handicapped. With the new Center," he continued, "we can expect to plan and schedule each year a variety of workshops, short term training programs, seminars, and other learning activities, drawing not only from the staff and faculty of Gallaudet College but also from appropriate resource persons from schools for the deaf, colleges and universities including JCCC, and state and local agencies in the area for the conduct of such programs."

"What we're talking about," said Edward Franklin, newly appointed director of the Extension Center is a pilot program for Gallaudet, which is attempting to serve a wider geographical portion of the country.

Franklin, who comes to his new position from counseling hearing impaired students at the Metropolitan Technical Community College in Omaha, Nebraska, has

been working with deaf people in various capacities for the past five years. He believes that there is no limit to the number of people in the five-state region who could be served by the Extension Center. We're starting now to plan workshops for as early as the last part of October, he said.

Programs which may be offered by the Center include intensive workshops in language development for elementary teachers, region-wide certification for teachers of sign language, courses in leadership for deaf adults, parent education sessions, P.L. 94-142 workshops, and professional workshops. Both Franklin and Mayes anticipate that the Extension Center will try to meet some of the educational, vocational, cultural, and social needs of deaf children, youths, and adults as they are identified by schools and agencies in the five-state region.

For more information contact: Dr. Thomas Mayes, Dean, Center for Continuing Education, Gallaudet College, Washington, D.C. 20002, or Edward Franklin, Director, Midwest Regional Extension Center, Johnson County Community College, Overland Park, Kansas 66210.

OSHA Drops Feasibility Document

OSHA spokesman Morton Corn announced a decision to discontinue development of a technical feasibility document on noise control. A draft document, prepared under contract by Bolt, Beranek and Newman, Inc., became too much of a point of controversy during the hearing on workplace standard revisions. It was also being prematurely used by OSHA compliance officers for enforcement purposes.

A number of industries responded to the Labor Department's request for comments on the BBN document. The industries said the document left doubts about its economic analysis of workplace noise regulation, and they questioned the cost figures and worker exposure profiles.

EPA also remained unsatisfied with the document. They stated that the acceptance by BBN of the AAOO's definition of hearing impairment is in question, as it was not intended for use in preventive criteria. EPA was also dissatisfied with the report's treatment of worker mobility.

CHABA Will Look at Noise and Electro-Physiology

The Committee on Hearing, Bioacoustics and Biomechanics ("CHABA") of the National Research Council will cover noise and other topics at its meeting October 20 and 21 in Washington, D.C. Secretary Milton Whitcomb announces that the meeting will cover the following areas:

1. The Concorde Trail at Dallas.
2. The Status of Voiceprints in the Courtroom.
3. Direct Electrical Stimulation of the Auditory Nervous System.
4. Auditory Evoked Potentials.
5. The Effect of Noise on Sleep.
6. Problems of High Intensity Noise.
7. The Effect of Whole-Body Vibration.

This CHABA meeting is back-to-back with the NOISE-CON 77 meeting being held October 17-19 at NASA Langley nearby, so members may combine the two meetings.

Interrogatory . . .

[Cont. from Page 3]

other students or else disruptive. 75 percent of the potential drop-outs have identified themselves by the time they are in fourth grade. Language learning problems, particularly those arising from auditory processing deficits generally manifest themselves in the third or fourth grade. The Colorado Youth Services report 80 percent of incarcerated juveniles have language learning disabilities.

Recurrent serous otitis media in the infant does not mean the child necessarily will become a juvenile delinquent. It does mean there is a high risk factor that he will fail to develop normal auditory-language processing skills and thus become language-learning disabled. This sets the stage for moving into the delinquent population.

Webster and Webster documented that rats who were given conductive hearing losses at birth developed significantly smaller globular cells of the ventral cochlear nucleus and neurons of the medial nucleus of the trapezoid body than a normal matched group when neuronal comparisons were made at six weeks. There were also fewer neurons in the dorsal cochlear nucleus. These nuclei are located in the brain stem and are integrally associated with the reticular activating system which is important in establishing and maintaining cortical tone.

The maintenance of cortical tone is crucial to the maintenance of attention. Sheer maintains that hyperactivity and the accompanying distractibility is the result of the organism's attempt to increase cortical tone via sensory stimulation as a result of inadequate brain stem activation of the cortex. It is logical to assume that during early critical stages of development, mild sensory deprivation due to conductive hearing loss resulting from serous otitis media has the potential to cause the symptom that is referred to as Language Learning Disability.

All professionals who treat or evaluate the infant and preschool child must be aware of the developmental ramifications of mild conductive hearing loss. Prevention of later auditory-language processing disturbance through aggressive treatment is critical. It will only come from early identification and aggressive treatment. The latter requires cooperative effort between the physician, the audiologist and the clinician. Once identified, mild amplification should be utilized if medical treatment cannot control the hearing. Losses averaging amplification should be utilized if medical treatment cannot control the hearing. Loss averaging greater than 15dB should be fit with a mild hearing aid. Parents should be trained to provide proper auditory training to stimulate the development of auditory decoding, synthesis, figure-ground and retention skills. This home program should be monitored by the audiologist or hearing clinician and modified as needed. If the youngster is 3 years or older, consideration should be given to placing the child in a formal treatment program coupled with a strong home program.

Auditory-language processing skills can be remediated in the school age child. It is a long treatment program which must direct itself not only to the auditory problems but to the resulting academic and emotional problems. How much better it would be to concentrate our efforts on prevention.

Carpenter, Malcolm B. *Human Neuroanatomy*. Baltimore: The Williams and Wilkins Co., pp. 327-337, 1976.

Downs, M. "Deafness in Childhood". *The International Symposium on Deafness in Childhood*, 1976.

Howie, V.M., J. H. Ploussard and J. L. Sloyer, Jr. "The Otitis Media Prone Condition", *American Journal of Diseases Children*, 129: 676-678, 1975.

Lowe, J. F., J. S. Banforth, and R. Pracy. "Acute Otitis Media: One year in a General Practice", *Lancet* 2:1129-1132, 1963.

Mawson, S.R. "Chronic Otitis Media", in *Hearing Loss in Children*, pp. 431-441. Edited by Burton F. Jaffe. Baltimore. University Park Press, 1977.

Moruzzi, G., and H.W. Magoun. "Brain Stem Reticular-Formation and Activation of the EEG", *Electroencephalog and Clinical Neurophysiology* 1:455-473, 1949.

Sheer, D. Z. "Lecture on Attention", *University of Houston*: April 15, 1977. Webster, D.B. and M. Webster, "Brain Stem Auditory Nuclei After Sound Deprivation". Paper presented to the 91st Acoustical Society of America Meeting, Washington, D.C. April 5-9, 1976.

Noel D. Matkin, *Pediatric Audiologist, Director, Language & Learning Center, Boys Town Institute for Communication Disorders in Children, Omaha.*

While serous otitis media is widely viewed as a common childhood problem, there are at least three major reasons why the implications of middle ear effusion on language development and auditory learning during infancy and early childhood have not been appreciated. First, middle ear effusion typically has not been viewed as a basis for communication disorder since many cases readily respond to medical or surgical intervention. Yet, a longitudinal study by Kaaijk (1977) indicated that 7 percent of the children with temporary hearing loss evidenced 4 or more episodes of otitis media over time with 29 percent of these youngsters having a bilateral impairment. In other words, a significant number of youngsters repeatedly encountered periods during which hearing sensitivity is depressed in both ears. Second, the pervasive effects of a so-called "mild" bilateral hearing loss during childhood, whether the impairment is conductive or sensorineural in type, have not been recognized. However, a review of the hierarchy of language development suggests that the rapid acquisition of receptive language concepts and associated auditory learning skills during the preschool years serves as the foundation for subsequent success in academic achievement once a youngster enters a school program. As McCarthy (1954) succinctly states "The child whose language development is seriously

ly delayed for any reason labors under an almost insurmountable handicap in his social and academic relationships". An investigation in the public schools by Quigley, et. al., (1969) as well as clinical experience, has revealed that minimal losses of 25-30dB often result in language delays of one or more years. Further, the handicap becomes more evident as the degree of the loss increases; with delays of 3 and 4 years commonly encountered in the presence of a 50dB bilateral impairment. Third, while articles are scattered throughout various journals which substantiate the preceding comments, adequate longitudinal research with large samples of young children having well documented medical histories and multi-disciplinary psychoeducational evaluations is lacking. Consequently, definitive information is not available with chronic serous otitis media and such issues as: the effectiveness that language and learning deficits associated with bilateral conductive losses can be remediated; the preferred remediation ear pathology during the first two years of life. Downs extrapolated from this data that 15 percent of all children, birth to two years of age, would have significant hearing loss. 15 percent to 20 percent of children in the regular classroom plan including use of amplification with fluctuating hearing loss; the effect of a unilateral hearing loss during early childhood; the prevalence of sensorineural deficits secondary to chronic SOM; etc.

The need for coordinated team work involving, as a minimum, the otologist, the audiologist and the childhood language specialist is self-evident when developing a service delivery model for children with recurrent serous otitis media. While the physician is the obvious team coordinator in such cases, the importance of ongoing audiologic monitoring and language assessment, as well as comprehensive otologic care, cannot be overstated. Simultaneously, individualized education and guidance programs for parents, as well as for educators involved in the child's management, are mandatory so that the hidden implications of the condition on present development as well as future achievement is fully recognized.

While the preceding comments relate to the management of individual children, a major educational thrust is needed in medical and educational communities regarding the potential problems resulting from middle ear effusion during infancy and early childhood. If the deleterious effects of chronic serous otitis media are to be minimized, the critical importance of early identification, referral and management must be understood by family physicians, pediatricians, nurses, nursery school teachers and Head Start personnel, among others. Obviously, such inservice training should be based on data obtained from systematic clinical investigations of children rather than upon assorted case studies so that the implications of serous otitis media are neither understressed nor overstated.

Marion P. Downs, M.A.
Editor, *Corti's Organ*
Dept. of Otolaryngology

University of Colorado Medical Center
4200 East Ninth Avenue
Denver, Colorado 80262

References:

- Kaaijk, C.K.J.: *Longitudinal Study of Hearing Loss in Childhood*. *Audiology* 16: 132-145, 1977
McCarthy, D.: *Language Development in Children*. In Leonard Carmichael (Ed.) *Manual of Child Psychology*, New York: John Wiley and Sons, 1954.
Quigley, S. and Thomure, F.: *The Relationship of Hearing to Learning*, State of Illinois, Office of the Superintendent of Public Instruction, 1969.

Maurice H. Miller, Prof. of Audiology, New York University and Chief of Audiology, Lenox Hill Hospital, New York.

SOM is unquestionably the major cause of hearing impairment in the preschool and school aged population and is responsible for enormous and frequently irreversible social and educational retardation. Since the average hearing level of children with these conditions is approximately 14 dB, they easily "pass through" typical screening programs which use a 20-25 dB cutoff point for air conduction signals. Children with these conditions are not constitutionally "sick" in the usual sense and are usually attending school but experiencing varying degrees of difficulty in participating in classroom activities. A fluctuating conductive hearing impairment is the main symptom of the initial stage of these conditions. Impedance audiometry must be performed routinely at least on the "high risk" population if these problems are to be detected with any degree of accuracy.

Failure to identify and manage current SOM results in these children being mislabeled as having "behavior" and "learning" problems. A child with recurrent SOM and its attendant sequelae who is not correctly identified and properly treated does indeed become "learning disabled."

Inadequately treated SOM may cause irreversible sensorineural hearing impairment. Many children with recurrent SOM show severe delay in acquisition of reading and arithmetic skills. The degree of academic delay seems to be related to the severity of the hearing impairment and while the conductive component if detected early enough is reversible, the academic impairment is often not. While considerable attention has been directed to the medical complications of SOM—atelectatic middle ear, adhesive otitis media, malfunctioning Eustachian tube and cholesteatoma—hearing health professionals need to be equally concerned with the social, behavioral and academic consequences—which can have devastating effects on the development and achievement potential of the child.

The otolaryngologist is the pivotal professional responsible for definitive management of infants and children with recurrent SOM. Medical and more often surgical treatment of these conditions including adenoidectomy, myringotomy and insertion of tubes using the operating microscope must be performed promptly—not after the condition has been present for years. My role as an Audiologist is in identifying

and measuring these conditions often in essentially asymptomatic children, getting the child to the otolaryngologist for definitive treatment and measuring the response to therapy. My reading of the educational and social consequences of inadequately treated SOM leads me to support aggressive surgical management by an experienced pediatric otolaryngologist. When my patients with these conditions do originate with the otolaryngologist, I do everything possible to arrange for such a referral as quickly as possible. SOM means much more to me than a pathological middle ear. Effective treatment can forestall irreversible social and academic damage.

Patricia Heffernan, Otolaryngologist, group Medical Clinic, In Beverly Hills, California.

The relatively high incidence of otitis media in young children and its usually mild medical implications, could easily lead to the misconception that it is an innocuous problem. Many specialists believe that in the infant and young child age group much as 23 percent of the population will have otitis media.

However, I do not believe that can any longer satisfy ourselves that it is a benign problem whose only significance is possible medical complication. Nor may we look at the numbers on an audiogram and label the results significant.

Public school classes for the child with language disorders report that the medical histories of the youngsters contain an unusually high number of upper respiratory infections and middle ear disease. Only infrequently do they note significant hearing loss. Several recent studies have documented the serious delay in language and speech development and deviant auditory behavior of these children—especially in contrast to those where no such incidence is noted.

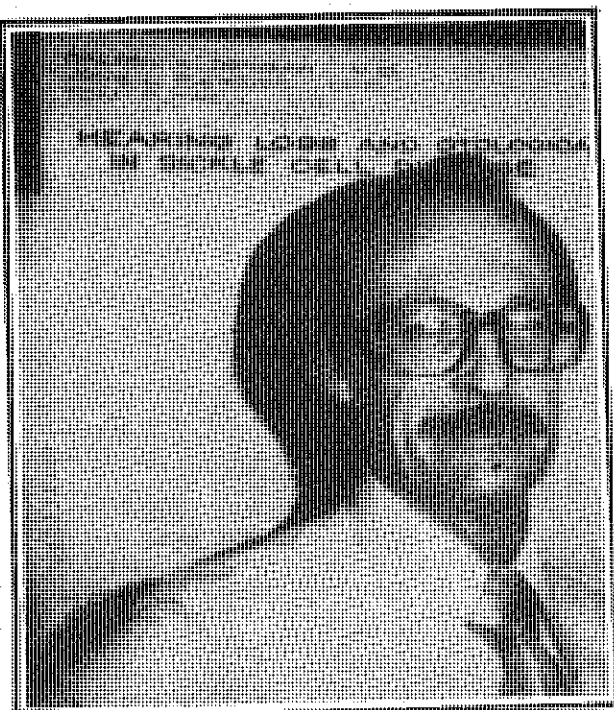
A child's development of linguistic and learning competence appears to be highly dependent on consistent sensory stimulation. Those who are already disadvantaged (socially, economically, intellectually, physically, emotionally, or any combination of these), are probably the least capable of compensating for added handicap arising from auditory inefficiency.

Parents need to be educated to recognize when their child's language and/or speech are developing in a manner that interferes with communication. The classroom teacher and parent need to have at least enough dialogue that parents can be alerted when a child is beginning to show listening and learning problems in the classroom. The physician and parents need to discuss more than the amount, schedule of medications, and possible diagnoses. We are beginning to accept that behavioral information is more meaningful than falling into the routine of offering a diagnosis (usually in terms that parents cannot understand).

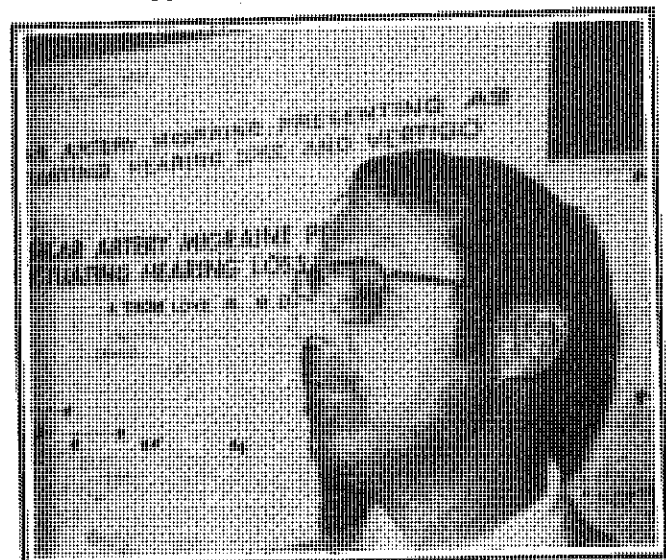
If a child is in the years critical to developing mastery of his language and speech patterns (under age 3½), his parents should be alerted that he may need to be held in mother's arms for language.

Continued on page 8

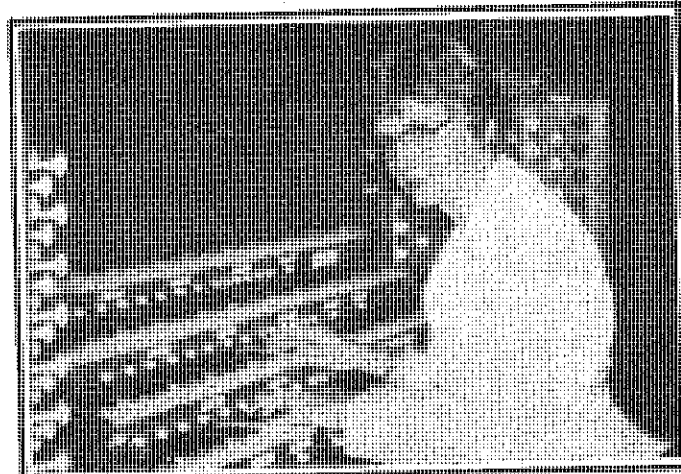
Highlights of AAOO and SMA Meetings



John Fletcher at AAOO, Dallas, Tx.



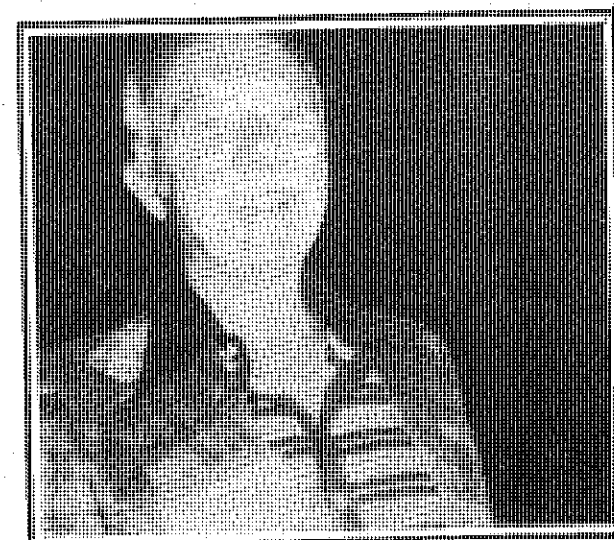
Thom Love, Galveston at AAOO, Dallas, Tx.



Carol Clever, Cal. State Univ. at Los Angeles. Besides being an audiologist, Carol is a concert organist and a licensed pilot.



This year's AAS Program Chairman, Harris Pomerantz at SMA meeting, Dallas.



Eddie Johnson, L.A.P.O., at SMA meeting in Dallas, Tx.

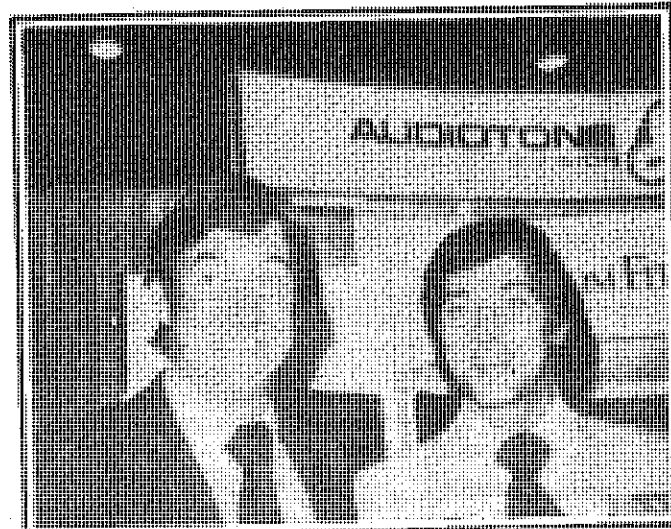
Playperson of the Month



Chuck Berlin.



Sharon Graham and Connie Cabeza



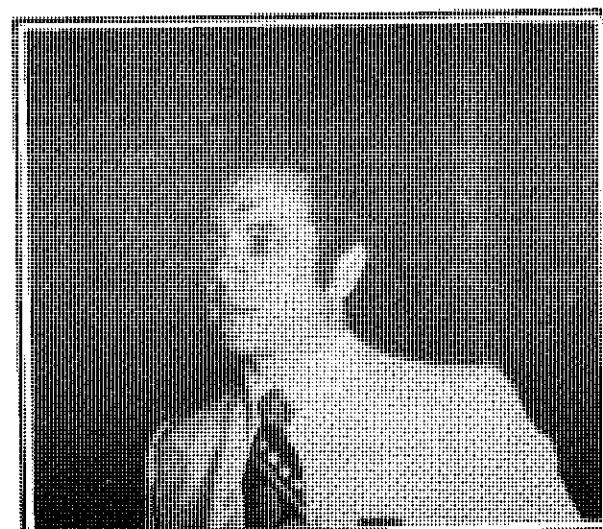
Asher Wolfe and Wayne Staab at AAOO, Dallas, Tx.



Jonni Miller at AAOO, Dallas, Tx.



Tony Ritolo and Lee Wilson at SMA meeting, Dallas, Tx.



Steve Cazden, President of Society of Medical Audiology.

Calendar of Events

October 2-6

American Academy of Ophthalmology and Otolaryngology Annual Meeting, Dallas, Texas.

October 3-5

Society of Medical Audiology Annual Meeting, Baker Hotel, Dallas, Texas.

October 13-15

Jack Katz, Ph.D., Staggered Spondiac Word Test Workshop, Milwaukee, Wis., For information, please contact: Bari S. Kipnes, Milwaukee Ear, Nose and Throat Clinic, Ltd., 10520 North Port Washington Rd., Mequon, Wis. 53092.

October 17-19

NOISE CON 77, The International Conference on Noise Control Engineering, NASA, Langley Research Center, Hampton, Virginia. Theme: "Transportation Noise". Write to: Conference Secretariat, Noise Control Foundation, P. O. Box 3469, Arlington Branch, Poughkeepsie, New York 12603.

October 29-31

Society for Ear, Nose and Throat Advances in Children, Chicago.

October 31-November 2

Evoked Electrical Activity in the Auditory Nervous System, Chicago, Illinois. Write to: Ralph Naunton, M.D., Department of Otolaryngology, University of Chicago, Chicago, Illinois.

November 2-5

American Speech and Hearing Association Annual Convention, Chicago, Illinois

November 6-12

"Surgical Anatomy and Techniques of the Temporal Bone" course. Eye and Ear Hospital, Pittsburgh. Write to: Ralph J. Caparosa, M.D., 3600 Forbes Avenue, Pittsburgh, Pennsylvania 15213.

December 2-4

7th Annual ENG Workshop and Concurrent ENG Technician Course, Honolulu, Hawaii.

December 12

American Audiology Society Annual Meeting, Miami, Florida.

December 13-16

Acoustical Society of America Meeting, Miami, Florida.

1978

March 4-11

Colorado Otology-Audiology Workshop. Write to: Colorado Otology-Audiology Workshop, Box B210, 4200 East Ninth Avenue, Denver, Colorado 80262.

March 8-11

2nd International Symposium on Pediatric Otorhinolaryngology, Kansas City, Missouri. Write to: Basharat Jazbi, M.D., Professor and Chief, Section of Otorhinolaryngology, The Children's Mercy Hospital, 24th at Gillham Road, Kansas City Missouri 64108.

June 13-16

Acoustical Society of America, Kingston, Rhode Island.

November 12-16

XIV International Congress of Audiology, Acapulco Cultural and Convention Center, Acapulco, Mexico. For information: Organizing Secretariat, Instituto Mexicano de la Audicion y el Lengua je, Progreso 141-A, Escandon Mexico 18, D.F. - Mexico.

Interrogatory . . .

Continued from page 6

age stimulation, since this provides him with increased insensitivity for her voice. Parents should be alerted to watch for delay in language and/ or speech. If combining factors or developmental language and/ or speech impairment, and otitis media occur, the child should have continuing and consistent medical monitoring until the ear is functioning normally; (b) regularly scheduled audiologic evaluation - to include Impedance testing, as well as audiometric threshold measurement; and assistance from a speech pathologist knowledgeable in normal patterns of language speech development, and appropriate intervention techniques.

The school age child with continuing middle ear disease, regardless of the degree of hearing loss should have any of the above found necessary, - plus - a continuing communication system between the non-school and school personnel responsible for youngster's medical care, educational progress.

Otitis media is educational potentially dangerous disability deserving urgent intervention. Not all children who suffer middle ear disorders will sustain language and/ or learning difficulties. However, we lack the tools to identify those who will. Many of those who do develop problems may escape identification until their deficits are too long established to respond easily to rehabilitation attempts.

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Read The New
Proposed By-Laws
Revision, Page 1

Abstracts of Papers
Presented at Annual
AAS Meeting
on Page 4.

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

THIRD CLASS

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society

Vol. 3, No. 1

January, 1978

New By-Laws Proposed

Dix Ward, as chairman of the Committee on By-Laws Revision, presented the new document to the Executive Committee at the Miami meeting. The Executive Committee voted unanimously to accept the revision and to submit it to the membership for vote. The complete revised document is printed on page 8. According to the present By-Laws the revision must be presented to the membership four months before a vote is taken. We urge all members to examine it carefully, as this is the document that will be voted on four months from now.

Dix Ward explains that the com-

mittee tried to maintain the intent of the founders that all professions dealing with hearing be welcomed to membership, and that no single individual or small group be allowed to seize power or become irrevocably entrenched.

Many issues were considered, he says, and as a result the revisions are numerous. Major changes include:

- (1) The change of name to the American Auditory Society;
- (2) The equivalent of a degree as a criterion for Membership, the equivalence to be decided by the Executive Committee;
- (3) A quorum of 20 for a Busi-

ness Meeting of the Society (we tried to be realistic);

- (4) Bylaw amendments to be effected only by letter ballot;

- (5) Provision for some pay for our hard-working Secretary-Treasurer;

- (6) Limitation that only one member of the Executive Committee can serve on the biennial Nominating Committee;

- (7) The provision that dues must be established by the Members at the regular annual meeting, not unilaterally by the Executive Committee;

- (8) Proxy votes to be abandoned;

- (9) To those who would like to (Cont. on Page 8)

Minutes of Executive Committee Meeting

DATE: December 12, 1977
PLACE: Carillon Hotel
Miami, Florida
TIME: 8:30 A.M.

MEMBERS IN ATTENDANCE:

Marion Downs
Bruce Graham
J. Donald Harris
Gilbert Herer
Geary McCandless
Ross Roeser

Hiroshi Shimizu
W. Dixon Ward

MEMBERS ABSENT:

Jaime T. Benitez
Leo Doerfler
David Dolowitz
Norma Hopkinson
Fred Linthicum
Ralph Naunton
F. Blair Simmons
Tom Tillman
Laura Wilbur

(Cont. on Page 11)

What's Our CR?

(Convention Rating)

Members of scholarly societies are wont to gather clannishly in hotels for what is known as annual Conventions. At these conventions little scientific papers are read by the few and listened to by fewer, all the while the rest are jostling elbows in hallways, trying to remember names of old friends (sic), and hustling jobs or other interests. The *New Scientist* (Vol. 76, No. 1072) reveals that there is a hierarchy among scientific societies so far as hoteliers are concerned.

An American anthropologist approached a Chicago hotel this year hoping to arrange an Annual Convention for 2500 fellow anthropologists. He was initially turned down because of the small size of the meeting. But upon hearing that the organization was one of anthropologists the hotelier became quite eager to host the society. His change of heart was not due to the prestige of anthropology but to commercial factors related to the type of conventioners that

(Cont. on Page 10)

Annual Meeting Sparked by Davis

Hallowell Davis, distinguished scientist, noted neuro-physiologist, astute psycho-acoustician and great human being—received the Raymond Carhart Memorial Lectureship award at the Miami meeting of the AAS. He delighted an audience of some 60 members and guests with his articulate and informative description of the status of Electric Response Audiometry (ERA). At an evening "Dinner with Hallowell Davis" event he endeared himself to AAS members by reciting poetry and joining in informal fun.

No one can speak more appropriately on electric response audiometry than Dr. Davis. He first performed electric measurements on nerve impulses in 1926, and since 1934 has worked continuously with electroencephalograph studies. He has been at the leading edge of all of the developments in eeg application to auditory testing.

Dr. Davis reviewed the classification of Auditory Evoked Potentials (see Table I). He detailed each of these potentials but expanded particularly on the BSER-P6. This response, he states, is a robust and reliable endpoint for audiometry having the same low threshold at high frequencies and

poor synchronization at the low frequencies as the N1 of ECochG. The longer latency of P6 makes it immune to ordinary stimulus artifacts so that ordinary earphones are practical.

Davis stresses that the BSER-P6 has very high-reliability, and that sedation (not anesthesia) is sufficient for the child. BSER-P6 is therefore recommended for noncooperative children or adults. If specific frequencies are desired, a combination of the slow waking response or middle sleep response for low frequencies and BSER for 1000 Hz and higher is useful.

Following Dr. Davis' presentation three invited speakers discussed various aspects of middle ear pressure problems, ranging from high altitude effects to diving hazards. Lt. Col. Don Gasaway, Dr. Frederick Pullen and Dr. J. Brown Farrior addressed themselves to these unusual phenomena. Abstracts of their talks will be found in this issue.

Those who attended the evening "Dinner with Hallowell Davis" felt that it was an event which would become traditional. Future Carhart Memorial lecturers will hopefully meet with the membership informally as did Dr. Davis.

TABLE I
AUDITORY EVOKED POTENTIALS

	CLASS	PROBABLE SOURCE	LATENCY (MSEC)	BEST RESPONSE	ERA
ECochG	FIRST	ORGAN OF CORTI (CM - EXTERNAL HAIR CELLS) N VIII	0	SP (DC) CM (AC)	?
			1 - 4	AP (N ₁)	**
VERTEX POTENTIALS	FAST	N VIII, BRAIN STEM	2 - 12	P ₆	**
	MIDDLE	NEUROGENIC: CORTEX I MYOGENIC: "SONOMOTOR"	12 - 50	P ₃₅	* ?
		CORTEX II (WAKING) CORTEX III (ASLEEP)	50 - 300 200 - 800	{N ₉₀ -P ₁₈₀ -N ₂₅₀ SUSTAINED POTENTIAL (DC) P ₂₀₀ -N ₃₀₀ :N ₆₀₀ -P ₆₀₀	** ? *
	LATE	CORTEX IV (EXPECTATION)	250 - 600 DC SHIFT	P ₃₀₀ CNV	?

NEWS

The Sixth Annual Convention of the Southern Audiological Society was held aboard the cruise ship Leonardo da Vinci between Fort Lauderdale, Florida and Nassau from September 9-12, 1977. Scientific sessions on "Electrophysiological Assessment of the Auditory System" featured

Charles Berlin, George Moushegian and Kurt Hecox.

Officers elected for 1977-78 were President—Richard F. Dixon (North Carolina), President-Elect—John C. Cooper (Texas), Secretary-Treasurer—Neil M. Young (Virginia), Member-at-Large—June F. Kennedy (Florida).



President McCandless presents Carhart award to Hallowell Davis

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J. Donald Harris, Ph.D.
Geary McCandless, Ph.D.
F. Blair Simmons, M.D.

Editorial

The following editorial appeared in the October issue of *Sound & Vibration*, and is reprinted with the kind permission of Mr. Yerges and S/V.



The Mandarins
But man, proud man!
Dress'd in a little brief authority,
Most ignorant of what he's most
assur'd

—Measure for Measure

Symposium on the Pathology and Pathophysiology of the Eustachian Tube and Middle Ear

FREIBURG IM
BREISGAU, 9.28.-10.1.1977
reported by Imre Friedmann

The Symposium attracted a large number of participants to this picturesque town in the Black Forest, mainly from Germany itself, but with a generous sprinkling of guests from Sweden, England, Austria and Switzerland. Dr. Juhn from Minneapolis represented the USA. It was held in the splendid Lecture Hall of the University ENT Clinic created by the former Head, Prof. F. Zollner of Tympanosclerosis and Tympanoplasty fame. He opened the proceedings with a fine lecture on "The History of Eustachian Tube-research."

The present writer was perhaps the only person conscious of the fact that in Freiburg ASCHOFF had worked—the greatest pathologist since Virchow's period—whose textbooks on General and Special Pathology had guided and inspired many a budding pathologist before the last war.

The Symposium, devoted to the normal and pathological aspects of the middle ear cleft fitted ideally into the spirit of this great University. The lectures, followed by some lively and often heated discussions attracted a large and attentive audience, generously sustained by refreshments in the intervals.

On the first day the main topic centred around the Eustachian tube: its function and relation to the pathophysiology of the middle ear. The eminent speakers included Feldmann (Munster), Ingelstedt (Malmo), Palva

(Helsinki), Arnold (Dusseldorf), Munker (Freiburg), Aschan (Linköping), Tos (Hellerup), Plester (Tübingen), and others. The normal function and physiology of the E.T. formed the subject matter of the first session followed by papers on the malfunctioning tube. The influence of nasopharyngeal tumors, of the cleft palate and certain genetic factors were discussed in some detail.

The second day produced some lively arguments concerning the middle ear mucosa under "normal" and pathological conditions. There was an astonishing degree of similarity of the **Histological observations** as presented by Friedmann, Sade, Tos and Wullstein. Their interpretation, as known from the literature, generated some fierce controversy (enjoyed by all). Although the Symposium seemed to be in harmony on the important secretory role of the "transformed" middle ear mucosa in "secretory" otitis media, the terminology, however, has remained somewhat shaky...

I have considered the following points of relevance:

1. The normal mucosa is lined by flat cells forming a simple pavement epithelium. It has an inherent respiratory epithelial potential and qualities similar to those of the flat epithelium of the pulmonary alveoli. Therefore, it would react by a transformation into a cuboidal or ciliated columnar epithelium i.e.a. stratified or pseudostratified respiratory type epithelium with secretory elements such as goblet cells and gland-like structures included in it.

2. This transformation (or reversal) is not true metaplasia.

3. It is a reversal to its genetically determined respiratory type.

4. Metaplasia would refer only to the formation of true squamous epithelium in the middle ear cleft.

5. Simple stratification (often due to the oblique plane of sectioning of the temporal bone specimens) and loss of cilia do not justify the term "squamous", that should here be used only for keratinizing squamous epithelium whose cells produced keratin filaments and/or keratohyaline globules.

Sade has maintained that he has seen true squamous epithelium in the middle ear frequently (the illustrations shown were from nasal

or cervical polyps which of course in common with inflammatory aural polyps often display metaplastic squamous epithelium on their surface exposed to external irritants).

Sabina Wullstein presented a profusely illustrated paper (using three projectors and screens) of her extensive studies of the anatomy and topographic details of the tympanic cavity of considerable surgical and pathological importance. Dr. Tos, next to Sade the most prolific contributor, has drawn renewed attention to the importance of his widely acclaimed quantitative studies of the goblet cell population of the middle ear mucosa. It would require a great deal of patient and consistent work to repeat his important results.

Juhn from Dr. Paparella's department in Minnesota gave a good account of what is best in American otological research. The experimental approach using

(Cont. on Page 3)

Letter from England

The problems of the ear nose and throat have been attracting a good deal of attention not only among the specialists but also among what the Americans call generalists and general pathologists. The Journal of Pathology has published an interesting paper on the pathology of otosclerosis in which Dr. Ingle Wright, a former assistant of your reporter, has revived the vascular theory of the pathogenesis of this obscure condition causing deafness. An Editorial in *The Lancet*, anonymous but you may guess the author, has commented on this paper comparing it with the work of Lim and Saunders and with the opinion of the doyen of Otopathology John Lindsay who has often reflected on the obscurity of the cause of otospongiosis, to give it the more fashionable name.

It is interesting to note that the programme of the Winter meeting of the Pathological Society of Great Britain and Ireland has included several papers of ENT-interest and that at a recent meeting of the Otological Section of the Royal Society of Medicine there were five pathologists present: all specialists in the pathology of the ear nose and throat. The principal topic this time, not for the first time or for the last time either, was the pathogenesis of cholesteatoma. The metaplastic theory was ably defended by our old friend Jacob Sade and his splendid presentation has nearly converted the protagonists of the immigration theory. There must be even more close co-operation between surgeon and pathologist because the surgeon-pathologists, however excellent their pathology, cannot overcome their inherent clinical bias of interpretation.

have the wisdom and learning to advise presidents and legislatures.

They attempt to establish quotas, codes, and standards, including who is entitled to what—even who should be permitted to be born or to live. They decide that "zero growth," energy conservation and rationing, acceptable limits of unemployment and minimum wages, population density, racial make-up of schools and communities (as well as private businesses) are all within their purview.

Once such speculations were the realm of a few academics, isolated in their ivory towers, and accepted with bemused tolerance as "dreamers." Now, however, their voices are being heard more clearly, and their advice is sought more actively.

People no longer feel confident in their own views nor in the democratic processes. They look for faster, more "exact" solutions to problems, particularly those couched in the esoteric language of the "experts."

More frightening is the respect various branches of the elites pay to the opinions of their colleagues in other disciplines. Healthy skepticism, intellectual humility, a sense of awe and wonder, patient questioning and examination—once the marks of rational, scientific

(Cont. on Page 3)

You will be interested to know that parents of children with Down's Syndrome have been awarded a so-called "Mobility allowance" of 7 pounds or about 13 dollars weekly. This will enable them to keep their cars running and drive out into the country with the child.

Lastly, there is going to be a change at the helm of the old Journal of Laryngology. Sir Geoffrey Bateman is handing over the Editorship to John Ballantyne. We wish him every success in maintaining the high standard set by Sir Geoffrey during his tenure of this important post in the otolaryngological world.

—Imre Friedmann, London

Letter to the Editor

Dear Sirs:

First of all let me congratulate you and the American Audiology Society by the Corti's Organ (Audionews) which has been a newspaper very interesting and really keeps us up to date with the realizations in the field of Audiology, not only in your Country but as well as abroad.

I take the opportunity to inform you and the Society, that I've finished my MSc Course at Salford University (England) and I've received my MSc Diploma on the 14th July 1977, as you can see in the photocopies enclosed.

Finally I've been invited to take charge as the Clinical Director of the Speech and Hearing Clinic of the Parents Association to the Education of Deaf Children, which was supported by the Calouste Gulbenkian Foundation. The Clinic which was settled up in Lisbon has started working on the beginning of October.

Yours sincerely,
Paulo Noronha Pizarro.
Lisbon, Portugal

Hubert and the Space Problem

MEMORANDUM

From: Hubert L. Gerstman, D.Ed Chief
Through: Administrative Assistant
To: Hospital Counsel
Subject: Task Force Report on Space

The Speech, Hearing and Language Center, Staff Sub-Committee on Planning, formed a task force on space, April, 1975. Their report includes several options, one of which was designated as the most fruitful option to be given the highest priority.

Option 1 suggests the following plan:

1. In the absence of any further space contribution by the hospital, a plan is hereby submitted. The first stage of the plan is to double up offices for 2 of the speech clinicians. This would free up 1 office which could be then remodeled.

2. The remodeling would consist of measuring the height of the vacated room and installing a new horizontal partition locating it exactly half-way between the floor and the ceiling.

3. Two new doors to the room should then be constructed, 1 as an entrance to the upper portion of the room, and the second as an entrance to the lower portion.

4. Plates should be designed to identify the doors as being access to the upper level and the lower level respectively.

5. Furniture, somewhat reduced in size should then be duplicated for both the upper and lower levels.

This option has the affect of doubling the available clinical rooms for the Speech, Hearing and Language Center when carried out to its extreme of remodeling each room in the Center in a similar way. The phased approach to this, of course, is to do only 1 room at a time so that no clinical time is lost in the interim period.

The Task Force studied the ramifications of this approach and did note that 1 drawback to the plan would be that the case load would be restricted to children in the normal growth ranges under the ages of approximately 7 or 8 years of age. Another secondary drawback was noted by the Task Force in the area of personnel. The consequence of this particular renovation option would be that only midget speech pathologists and audiologists could be hired to fill the staff clinical positions.

The question to Hospital Counsel regards the interpretation of discriminatory hiring practices and whether or not height restrictions in job qualifications would be considered a discriminatory hiring practice. (See memos to Rehabilitation Commission, Architectural Services, Department of Physical and

Rehabilitation Medicine, Offices of Grants Administration Dental School/Medical School.)

H.L.G.

MEMORANDUM

To: Dean Dental TUSDM

From: Hubert L. Gerstman, D.Ed Chief
Subject: Affiliated Health Care Training

Pursuant to your request for new ideas relevant to the building of programs in the health care service area, the Speech, Hearing and Language Center has studied the field of speech pathology. It has come to our attention that a new job market may soon be created for speech pathologists who have undergone excellent training experiences, whose maximum height has been achieved at 4 ft. 1 in. (or who are not expected to grow beyond that height). It is projected that several positions will be available for persons meeting these qualifications over the next 3 to 5 years so that we would like to develop a curriculum that would meet these highly specialized needs.

Please feel free to contact us with any questions or comments or feedback you may have on this matter.

Thank you very much for your cooperation.

H.L.G.

cc Dean Medical
University President

MEMORANDUM

To: Grants Offices

From: Hubert L. Gerstman, D.Ed Chief
Subject: Possible funding sources

It has recently come to our attention that there may be a significant breakthrough in the design of hospital facilities for communication disorders centers. We were wondering how we might get together with someone from HEW (preferably NIH) to suggest the development of an RFP (request for proposal) dealing with the overcoming of architectural barriers in speech, hearing and language centers in the problem of very tall people. We feel that this area of investigation would be very heuristic and we would appreciate your help in designing an entire public appeal to solicit funds for the building of a programmatic concept in the relationship of height to communication disturbance.

We feel that the preparation of these materials should be written at the proper level.

Thank you for your cooperation in this matter.

H.L.G.

MEMORANDUM

To: Architectural Services

From: Hubert L. Gerstman, D.Ed Chief
Subject: Design of highly specialized chairs

It has come to our attention that the Speech, Hearing and Language Center, may be in need of a unique chair that seats 2 people. The chair would have to accommodate 1 person sitting so that his eyes would be at a height of 3 ft. 5 in., and another in the same article of furniture seated so that eyes would be at a height of approximately 8 ft. 2 in., measured from the floor to the head of the observer. These would be necessary for parents sitting outside a uniquely designed observation area. We will forward sketches of the concept once you have investigated the basic configuration described.

H.L.G.

MEMORANDUM

To: Rehabilitation Commission

From: Hubert L. Gerstman, D.Ed Chief
Subject: Short People

It has come to our attention that there may soon be a special program of advanced study developed in the communication disorders field that will be particularly designed for adults 4 ft. 1 in. and under. We were wondering if there are any special monies designated for the advanced academic and professional training of those handicapped by virtue of their height.

We were also wondering if there were any special programs for persons 4 ft. 11 2 in. or taller who wished their height to be reduced so they could meet particular vocational goals.

We would appreciate the forwarding of any information you might have on this subject area.

NOTE: If you are able to provide us with a positive response to our inquiries in paragraph 1, could you also be kind as to investigate the funds available for staffing grants for institutions providing employment to "very short people."

H.L.G.

MEMORANDUM

To: Department of Physical and Rehabilitation Medicine

From: Hubert L. Gerstman, D.Ed Chief

It has come to our attention that by 1980 we will be able to see our adult patients either on the floor of the Rehabilitation Institute or in wheelchairs that may be reclined so that the patient does not exceed a height of approximately 4 ft. 4

in, while seated in the chair. Current projections indicate that by 1980 this ceiling will be placed on our ability to serve clients. Perhaps the Research and Training Center might fund a project in conjunction with the Department of Bio-Medical Engineering for the design of chairs that would not exceed such specifications.

We are looking forward to your early reply.

H.L.G.

Big Green Publishing Company
762 Book Street
Omaha, Nebraska 681735

Dear Mr. Johnson:

We thank the members of your publications board and editorial staff for their acceptance of our fictionalized account entitled "The Cast of the Bureaucracy and the Little Green People." We fully accept and recognize the validity of your criticisms (paragraph 3, line 6) where you raise the question "...but what happens if someone actually tried to instigate such a scheme?" We have agreed to endeavor to insert a paragraph or 2 under Chapter 5 that would indicate that it would be impossible to manipulate the bureaucracy in such a manner.

We also agree that the exaggeration element is the major source for most of the humor in this story but it is difficult to respond to your editor's statement questioning whether or not the episode where the lawyer throws the plaintiff at

Symposium...

(Cont. from Page 2)

the chinchilla in their study of the pathology, biochemistry and immunology of otitis media will continue to provide valuable material as he has shown. The immunological reaction of the middle ear mucosa was further discussed by Kastenbauer and Hussl (a former co-worker of David Lim).

The organization of the Symposium was faultless and credit is due to Drs. Beck, Arnold and Munker. Dr. Arnold now with Vosteen in Dusseldorf is not only an excellent electron microscopist and surgeon but also a fine musician. With his friends he played in a Mozart quartet at an elegant reception at the ancient Kaufhaus—a most friendly occasion. So was the Dinner given by our three organizers and Dr. Beck revealed his particular talent as a poet reading his poem: "To Eustachius" with great success.

The ancillary arrangements and, in particular, the projection were superb: two or even three projectors used in the simultaneous projection of 2 or 3 slides. How am I going to get used to a single projector again?

the voice print expert is not a little too fantastic.

Our Department of Psychiatry tells us that frustration can build up over a period of years, that could conceivably lend credibility to such an episode.

We would prefer to leave the courtroom scene in its original form, although we are willing to modify the part of the bouncing and ricocheting around the judges bench. We also feel the same way about the hospital administration conference, although if you wish to reduce the time frame to 25 minutes instead of the original hour and 10 minutes, that would be satisfactory.

The editing of the violence that occurs in the ensuing scene may be a poor strategic move from the standpoint of marketability. We felt that the movie and television rights would be enhanced by the retention of that particular episode. We are all devoted to the climax when the conference table is destroyed by a single karate chop from the food service man who has stopped by to pick up the empty coffee pot.

Again, thank you for the check. You will be happy to know that we are using it to initiate certain drawings for an architectural modification of our clinic area.

Sincerely,
H.L.G.

Hayden, Campbell & Filtch
Employment Counselors
6812753 Tenth Avenue
Bronx, New York 10422

Attn: Mr. Martin Filtch

Dear Marty:

About that job offer with that 1-ring circus, do you think that you could get them to add 20% to the salary plus moving expenses? Call me when you get back from Finland.

Sincerely,
H.L.G.

Editorial...

(Cont. from Page 2)

tifically-inclined persons—are no longer acceptable. Quick, exact solutions, "correct answers," "objective" information—these are the currency of today's mandarins.

I have felt increasingly uneasy about these trends for years, but now I am positively terrified. Brave New World and 1984 pale into insignificance when compared with the implications of Vance Packard's "The People Shapers." Most frightening of all, it is now the "hard" sciences, not the soft, fuzzy "social sciences," which are preeminent in this new game.

Is it possible that mankind, in the name of reason, has abandoned reason for a new breed of tyrants?

—Lyle F. Yerges
Contributing Editor

*Vance Packard, The People Shapers, Little, Brown and Company.

Hearing Instrument Institute Plans Workshops

Three educational Workshops on Hearing Aids will be held in winter and spring of 1978, sponsored by the Hearing Instrument Institute (HII). They will be held in Las Vegas, Nevada, January 27-28, New Orleans, Louisiana, February 24-25, and in Atlanta, Georgia, April 2-3. The two day workshop will focus on the responsibilities and contributions of physicians, audiologists, and hearing aid specialists to the hearing impaired public. One otologist, one audiologist, one engineer, and two hearing aid specialists will comprise the faculty for each workshop. Opportunity will be provided for both formal and informal exchange of knowledge and expertise among the instructors and participants. Thirteen and one-half contact hours will be distributed over two days.

For further information contact: Mary Ann Armour, Executive Director, Hearing Instruments Institute, 301 Sovereign Court, Suite 108D, Manchester, Missouri 63011.

Arslan Wins Amplifon Award

Dr. Michele Arslan of the University of Padua was the recipient of the 1977 Amplifon International Prize. Dr. Arslan was honored for his long-term contributions to the knowledge of deafness. He has clarified particularly some of the aspects of Meniere's disease in his life-long work.

The award has been held previously by Dr. Jim Jerger of the U.S.

Cincinnati Hosts 1979 Symposium

The Department of Otolaryngology and Maxillofacial Surgery at the University of Cincinnati Medical Center and Children's Hospital Medical Center of Cincinnati announce a two and one-half day International Symposium on the Hearing Impaired Child. This Symposium, to take place in May 17, 18, 19, 1979 will bring together international workers in the field of the Child with severe hearing impairment.

The Symposium will concentrate on the Medical and Surgical evaluation and rehabilitation of these children in addition to the audiological aspects of detection, evaluation and rehabilitation.

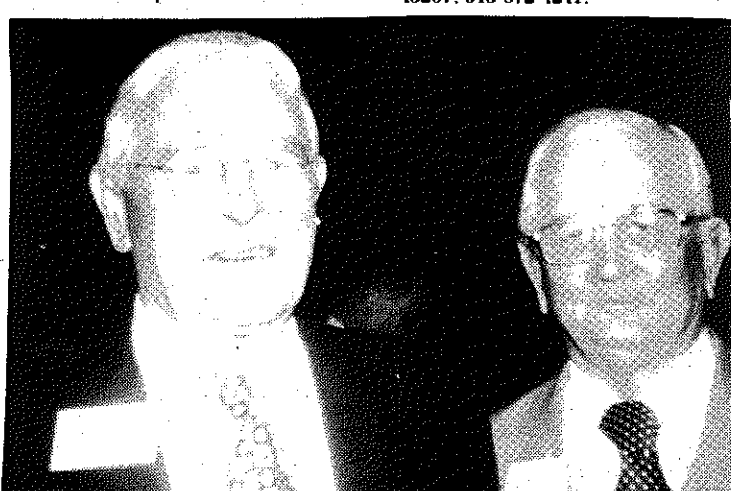
The Symposium will be divided into Didactic lectures combined with workshops in which active

participation by the faculty and participants will be encouraged.

The Symposium promises to be a forum for the exchange of ideas amongst professionals in various aspects of management of the child with severe hearing impairment. For further details contact Dr. Allan B. Seid or Dr. Robert Keith at the University of Cincinnati Medical Center.

Dr. Allan B. Seid, Children's Hospital Medical Center, Elland & Bethesda Aves., Cincinnati, Ohio 45229, 513-559-4355.

Dr. Robert Keith, Division of Audiology & Speech Pathology, 234 Goodman St., Cincinnati, Ohio 45267, 513-872-4241.



J. Brown Farrior (left) with Hallowell Davis during the annual meeting

Tracoustics Honors Outstanding Military Audiologist of 1977

Captain Steven W. Morris of Ft. Polk, Louisiana is the recipient of the 1977 Tracoustics, Inc. award to the outstanding member of the Military Audiology and Speech Pathology Society.

Captain Morris was selected as this year's outstanding MASPS member based upon his significant contributions to the Audiology and Hearing Conservation Programs at Ft. Polk, Louisiana, where he has been assigned as an Army Audiologist since his entrance to active duty in 1975.

The award was announced by Captain Donald R. Bender, current President of the Military Audiology and Speech Pathology Society, at the Annual MASPS Banquet at the Palmer House, in Chicago on November 2, 1977. Don M. Musick of Tracoustics, Inc. presented Captain Morris with a handsome bronze plaque to commemorate the award.

Abstracts of AAS Papers

DEVELOPMENT OF A MODIFIED SPEECH DISCRIMINATION TEST.

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Efficient acquisition of speech discrimination information rests upon an interaction among at least three factors: 1. the speed of administration, 2. the range of difficulty present in a given word list, and 3. the sensitivity, or ability of the list to effectively differentiate among various types of pathology. The purpose of the present study was to evaluate the feasibility of constructing a standardized discrimination test composed of highly discriminating items based on currently used speech materials.

Twenty adult listeners with normal hearing were presented with CID W-22 Lists 1 through 4. One fifth-word list was used to screen subjects and the remaining three lists were then presented in the presence of competing wide-band noise. A signal-to-noise ratio was employed that yielded a discrimination score of approximately fifty percent.

Results were consistent with previously reported findings that about 30 percent of the words in a list are unlikely to yield significant information about listeners, either because the words are seldom missed or often

missed. Of the remaining elements of the list two basic error response patterns were observed. One response pattern was comprised of words which tended to be consistently missed only by individuals with overall discrimination scores below a given range, while the other consisted of a group of words whose error response bore no systematic relationship to overall discrimination score.

Testing is presently underway to determine whether similar clustering effects are present in persons with hearing impairment. If so, it may be possible to construct lists of speech discrimination materials which differentiate patients more effectively without increasing the administration time required.

"COMPARISONS AMONG AUDITORY REACTION TIME, LOUDNESS AND CERTAIN CHARACTERISTICS OF THE ACOUSTIC REFLEX."

Lynne Marshall and John F. Brandt (University of Kansas, Bureau of Child Research, Lawrence, Kansas 66045)

Although the acoustic reflex threshold is often assumed to be loudness governed and the acoustic reflex threshold is often used as an objective measure of loudness recruitment, many experiments question whether loudness is the determiner of the reflex. Reflex threshold and equal loudness data often disagree. Loudness summation from wide- and narrow-band stimuli is often less than would be predicted from reflex threshold data. The size of the critical bands for loudness and reflex differ considerably. Loudness discomfort thresholds and the reflex threshold often disagree.

Certain response characteristics of the acoustic reflex have been described as a function of intensity, e.g., amplitude, latency, rise-time and fall-time as well as electromyographic data. The relation between these response characteristics and loudness have not been experimentally determined however.

Certain psychophysical procedures have traditionally been used to examine loudness, Magnitude estimation scaling techniques and auditory reaction time experiments are equally capable of producing equal loudness contours. Measures of the acoustic reflex as a function of time or intensity are traditionally gathered at a different time. The data are then compared and inferences about the relation of loudness and reflex activity are made assuming that the reflex activity is the same during the loudness measurement. In the present experiment the middle ear muscle activity was measured concurrently with auditory reaction time. Magnitude estimations of loudness for the same signals were also obtained.

Ten normal hearing listeners were instructed to respond as rapidly as possible (auditory reaction time) to tones ranging from 250 to 4000 Hz in octave intervals and broad band noise ranging from 35 to 115 dB SPL. Reaction time was measured on-line with an electronic counter. An FM tap recorder was used to record current middle-ear muscle activity from an electroacoustic impedance bridge for later playback and analysis on a digital storage oscilloscope.

Equal loudness contours generated from magnitude estimates

(Cont. on Page 5)



FIGURE LEGEND:

Don M. Musick (left) of Tracoustics, Inc. presents the annual award for outstanding member of the Military Audiology and Speech Pathology Society to Captain Steven W. Morris of Ft. Polk, Louisiana (left). Captain Donald R. Bender, (center) current President of the MASPS, announced the award at the MASPS meeting held during the recent ASHA Convention in Chicago.

AAS . . .

(Cont. from Page 4)

mates were in good agreement with those obtained from previous researchers. Equal magnitude contours for reaction time were in good agreement with the equal-loudness contours. The usual relationships (inverse) between reaction time and SPL and loudness were apparent.

For equal sound pressures, low to mid frequency stimuli produced larger acoustic reflex contractions (amplitude), shorter reflex latency, and faster rise time than did high frequency stimuli. No relationship could be discerned between any of the reflex characteristics and loudness of the tone and noise bursts. None of the dynamic characteristics of the reflex showed evidence of being loudness governed at levels above the reflex threshold.

DIFFERENTIAL DIAGNOSIS OF COCHLEAR DISORDERS

Paul Yanick, Jr.
Stephen Freifeld

Cochlear hydrops is a disorder of the inner ear clinically manifested by the symptoms of fullness, tinnitus, and fluctuation in hearing loss. The basic theory of the origin of cochlear hydrops rests on the assumption that the endolymph within the cochlear duct is in some manner influenced either to increase its production or, because of a defect in the absorption, the volume expands. An increase in the osmotic pressure within the cochlear duct occurs, and a decrease in the efficiency of the hair cell processes results.

The sensation of fullness or pressure in the ear is the most constant and early complaint of this disorder. For this reason, careful attention should be focused toward distinguishing the fullness of cochlear hydrops from that of middle ear disorders. Impedance measurements are helpful in localizing fullness sensations from the middle ear. However, the role of impedance audiometry as a detector of pressure changes in the cochlea has not received adequate clinical exploration.

It has been demonstrated experimentally that increase and decrease in the fluid volume of the cochlea can be reflected as a change in impedance at the tympanic membrane. The purpose of this presentation is to relate the static impedance values in subjects with bilateral cochlear hydrops to audiometric findings and symptoms.

Gosselin and Yanick (1976) and Yanick (1977) reported audiologic and metabolic findings in 90 patients with fluctuating hearing loss. Fullness (86%) and tinnitus (90%) were the most common complaints. There were three basic groups of audiometric configurations: A mild low tone loss (50%), a moderate flat tone loss (31.3%), and a ski-slope or high tone loss (18.3%). Low frequency sensorineural hearing loss reflects the conductivity of the cochlea, and it seems reasonable to assume that impedance changes in the cochlea may be manifested at the tympanic membrane.

The Metz loudness recruitment test was positive in 71%, and bilat-

eral diplacusis was found in 68.7% of these patients. Interestingly, it occurred in 90% of the mild low tone loss group, in 72% of the flat loss group, and in only 6% of the ski-slope group. Speech discrimination scores were 82% at 30 dB sensation level and 68% at 45 dB sensation level. Raising the sensation level tends to stress the hydropic ear.

An abnormal glucose tolerance test was found in 58%, elevated triglycerides and cholesterol levels in 33%, and hypothyroidism in 13%. Treatment of the particular type of metabolic disorder resulted in relief of fullness and tinnitus in one-third of the 90 cases. Thirty cases were re-tested one month after dietary management and treatment had been administered. Fifty percent of these patients demonstrated improvements in discrimination scores and hearing thresholds. The other fifty percent reported relief from tinnitus and fullness.

Eighty subjects, or 160 ears with cochlear hydrops, were formed into three groups: Those with mild low-tone loss, moderate flat losses, and ski-slope losses. The range of bilateral static impedance values was 500 to 5000 ohms with a mean of 3333.3 ohms in the group with mild to moderate flat losses. The ski-slope group had considerably lower static impedance values with a mean of 1502.5 ohms consistent with normal reference data. Subjects in the latter group had normal hearing levels in the lower frequencies. In addition, the percentage of fullness and diplacusis was dramatically lower in this group as compared to those with either mild low tone or moderate flat losses. Thus the impedance pattern associated with cochlear hydrops seems to reflect the changes in fluid pressure in the cochlea that are a result of low tone losses.

The following case report may be illustrative: A 24-year-old law student had for several years complained of fluctuating hearing loss, fullness, recruitment, pitch distortion, and tinnitus. At the time of the original audiogram, he had no symptoms of fullness or pressure, no tinnitus, and a minimal hearing loss compared to previous audiograms. The static impedance values were 2000 ohms in both ears. One week later, he had a recrudescence of symptoms and hearing loss in the right ear. The test results showed increased hearing levels, and more importantly, increased static impedance values of 6000 ohms in the affected ear. The patient inhaled 95% oxygen and 5% carbon dioxide for 15 minutes, and after the inhalation, hearing levels had improved slightly (approximately 10 dB), but the static impedance had lowered from 6000 to 3000 ohms. The patient felt relieved from the pressure sensations and annoying tinnitus. Carbon dioxide inhalation has the effect of increasing blood flow to the inner ear, and it has been suggested that increasing the circulation may increase the potential capacity of the various sites in the inner ear which absorb endolymph.

In summary, a complete audiologic test battery that includes static impedance measurements can help to identify the finer details of cochlear pathology. Symptoms of fullness, tinnitus, pitch distortion, and hyperacusis

must receive their full share of investigative effort. Early detection and proper medical management are imperative as the chances of permanent loss is greater as the disorder progresses. Proper audiologic monitoring may permit the evaluation of the activity or abatement of pathology and provide assessment of the effects of treatment.

THE EFFECT OF PRESSURE ON PURE TONE THRESHOLDS

T. W. Norris, R. E. Jirsa, and
B. K. Skinner, University of
Nebraska Medical Center

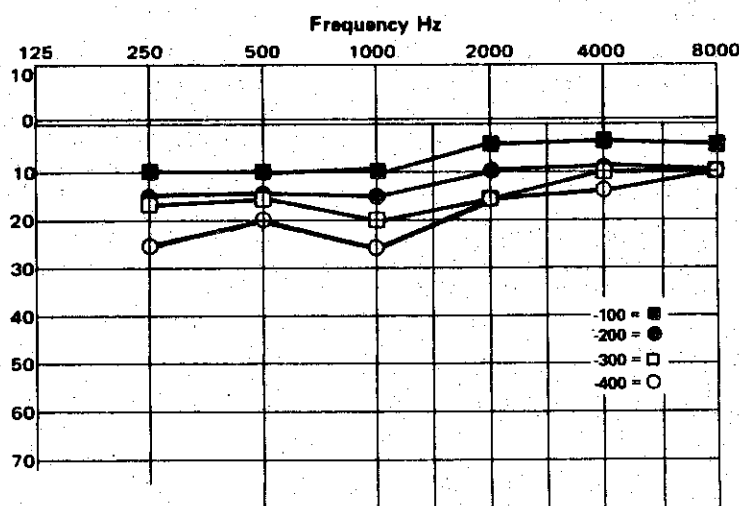
In this study the authors examined auditory thresholds at different levels of positive and negative pressure. The purpose was to provide data on which to base a more reliable estimate of the degree of conductive loss from pressure readings. Reference was made to behavioral test findings in the child less than three years of age that suggest normal cochlear function while impedance measurements confirm negative middle ear pressure. Because there is no convenient method to determine actual organic thresholds, results are generally summarized by noting that "hearing function is probably within normal limits; however, in view of the negative middle ear pressure there is a possibility that a mild conductive type hearing loss exists." However, when considering the potentially harmful effects that a mild hearing loss can have on speech and language development in a child of this age, the question of degree

suggests the degree of conductive hearing loss that could be present at these same negative pressure values. The shift or conductive loss averaged over the speech range from 500, 1000, and 2000 Hz is approximately 8 dB for a -100 mm H2O pressure, 14 dB for -200 mm H2O pressure, 16 dB for -300 mm H2O pressure, and 20 dB for -400 mm H2O pressure.

In earlier investigations, there was surprising agreement between the threshold shift determined by Flisberg et al. who determined hearing shift with induced intertympanic pressure change in an otherwise normal ear and Sitler et al. who monitored hearing threshold at specific levels of organic negative middle ear pressure in children. Both studies indicated a shift of approximately 20 dB for the speech range average of 500, 1000, and 2000 Hz within a negative pressure range of 250 - 270 mm H2O. The threshold shifts observed in our study were slightly less than those observed in these referenced reports. For example, at 300 mm H2O pressure we found a shift of 16 dB for the speech frequency average. Our smaller threshold shift may be attributable to the fact that we used trained listeners and tested in a sound controlled environment, whereas, the Sitler et al. study involved children who were apparently tested as a part of a screening program, and the Flisberg study makes reference to thresholds recorded on only one subject.

In summary, the audiologist should suspect a conductive hearing loss that can reach levels of concern with negative middle ear pressure. The data confirm a loss

PURE TONE AUDIOGRAM



of conductive loss associated with changes in middle ear pressure becomes significant.

Ten normal hearing subjects were tested by presenting test signals through an ipsilateral probe which was sealed into the ear canal to accommodate specific intratympanic pressure changes of the ear being tested. The test signals were 250, 500, 1000, 2000, 4000, and 8000 Hz presented through intratympanic pressure levels of -400, -300, -200, -100, 0, 100, 200, 300 mm H2O.

To illustrate the clinical importance of negative pressure the audiogram demonstrates the threshold shift recorded at each negative pressure level. Assuming that the thresholds recorded at 0 mm H2O pressure represent audiometric 0 HL, the difference (shift) in dB between base line and thresholds recorded at -100 and -200 and -300 and -400 mm H2O pressure (to the nearest 5 dB)

of approximately 8 dB for the speech range of 500, 1000, and 2000 Hz with a -100 mm H2O pressure to approximately 20 dB for the same frequency average at -400 mm H2O pressure. Moreover, it is valuable to recognize that the greatest threshold shift occurs at approximately the mid-point of the speech range.

CONGENITAL MIXED DEAFNESS - PERILABYRINTHINE HYDROPS

J. Brown Farrior
Tampa, Florida
Clinical Professor Emeritus in
Otolaryngology
University of South Florida
College of Medicine

Round window membrane rupture, a cause of sudden deafness and a diving hazard, as just described by

Frederick W. Pullen, indicates the increasing incidence of spontaneous fistulas of the oval and round window as they are being diagnosed in otology today.

The purpose of this presentation is to state that these spontaneous fistulas of the oval and round window do not develop unless there is some congenital irregularity in the flow of cerebrospinal fluid into the inner ear and perilymphatic space. These congenital irregularities in the flow of cerebrospinal fluid may be either through an overly patent aqueduct of the cochlea or through the perineural spaces of the internal auditory canal. This excess flow of cerebral spinal fluid produces increased pressure in the inner ear which I have named "PERILYMPHATIC HYDROPS". The excess pressures in perilymphatic hydrops cause the spontaneous fistulas of the oval and round window.

Usually an excess flow of cerebrospinal fluid into the inner ear is sub-clinical, but in congenital mixed deafness these abnormal pathways in the flow of cerebrospinal fluid produce both a sensory neural hearing loss and a conductive hearing loss. The sensory neural hearing loss is a direct result of the perilymphatic hydrops from the excess pressures of the cerebrospinal fluid in the inner ear. These pressures produce the progressive destructive sensory neural hearing loss which usually occurs in the first month or years of life. The conductive portion of the congenital mixed deafness is produced by the same pressures of the perilymphatic hydrops which pushed the stapes outward so that it becomes locked and immobile in the overhanging anterior lips of the oval window niche, producing a condition which I have termed as a "LOCKED STAPES". If there are no overhanging anterior lips of the oval window, then these pressures simply push the stapes into the middle ear and there is a cerebral spinal fluid otorrhea and a total loss of hearing and these rare cases are simply diagnosed as a congenital nerve deafness.

I present these theories to the American Audiology Society with the hope that some of you can prove them to be fact and then we will be in a position to start surgical correction either by ablation of the aqueduct of the cochlea or by sealing the perineural spaces of the internal auditory canal and thereby stop this progressive destructive sensory neural hearing loss.

Unfortunately, most of the children with congenital mixed deafness are beyond the limits of audiologic diagnosis and the diagnosis must largely be based on history. First, there is the congenital mixed deafness and, although there is little speech discrimination, they can wear a hearing aid with considerably satisfaction and they have the typical soft voice of the conductive hearing loss with relative good speech and about the only test of any value is that they have good bone conduction for the lower tone frequencies, particularly when tested with the tuning forks on the teeth.

In an effort to substantiate the above theories, I will present a

(Cont. on Page 8)

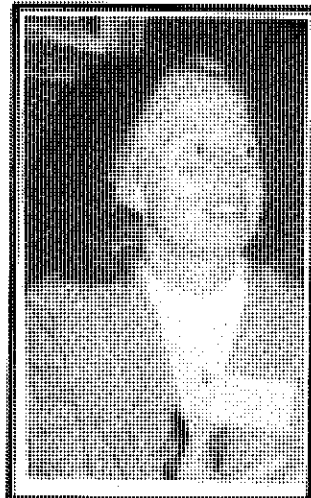
At ASHA



Charlie Anderson of Tracoustics and his new assistant Wendy.



Maurice Miller, Sandy Gerber & George Meucher

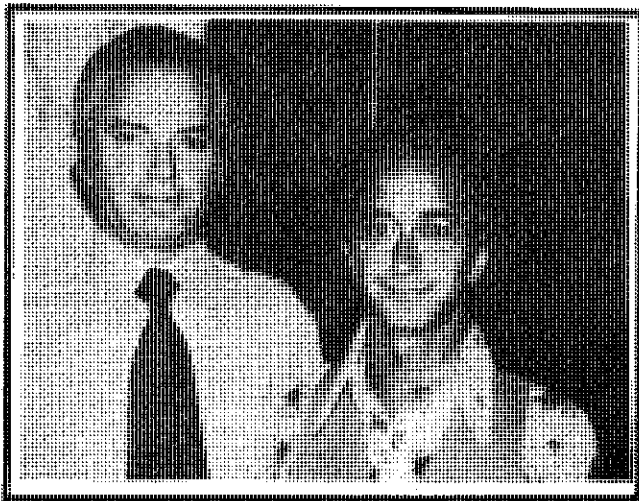


Carol Ehrlich

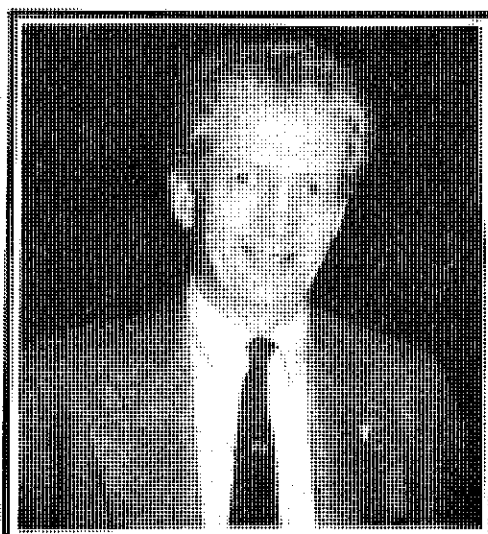


Bruce Graham

At SENTAC



Ernesto Deutsch from Mexico and his son



Gabe Tucker, program chairman of SENTAC

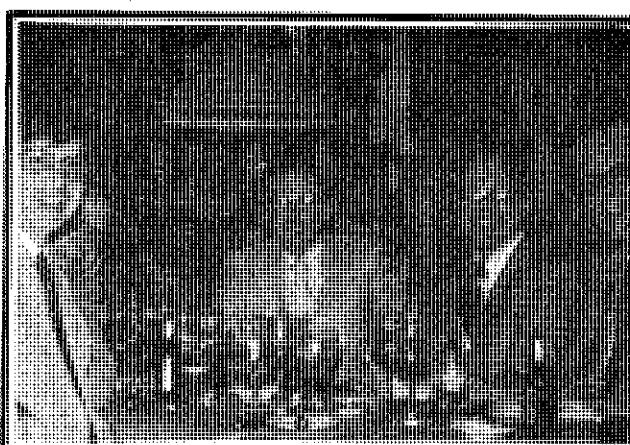


"Cub" Culbertson, new president of SENTAC, with Fred Bess

AFTER THE ANNUAL MEETING



Ye Editor, Dr. Davis, & Ruth Samuel toast to a successful meeting



The Engineers Table



Sharing conviviality

MEMBERS

BEFORE THE ANNUAL MEETING



The "Brave 10" just before departure for SCUBA and snorkeling



Ye Associate Editor Roeser stocking up with refreshments

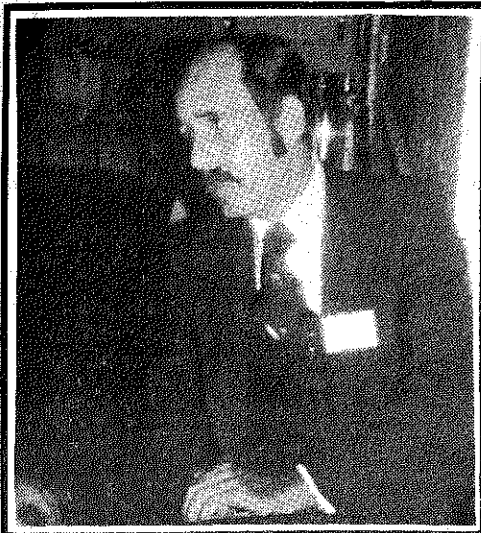


Geary McCandless & Tom Norris after getting a taste of the salt

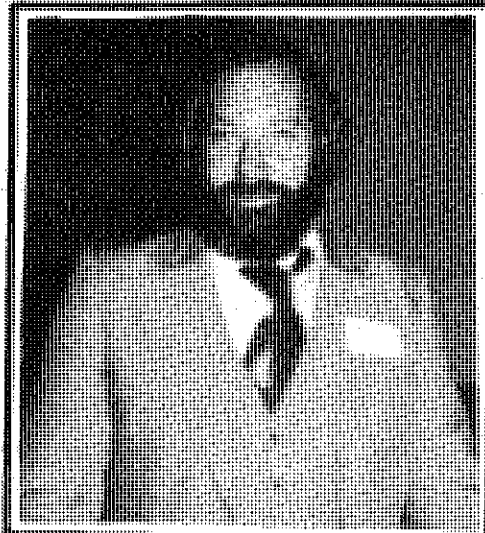


Gretchen Seifert relaxes after successfully completing her SCUBA certification

DURING THE ANNUAL MEETING



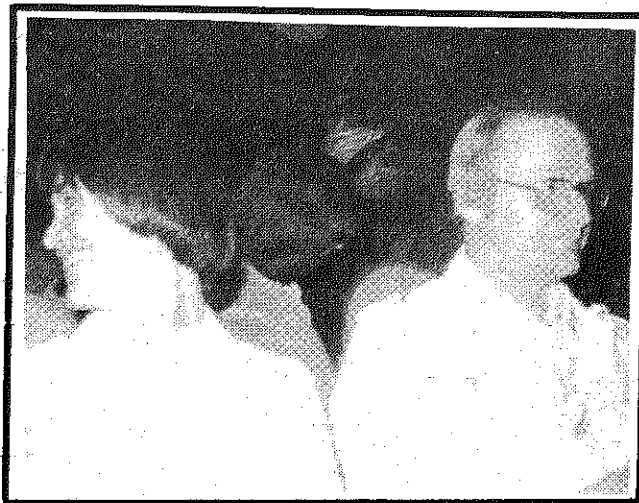
Gerald Miltenberger



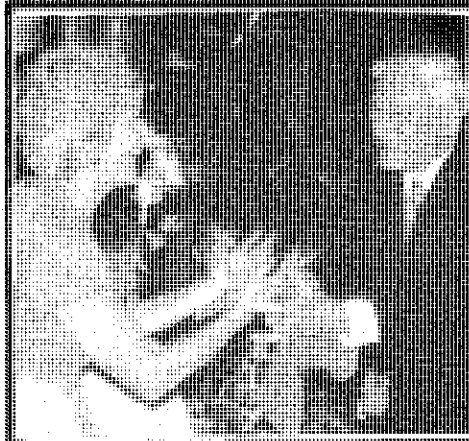
Mike Seidemann



J. D. Harris "At Nap"



Enjoyment of the drink



Ye Editor Downs entertaining Dr. Davis



Susanne Kos and Dan Bode.

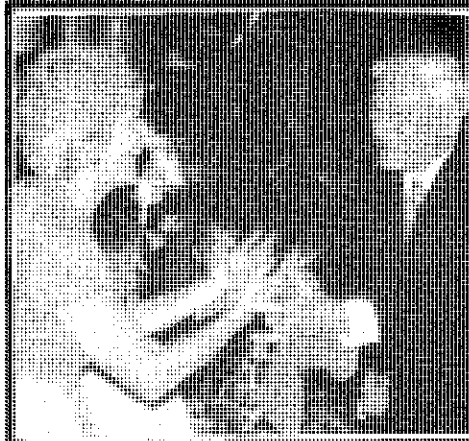
"DINNER WITH DAVIS"



J. D. Harris "At Nap"



Enjoyment of the drink



Ye Editor Downs entertaining Dr. Davis



Susanne Kos and Dan Bode.

New By-Laws . . .

(Cont. from Page 1)

eliminate all legalese from the Bylaws, it should be noted that Articles VII and IX of the proposed Bylaws were left essentially as is, because they have to do with our IRS status.

The members of the By-Laws Committee were: Laura Wilber, Jerry Tobias, Wayne Staab, Blair Simmons, Bert Scharf, Ross Roeser, Jerry Northern, Ralph

Naunton, Sam Lybarer, and Marion Downs. At the final meeting, invited guests President Geary McCandless and Editor Don Harris also contributed sound suggestions and helped break a deadlock or two.

Please read the new By-Laws carefully, and be prepared to vote when the mail ballot is sent out later this year.

ARTICLE I. NAME

1.1. The name of this organization shall be The American Auditory Society, formerly known as The American Audiology Society.

ARTICLE II. AIMS

2.1. The aims of the Society are to increase knowledge and understanding of the auditory process, promote conservation of hearing, and foster habilitation and rehabilitation of persons with hearing impairments. The Society shall coordinate the exchange and dissemination of information, particularly by holding regular meetings and publishing reports.

ARTICLE III. MEMBERSHIP

3.1. **Classes of Membership.** The Society shall be composed of Active Members and Life Members.

3.2. **Active Membership.** To become an Active Member of the Society, the applicant must (a) possess a Bachelor's degree from a recognized academic institution or (b) have had the equivalent of an academic degree in scientific experience or in professional experience in the field of audition, and must have demonstrated an interest in the field of hearing. Admission to the Society may be granted by the Executive Committee after the candidate has submitted an application.

3.3. **Life Membership.** An Active Member who has attained the age of 70 years, and who has been an Active Member of the Society for not less than 10 years, may become a Life Member by submitting a written request to the Secretary-Treasurer.

3.4. (a) **Dues.** Membership dues shall be established, upon the recommendation of the Executive Committee, by a majority vote of the Members present and voting at a regular business meeting of the Society. The annual dues may or may not include a yearly subscription to the official journal of the Society (known in 1977 as the Journal of the American Audiology Society).

(b) Dues shall be payable on the first day of each year and shall be considered delinquent if not paid by the last day of March of that year.

(c) Life Members shall be exempt from all dues except that portion covering subscription to the official journal of the Society. However, the Executive Committee may waive, on a year-to-year basis, such subscription costs, if the Society's financial condition permits.

3.5. (a) **Termination of Membership.** Members whose dues are delinquent shall be notified by the Secretary-Treasurer of such delinquency by the end of April of the year concerned. If the dues remain delinquent 30 days after such notification, membership shall be terminated. A Member whose membership has been so terminated may become a Member of the Society again only by applying for membership and being elected thereto in the manner herein prescribed. A penalty may be assessed for reinstatement.

(b) Any Member who is not delinquent in the payment of dues may file his resignation, in writing, with the Secretary-Treasurer, and shall cease to be a Member of the Society as of the date such resignation is filed. Dues paid are not refundable.

(c) The Executive Committee may expel from the Society a Member whose conduct it deems contrary to the best interests of the Society. Expulsion shall require concurrence by two-thirds (2/3) of the Executive Committee.

3.6. **Privileges.** Members and non-members may attend general meetings of the Society and may submit papers for presentation at meetings and/or for publication in a Society publication. Members shall receive publications, programs of Society meetings, membership lists and such other publications as may be authorized by the Executive Committee. Only Members shall be entitled to vote, to hold office in the Society, or to serve on its committees. Members may recommend subjects for study by the Executive Committee, may present resolutions or reports, may submit petitions for amendment or revision of the Bylaws, and may recommend locations for future meetings.

ARTICLE IV. MEETINGS

4.1. **Time and Location.** The Society shall ordinarily meet at least once a year and also at such other times and places, upon such notice as the Executive Committee may determine.

4.2. (a) **Business Meetings.** A business meeting shall be held during every ordinary meeting of the Society. Twenty Members present in person shall constitute a quorum at a business meeting. Policy decisions shall be made by a simple majority vote of those present and voting at a business meeting. In the event of a tie vote, the President shall cast the deciding ballot. However, the Executive Committee, when it deems necessary, may authorize a letter ballot to the entire membership for the purpose of establishing any decision.

(b) At each business meeting, Members shall be informed of all

actions taken by the Executive Committee since the last meeting of the Society.

4.3 **Rules of Order.** The meetings of the Society shall be governed by the rules contained in the then current edition of Roberts Rules of Order in all cases in which they are not inconsistent with the other provisions of the Bylaws of the Society.

4.4 **Minutes.** Minutes of all business meetings shall be recorded. They shall be signed by the President and the Secretary-Treasurer. They are to be subject to correction at the next following business meeting. The minutes are to be kept at the office of the Secretary-Treasurer, where they may be inspected by any Member. A summary of the proceedings of each business meeting shall be sent to all Members.

ARTICLE V. EXECUTIVE COMMITTEE

5.1. **Purpose.** The affairs of the Society shall be managed by an Executive Committee, as authorized by the Membership.

5.2. (a) **Composition.** The voting membership of the Executive Committee shall consist of fifteen Members of the Society.

(b) Fourteen members of the Committee shall be elected for a term of four years; seven shall be elected on odd-numbered years in a manner specified in the Statutes of the American Audiology Society. Each Member may be elected for two consecutive terms of office. Following a lapse of two years the Member may be reelected for two additional terms.

(c) For each election, the Executive Committee shall appoint a Nominating Committee representing insofar as possible the professions and interests of the entire Society. No more than one member of the Executive Committee can serve on the Nominating Committee. Before February 1 of odd-numbered years, the Nominating Committee will present no less than ten and no more than fourteen candidates to fill the seven available positions of the Executive Committee. These candidates should also be representative of the professions and interests of the entire Society. Candidates may also be nominated by a written petition signed by not less than ten Members and filed with the Secretary-Treasurer by June 1 of election years. Names and a brief biographical history of candidates shall be made available to the Membership prior to the election. Voting shall be performed by mail ballot in September of odd-numbered years and returned to the Secretary-Treasurer.

(d) In the event of the death or resignation of a member of the Executive Committee, the President shall appoint a replacement to complete the term of office concerned. This Member shall be eligible for election to two further consecutive terms of office.

(e) The fifteenth member of the Executive Committee shall be the Secretary-Treasurer, who shall be a Member appointed by the Executive Committee for a two-year term, to be renewed annually.

(f) Editors of Society publications shall be members ex officio of the Executive Committee, without vote.

(g) No remuneration for services shall be paid to any member of the Committee, except the Secretary-Treasurer. Remuneration for the office of Secretary-Treasurer shall be determined by the Executive Committee.

5.3. (a) **Officers.** The Executive Committee shall elect from among its members a President, a President-Elect, and an Assistant Secretary-Treasurer, all of whom, together with the Secretary-Treasurer, shall serve as the officers of the Society.

(b) The President of the Society shall be responsible for administration of the Society business and shall preside at all sessions of the Executive Committee and at Society business meetings.

(c) The President-Elect shall assist the President, shall perform the duties and responsibilities of the President in his absence, and shall assume the duties and responsibilities of the President if this office is vacated.

(d) The Assistant Secretary-Treasurer shall assist the Secretary-Treasurer, and shall perform the duties and responsibilities of the Secretary-Treasurer in his absence.

(e) The President and Assistant Secretary-Treasurer shall serve terms of one year each.

5.4. **Meetings.** The Executive Committee shall convene at least once during each Society meeting. It may also meet exceptionally on invitation by the President or at the request of six or more of the Executive Committee members. A quorum shall consist of eight voting members. Minutes of all meetings shall be recorded.

5.5. (a) **Decisions.** The decisions of the Executive Committee shall be determined by a majority of the members voting; should an equality of votes occur, the President shall cast the deciding vote.

(b) The Executive Committee shall determine its own internal rules.

5.6. (a) **Duties.** The Executive Committee shall act on behalf of the Society; it shall undertake all appropriate duties of management and of administration.

(b) The Executive Committee shall grant Membership to those applicants whose qualifications, in the Committee's judgment, meet the requirements specified in Article III, Section 3.2.

(c) The Executive Committee shall decide when and where the Society shall meet and shall elect a Program Chairman for that meeting. The Program Chairman shall be responsible for organizing the program and conducting the meeting. To this end, a Program Committee may be appointed by the Program Chairman.

(d) The Executive Committee, as directed by the Society Membership, shall have the authority to administer Society funds. Funds of the Society shall be managed by the Secretary-Treasurer.

(e) The Executive Committee shall report its activities and decisions to the Membership at least once a year.

ARTICLE VI. SECRETARY-TREASURER

6.1 (a.) **Duties.** The Secretary-Treasurer shall coordinate all correspondence and, in conformity with directives issued by the Executive

(Cont. on Page 10)

AAS. . .

(Cont. from Page 5)

series of stapes gushers of cerebrospinal fluid occurring during the course of stapedectomy. I will present cases of spontaneous cerebrospinal fluid otorrhea with either meningitis or diagnoses of Meniere's disease and I will show two cases on which I have performed an ablation of the aqueduct of the cochlea behind the round window in an effort to stop the excess flow of cerebrospinal fluid into the inner ear.

When, in the course of stapedectomy, the surgeon perforates the stapedial footplate and pulsating cerebrospinal fluid gradually fills the middle ear and the ear speculum and runs over the operating table and on the floor, that is known as "stapes gusher" and it can be controlled only by proceeding with a stapedectomy and fixing a viable graft in the oval window. This particular case was in an 8 year old boy with a congenitally mixed deafness.

My interest in congenitally cerebrospinal fluid otorrhea started with a 15 months old baby that had recurrent otitis media with three attacks of meningitis and whenever a myringotomy was performed there was copious flow of cerebrospinal fluid lasting about a week of ten days, or until the myringotomy had closed. Exploratory surgery revealed the stapes pulsating in the oval window and the copious flow (estimated between 500 and 1,000 ccs.) of cerebrospinal fluid which continued to fill the cavity. In the oval window there were no overhanging anterior lips to locate the stapes so that the stapes simply exploded into the middle ear and the flow of fluid could not be controlled with grafts in the oval window or by packing around the internal auditory canal. Opening of the horizontal semicircular canal revealed the markedly dilated vestibule typical of the true Mondini-Alexander. The flow of cerebrospinal fluid was finally controlled by packing the vestibule with a muscle graft so that the child has had no more meningitis, but of course she has total bilateral congenital nerve deafness.

In the stapes gusher of the cerebrospinal fluid, it is my opinion that it was an overlarge patent aqueduct of the cochlea while in this true Mondini-Alexander there would be patent perineural spaces at the internal auditory canal.

In the 8 year old boy with the stapes gusher, in 1965, I ablated the aqueduct of the cochlea by going anterior to the vertical facial nerve and behind the round window to transect the aqueduct of the cochlea, obtaining a copious flow of cerebrospinal fluid and then ablate the aqueduct of the cochlea. This ablation of the aqueduct of the cochlea gave him a 17 decibel hearing improvement in 1965 which gradually decreased until 1970.

These cases are shown in three dimensional photography in the Academy Atlases Tympanoplasty in 3-D, Volume II, Reels 23 and 24.

(Cont. on Page 9)

Minutes . . .

(Cont. from Page 1)

The meeting was called to order by President McCandless at 8:30 a.m.

1. The minutes of the 1976 Executive Committee meeting in Las Vegas, Nevada were presented to the members present and approved.

2. The following income and expense statement for the period January 1 through October 31 was presented and approved:

Income and Disbursement Statement for the period January 1, 1977-October 31, 1977	
Cash on Hand at 1 1 77	\$10,624.94
Membership Dues	7,892.34
JAAS Allowance	2,000.00
Sale of Mailing List	52.00
Sale of Advertising-C.O.	125.00
Total Assets	20,694.28
Equipment	190.63
Supplies	164.19
Postage-Office	379.87
Postage-Cortis Organ	456.00
Duplicating Costs	54.08
Telephone	176.63
Travel	78.40
Publication Costs-JAAS	10,920.00
Bookkeeping Costs-Cortis Organ	2,021.03
Bookkeeping Audit	170.00
Contract Service-Office	344.75
Contract Service-Cortis Organ	61.75
Convention Expense	264.73
JAAS Income Allowance Expense	2,000.00
Total Expenses	17,282.06
Cash on Hand at 10 31 77	\$3,412.22

A detailed audited financial report is published each year in the April issue of Cortis Organ.

3. A list of 114 persons who submitted applications during the 1977 calendar year was presented to the Executive Committee, with their highest held degree and the city and state of their residence. There being no objections to any of the persons applying, all were accepted as Members of the Society (The list appears at the end of the minutes).

It was suggested that in the future the list include the names of the two Members who sponsored the applicant and the list be sent to the Executive Committee Members one week prior to the annual meeting.

4. After discussion, it was decided that the 1978 annual meeting of the American Audiology Society will be held in San Francisco in conjunction with the annual meeting of the American Speech and Hearing Association.

The name of an AAS Member was suggested as Program Chairman for the 1978 AAS meeting. That person will be contacted by President McCandless and asked to serve as Program Chairman.

5. A motion was made and passed on the possibility of having the AAS sponsor a national meeting on a topic of broad interest. The rationale for having such a meeting is to increase the visibility of the AAS and ultimately enhance membership. Norma Hopkinson was appointed as the Chairman of a committee to explore having such a meeting. Bruce Graham and Dix Ward were appointed members of the committee.

6. J. Donald Harris reported on the status of The Journal of the American Audiology Society for the calendar year 1977.

a) Of 62 (sixty-two) manuscripts submitted, 35 were accepted, 24 are currently with reviewers or authors, and 3 were rejected outright.

b) Dr. Harris wished to express public appreciation to the following Section Editors:

Dr. Phillip Bellefleur	Dr. Thomas Porter
Dr. William Cooper	Dr. William Rintelmann
Prof. Marion Downs	Dr. Jay Sanders
Dr. George Gerken	Dr. Hiroshi Shimizu
Dr. A. Bruce Graham	Dr. John Sinclair
Dr. Norma T. Hopkinson	Dr. Richard Sweetman
Dr. George Lynn	Dr. W. Dixon Ward

c) JAAS was approached to publish the Proceedings of the National Symposium on Impedance Screening in Children in June, 1977 in Nashville, Tennessee. The proposal was not accepted, and Grune and Stratton will publish the proceedings in book form.

d) After discussion, the following motion was made:

"The Journal of the American Audiology Society be hospitable to receiving papers from The Society of Ear, Nose and Throat Advances in Children (SENTAC), provided that the manuscripts be reviewed by the officers of SENTAC and then reviewed by the normal JAAS process. Such manuscripts shall be identified in the journal as SENTAC transactions." (Passed)

7. Marion Downs reported on the status of Cortis Organ.

a) It was indicated that the format of the newsletter was appropriate as is.

b) It was decided to make one issue of Cortis Organ a membership promotional issue and send it to a different discipline each year depending on costs and the availability of funds.

8. Susanne Kos was appointed the Chairman of The Carhart Memorial Lectureship Committee. A summary of the recommendations of last year's committee will be obtained by Dix Ward from Tom Tillman. It was recommended that in future years a citation be written by the Chairman of the committee and sent to selected state, national, and international publications along with a photograph of the recipient.

9. Dix Ward presented and reviewed the newly proposed Bylaws the committee on Statutes revision had formulated. After minor changes the following motion was made:

AAS . . .

(Cont. from Page 8)

In a similar case with ablation of the aqueduct of the cochlea in 1969, the patient obtained a 13 decibel hearing improvement.

Certainly these results are equivocal.

This approach to the aqueduct of the cochlea is now used by Gacek in his section of the singular nerve for positional vertigo.

My interest in the aqueduct of the cochlea goes back to my work on the sublabrynthine approach to the petrous apex. The aqueduct of the cochlea could also be transected through a

transmastoid approach through the retrofacial cells and cut the aqueduct of the cochlea as it crosses the top of the jugular bulb. I believe that Glasscock has explored this possibility.

In regard to the spontaneous fistulas of the oval window, in 1965 I presented I believe the first such spontaneous fistula in which this 30 year old male with congenital deafness and cerebral palsy began in 1964 with spells diagnosed as Meniere's disease, but the spells were peculiar in that first he would have a click in the ear and then a spell of vertigo lasting for several days and, during this period, he would have a copious fluid post nasal discharge of cerebrospinal fluid. The stapedectomy revealed the

fluid coming out of the unlocked anterior lip of the oval window and the stapedectomy with sealing of the oval window with a large viable graft attached to the incus with stainless steel wire stopped all of his spells and he has had no further post nasal discharge or vertigo or tinnitus. His family and referring physician remain grateful over this 12 year period.

In another patient first presented with a 23 decibel hearing loss at age 10 and with audiograms at age 13, 17, 19 and 21 this progressed to a 62 decibel hearing loss.

Another patient with congenital mixed deafness, a very cooperative and intelligent male at age 26 could wear a hearing aid but only in his right ear with some satisfaction, for he had a total hearing loss in the left ear.

In 1972, the hearing in the right ear with the hearing aid suddenly became distorted and tinny and all sounds were just clattering noises so that he could not wear the hearing aid with satisfaction. The hearing recovered during April and May, but again in August there was marked distortion of hearing. I bravely explored this only hearing ear to find the stapes pulsating out of the anterior lip of the oval window and an anterior fistula of the oval window. This was sealed with a viable graft with no recurrence of the distortion of hearing and with continued satisfactory use of the hearing aid for the past five years.

In the course of several thousand stapes operations, I have had several patients with excess flow of cerebrospinal fluid out of the oval window and if the surgeon does not completely seal the oval window with a viable graft a blister will form under the mucous membrane of the middle ear, giving this patient a good pure tone hearing improvement but with marked distortion so that the hearing itself is unsatisfactory.

In vertigo in a true Mondini Alexander, Dr. William House has found a markedly dilated endolymphatic sac, indicating the destructive effects of the perilymphatic hydrops so that there is a through and through communication between the perilymphatic and endolymphatic system.

At the Academy in the fall of 1977, Clemis and Valvassori presented a paper "Congenital Hearing Loss associated with the Large Vestibular Aqueduct" substantiated by polytomographic findings. I expect this to be published in the Transactions of the American Academy of Ophthalmology and Otolaryngology.

These cases of excess cerebrospinal fluid pressure within the inner ear are presented to you with the hope of stimulating your interest in the possible diagnosis of "PERILYMPHATIC HYDROPS" and I hope that your future research will substantiate the following theories.

1. A spontaneous fistula of the oval or round window is dependent primarily upon an excess flow of cerebrospinal fluid into the inner ear through either an overly patent aqueduct of the cochlea or the perineural spaces of the internal auditory canal. The fistula itself may be precipitated by skin diving, exercise or any movement which increases the

"A copy of the proposed Bylaws be published in the January, 1978 edition of Cortis Organ. After a period of at least four months a mail ballot will be sent to all Members. Ratification will require two-thirds approval of those Members voting." (Passed)

10. Remuneration for the Secretary-Treasurer was set at \$50.00 per month, pending the acceptance of the newly revised Bylaws.

11. Hallowell Davis suggested that an AAS Member be appointed as liaison to the American EEG Association. Hiroshi Shimizu was appointed.

12. Sam Lybarger was elected from The Executive Committee members for the office of Vice President President Elect, 1978.

There being no other business, the meeting was adjourned at 12:05 PM.

Respectfully submitted,
Ross J. Roeser
Secretary-Treasurer

Name	Degree	City State
Alpine, Jerome	Ph.D.	Littleton, CO
Bauch, Christopher	M.S.	Salt Lake City, UT
Bauer, Stephanie Lynn	M.A.	Springfield, MA
Begen, Linda Gail	M.A.	Oakland, CA
Blackman, Lisa	M.A.	Philadelphia, PA
Blount, Augustine J.	M.A.	Chicopee, MA
Bonner, Margaret Mary	M.A.	Mequon, WI
Bove, Celeste F.	M.A.	Washington, D.C.
Brandy, William T.	Ph.D.	Indianapolis, IN
Breneman, Alyce I.	M.A.	Mankato, MN
Brown, B. Evelyn	M.A.	Chicago, IL
Brown, Helen Beck	M.A.	Chicago, IL
Callaway, Daniel B.	B.S.	Santa Monica, CA
Ciely, Paula	B.A.	Bayonne, NJ
Cohen, Ivan J.	M.A.	La Jolla, CA
Coley, Karen E.	M.A.	Grass Valley, CA
Conkey, Harlan D.	ED.D.	Corvallis, OR
Conway-Fithian, Susan	M.A.	Cincinnati, OH
Coughlin, Patrick	M.S.	Danville, PA
Cox, Robyn M.	Ph.D.	Memphis, TN
Cullen, Patrick Edward	M.S.	Stanford, CA
Davidson, Carolyn	M.S.	Garland, TX
Desporte, Edward J.	M.S.	Tyler, TX
Dujets, Gregory	M.A.	Great Notch, NJ
Dunbar, James W.	M.A.	Panama City, FL
Efros, Paul	M.A.	Baltimore, MD
Eisele, Sandy	SC.D.	Hamilton, Ontario
Elsom, Mary	B.A.	Signal Hill, CA
Ely, William G.	M.S.E.E.	Edina, MN
Firemark, Rosalyn	M.A.	Palos Verdes Est., CA
Fuller, Claude C., Jr.	M.S.	Dallas, TX
Gary, Robert J.	M.A.	Kelowna, B.C. CANADA
Gliener, Isidor	B.A.	Edmonton, Alberta CANADA
Gold, Toni	M.A.	Forest Hills, NY
Goldstein, Moise H., Jr.	SC.D.	Baltimore, MD
Gooding, Linda C.	M.S.	Kinston, RI
Greenbank, Persis T.	M.A.	El Dorado, KS
Haenel, Judith L.	M.A.	Orange, CA
Hagberg, Eric N.	M.A.	Youngstown, OH
Harrington, Don A.	Ph.D.	Rockville, MD
Henderson, David D.	M.S.	Keene, NH
Hougas, Wayne	M.S.	Superior, WI
Isenbath, John O., III	M.A.	Meadville, PA
Jaffe, Phyllis	M.A.	Larkspur, CA
Jamieson, Nancy H.	M.A.	Hockessin, DE
Jensen, Betty L.	M.A.	Des Moines, IA
Jones, Amy Beth	M.A.	Dracut, MA
Jones, Margorie Maureen	M.C.D.	Jackson, MS
Kelley, Laura Nicholl	M.A.	Paradise Valley, AZ
Knight, Willis R.	Ph.D.	Atlanta, GA
Kohut, Robert I.	M.D.	Irvine, CA
Landin, Deborah	M.S.	Minneapolis, MN
Lautz, John Robert, II	B.A.	San Gabriel, CA
Lawson, Gary D.	M.A.	Lansing, MI
Lewis, Linda D.	M.S.	Great Falls, MT
Lewis, Terry K.	M.A.	London, Ontario CANADA
Lucenay, Tom C.	B.B.A.	Waco, TX
Mahoney, Thomas M.	Ph.D.	Salt Lake City, UT

(Cont. on page 11)

(Cont. on Page 11)

What's Our CR?

(Cont. from Page 1)

anthropologists are. For example, psychologists are known to consume great quantities of liquor at the bars, but tend to become argumentative and violent, generating large repair bills.

Mathematicians are the opposite: they seldom meet in bars for their arguments, preferring to stay quietly in their rooms to discuss earnestly their major divisions. Anthropologists are the happy medium—they drink liberally but while snogged do not wreck the place.

We are wondering whether a CR (Convention Rating) has been established for AAS among hoteliers. We like to think we rate with anthropologists as the perfectly balanced conventioners: convivial yet non-violent. Any ideas?

New By-Laws . . .

(Cont. from Page 8)

Committee, shall attend to the daily administrative and financial affairs of the Society, and shall take an active part in all committees dealing with publications. If, for some reason, the Secretary-Treasurer is prevented from carrying out his duties, he shall be replaced temporarily by the Assistant Secretary, or by a member of the Executive Committee designated by the President. Should the Secretary-Treasurer deem it necessary, personnel may be recruited to assist with Society work, subject to approval of the Executive Committee.

(b) The Secretary-Treasurer shall undertake the duties of Secretary to the Society Membership during the business meeting, and to the Executive Committee, as well as to any committees that may be set up by one or the other of these bodies. The Secretary-Treasurer or a person designated by him shall represent the Executive Committee on local organizing committees of Society meetings.

(c) The Secretary-Treasurer shall establish a bank account in the name of The American Auditory Society and shall conduct the necessary financial transactions of the Society. An audit of the financial status shall be performed annually by a certified public accountant and reported to the Membership.

ARTICLE VII. DEALINGS WITH THIRD PARTIES

7.1 Representation. The Executive Committee shall represent the Society in all its dealings with third parties.

7.2 Signatures. The Executive Committee shall designate those persons authorized to sign on behalf of the Society and shall decide on the title of signature.

7.3 Obligations. Members of the Society, as well as its agents and assignees, shall incur no personal financial obligation when acting on

the Society's behalf.

ARTICLE VIII. RULES

8.1 General. The Executive Committee may, by majority vote, interpret the meaning of these Bylaws and adopt Rules, not inconsistent with the Bylaws, to govern the activities of the Society.

ARTICLE IX. LIQUIDATION

9.1 Procedure. In the event of dissolution of the Society, for whatever reason and whenever this might be, this step will be undertaken by a Liquidator appointed by action of the Members at a business meeting, who shall also decide on his powers and, if applicable, fix his remuneration. In default of such an appointment, the liquidation shall be carried out by the Executive Committee in office at the time acting as Liquidators.

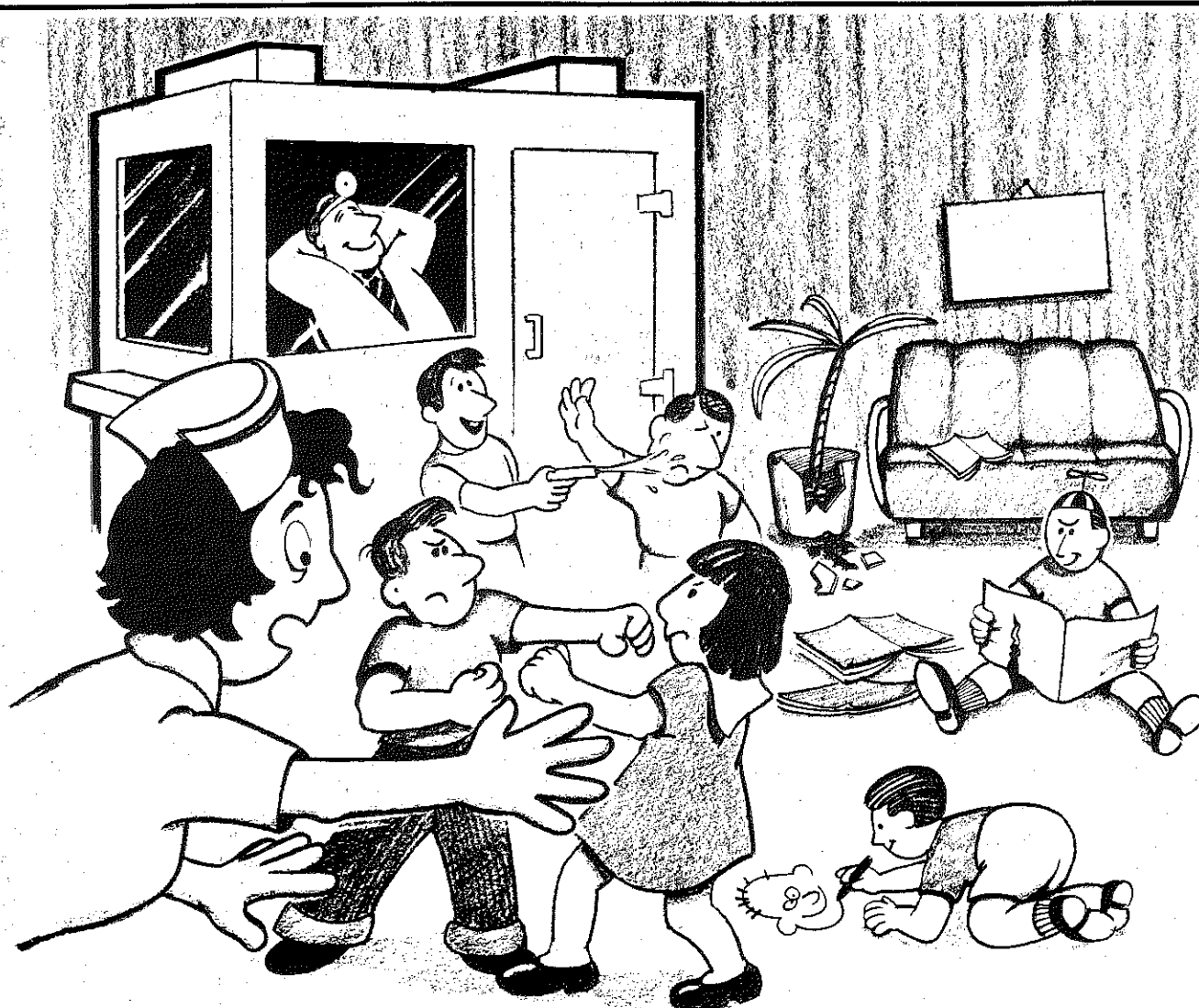
ARTICLE X

AMENDMENTS AND REVISIONS

10.1 (a) Procedure. Amendments or revisions of these Bylaws may be proposed either by the Executive Committee or by a petition signed by at least 40 Members.

(b) Notice of the general nature of any proposed amendments or revisions shall be given in a Society publication at least four months prior to a mail ballot.

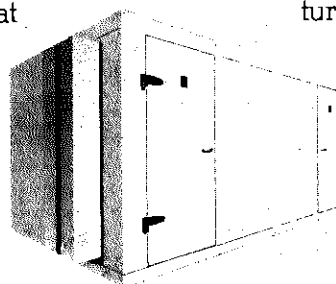
(c) To become effective, such amendments or revisions must be approved by affirmative written ballot of two-thirds of the Members voting.



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Book Review AAS . . .

The Acceptability of Risks, by Barry Rose, The Council for Science and Society, London, L5, 1977.

This report by a working group presents a factual discussion of the science of risk quantification. Its survey of industrial risk management would be of interest to AAS members, analyzing as it does the individual human response and the attitude of society to risk exposure. It recommends that those exposed to risks should have a powerful voice in deciding what risks they should be exposed to. How this can be done is not tackled straight-on; instead, the question is addressed "who should make the decisions?" An attempt is made to answer this question by setting up "risk advisors", or safety counsellors—but their role is not well-defined.

This report has been widely discussed in England and might be timely to consider in the U.S.

Minutes. . .

(Cont. from page 9)

Martin, Paul G.	M.S.	Bluefield, WY
Mattingly, Susan Carol	Ph.D.	Montreal, Quebec CANADA
McDowall, Mark T.	Ph.D.	Ponce, PR
Mendelson, Gary L.	M.A.	Potomac, MD
Miller, Stephen E.	M.S.	Dallas, TX
Minekime, Karen D.	M.A.	Washington, D.C.
Nerbonne, Michael A.	Ph.D.	Pocatello, ID
Olsen, Robert G.	M.C.D.	Denison, TX
Osborne, George S.	Ph.D., DDS	Oak Park, IL
Ostergard, Caryn	M.A.	Denver, CO
Penrod, John P.	Ph.D.	Athens, GA
Peterson, Eileen Malsch	M.S.	Seattle, WA
Peterson, Steven W.	M.A.	Philadelphia, PA
Pinto, Valerie R.	M.A.	Leonia, NJ
Piper, Neil	M.S.	New York City, NY
Porter, Todd H.	M.A.	Houston, TX
Punch, Jerry L.	Ph.D.	College Park, MD
Raffin, Michael J.	Ph.D.	Evanston, IL
Rassi, Judith A.	M.A.	Chicago, IL
Raymond, Henry A.	M.S.	Indianapolis, IN
Raz, Israel	Ph.D.	Chicago, IL
Rosado, Hilda	M.S.	Rio Piedras, PR
Rosen, Robin Esman	M.A.	Philadelphia, PA
Rossi, Dominick F.	Ph.D.	Hotchkiss, CO
Ryals, Brenda	M.A.	Norfolk, VA
Schell, Yvonne	M.A.	Cincinnati, OH
Shifman, Suzanne	M.A.	Pontiac, MI
Siegel, Janice R.	M.A.	Orange, CA
Sinclair, John C.	Ph.D.	Mill Valley, CA
Skinner, Barbara K.	M.S.	Omaha, NE
Smith, Matthew, W. F.	M.S.C.	Albuquerque, NM
Spicer, Harry S.	M.A.	Monticello, AK
Streltzer, Carol Ann	M.A.	Lubbock, TX
Sullivan, Roy F.	Ph.D.	Garden City, NY
Suter, Charles M.	Ph.D.	Baltimore, MD
Trahan, Henry Paul	M.C.D.	Mobile, AL
Valente, Michael	Ph.D.	Lee's Summit, MO
Vandevander, Gary	M.S.	Charleston, WV
Vanke, J. William	M.A.	Chapel Hill, NC
Wales, John	M.S.	West Lafayette, IN
Waryas, Paul A.	Ph.D.	Parsons, KS
Webster, Molly	B.A.	New Orleans, LA
Wolford, Ellen W.	M.A.	Buffalo Grove, IL

Applicants for 1978

Name	Degree	City/State
Albers, Carol Cline	M.A.	Naples, FL
Alford, B. R.	M.D.	Houston, TX
Bluestone, Charles D.	M.D.	Pittsburgh, PA
Brant, Barbara	B.S.	Fredonia, NY
Cazals, Yves	D.E.A.	Bordeaux, FRANCE
Cire, George	B.A.	New Orleans, LA
Cox, Carol C.	M.A.	Klamath Falls, OR
Dickinson, David L.	M.A.	Alliance, OH
Jerger, James	Ph.D.	Houston, TX
Johnson, Robert M.	Ph.D.	Denver, CO
Lombardo, James C.	M.S.	Wausau, WI
Marshall, Lynne	Ph.D.	Syracuse, NY
Soliman, Salah M.	M.D., SC.D.	Cairo, EGYPT

AAS . . .

(Cont. from Page 9)

pressure of the cerebrospinal fluid.

2. Usually an excess flow of cerebrospinal fluid into the inner ear is sub-clinical.

3. In specific cases of congenital mixed deafness, these abnormal pathways in the flow of cerebrospinal fluid produce both a sensory-neural hearing loss and a conductive hearing loss. The sensory-neural hearing loss is a direct result of the excess pressures of the perilymphatic hydrops, these pressures producing progressive destructive pathology of the inner ear. The conductive portion of a congenital mixed deafness is produced by the same cerebrospinal fluid pressures, the perilymphatic hydrops, which pushes the stapes outward until it becomes locked and immobile in the overhanging anterior lips of the oval window niche, producing a condition which I have termed a "LOCKED STAPES".

4. If there are no overhanging anterior lips of the oval window, then the perilymphatic hydrops simply pushes the stapes into the middle ear and there is cerebrospinal fluid otorrhea and a total loss of hearing. In the past, these rare cases have simply died of meningitis or been diagnosed as a congenital nerve deafness.

5. The congenital irregularities in the flow of cerebrospinal fluid into the inner ear may vary from the sub-clinical overly patent aqueduct of the cochlea to the true Mondini Alexander as summarized by Illum and Everberg and Jensen.

6. In the true Mondini Alexander, the possibility of a locked stapes in the overhanging lips of the anterior niche of the oval window has not been noted in the pathologic reports.

REFERENCES

1. Farrior, J. B. and Endicott, J.: Congenital Mixed Deafness: Cerebral Spinal Fluid Otorrhea. *Laryngoscope*. Volume 81, Number 5684-700 1972.
2. Farrior, J. B.: Tympanoplasty in 3-D. Volume 2, Special Techniques in Ear Surgery, Atlas American Academy of Ophthalmology and Otolaryngology 1968.
3. House, Wm. H.: Mondini Alexander-the shunt operation for relief of vertigo. Shambaugh Workshop 1976.
4. Clemis, J. D. and Valvassori, G. E. and Decker, R.: Congenital Hearing Loss Associated with the Large Vestibular Aqueduct to be published 1978.
5. Illum, Peter: The Mondini type of cochlear malformation: A Survey of the Literature. *Arch. of Otol.* 96, 305-311, 1976.
6. Everberg, G. and Jensen, J.: Labyrinthine malformations: Genetical and radiological aspects. *Acta Oto-Laryngologica*. 82, 238-241, 1976.

Systematic Study Of Eustachian Tube Testing

Michael F. Seidemann and Melinda W. Seifert
Louisiana State University
Medical Center
New Orleans

Gregg D. Givens
Tulane University School of Medicine
New Orleans

The momentary measurement of middle ear pressure is likely to be a fleeting phenomenon (Feldman, 1976). The measurement of middle ear pressure may or may not be characteristic of "typical" middle ear pressure encountered in a specific middle ear (Beery and Bluestone, 1976). Therefore, additional information is needed to provide a definitive description regarding the ability of the middle ear-Eustachian tube complex to equilibrate ambient atmospheric pressure. It is no wonder that difficulty is experienced when we attempt to glean equilibration information from the mere determination of middle ear pressure. It is evident that a momentary measurement of middle ear pressure is of limited prognostic value. It therefore appears as if more emphasis should be placed upon the determination of pressure equilibration as an integral part of the middle ear measurement test battery.

Tests of Eustachian tube patency have previously been recognized as providing valuable data relative to the prediction of tympanoplastic surgical success (Holmquist, 1972). It is our contention that with a sufficient data base, the tympanometric determination of Eustachian tube patency can provide valuable predictive information, could reduce the numbers of over-referrals and at the same time initiate referrals that have been overlooked by false negative tympanometric pressure findings.

The subject population consisted of 26 adults between 20 and 30 years of age. A total of 48 ears met the inclusion criteria of tympanometry exhibiting normal middle ear pressure and function.

The procedure used was one adapted from the procedure outline by Williams (1975). The procedure was administered at +400, +350, +300, +250, +200 mm. H₂O.

The results of this study indicated a direct relationship between the pressure exerted and the amount of resultant pressure change obtained. It seems desirable to maximize the amount of pressure change obtained in Eustachian tube testing. The maximization of change obtained with normal ears should thereby enable the clinician to better visualize deviations from the norm in either direction.

The amount of pressure change obtained in this study was consistently greater with induced negative pressure than with induced positive pressure. The amount of pressure change obtained with maximum positive pressure (+400 mm) was less than the pressure change obtained with the minimum

negative pressure (-200 mm).

A direct relationship was found to exist between the amount of function change and the amount of pressure induced. It was recommended that an induced pressure of at least +350 mm be employed in the Eustachian tube test procedure in order to maximize the detection of function changes—5%. However, analyses of Eustachian tube test data should be biparametric (pressure and function) (Seidemann and Givens, 1977). With regard to the combined analysis of pressure and function data, it is felt that an induced pressure of -400 mm should be recommended for the test procedure.

Scientist Receives Award

The 1977 edition of the Centro Ricerche e Studi Amplifon International Prize—which is the most important award in the audiological field—has been attributed for the first time to an Italian scientist: Michele Arslan, who carried out his research work at the Ear Nose and Throat Clinic of Padua University. The motivation written by the 15 members of the Prize Committee emphasizes Arslan's "original and important contribution in the field of experimental physiology, physiopathology, clinical management and therapy of the inner ear diseases and in the field of the vestibular system."

Prof. Arslan dedicated his long scientific activity especially to Meniere's disease, obtaining excellent results by means of an original surgical technique, based on ultrasounds, which has been adopted all over the world and thus giving an essential contribution to the cure of this particular ear disease.

Prof. Arslan was presented with the Centro Ricerche e Studi Amplifon International Prize during a ceremony held at the Milan Press Club on November 24th, 1977.

Prof. Ettore Bocca, Head of the Ear Nose and Throat Clinic of the Milan University, introduced Professor Arslan, stressing his many scientific achievements, whilst Prof. Antonio Antonelli, Assistant Head of the Ear Nose and Throat Clinic of the Milan University, spoke on "Dizziness and the vestibular system: Prof. Michele Arslan's researches and discoveries."

In the afternoon of the same day, Prof. Arslan himself has acted as chairman of a round table on Meniere's disease, which took place at the Amplifon Research and Study Centre and to which Prof. Heinrich Spoendlin, Head of the Ear Nose and Throat Clinic of Innsbruck, and Prof. Jan Stahle, of the Ear Nose and Throat Clinic of Uppsala, participated.

Calendar of Events

January 19-20

Training Courses For Audiometric Technicians In Industry, approved for 15 contact hours by Florida Nurses Association. Further information from Larry B. Shipley, Jacksonville Hearing and Noise Control Inc., 836 Prudential Dr., Suite 531, Jacksonville, FL 32207, 904-399-1914.

January 22-26

Forty Sixth Annual Mid-Winter Clinical Convention, Otolaryngology, Los Angeles Hilton Hotel, Los Angeles, Ca. AMA and CMA 28 hour accredited course for Continuing Medical Education. Registration fees—\$175 for practicing otolaryngologists; \$75 for residents. Contact: Richard Pruter, Ex. Sec., P.O. Box 49412, Los Angeles, Ca 90049, 213-879-0143.

January 27-28

Electronystagmography And The Dizzy Patient, The Red Lion, Portland, OR. A two-day workshop on testing, interpreting and understanding the dizzy patient, conducted by Darrel L. Teter, Ph.D. and Frederick H. Linthicum, M.D. Fee—\$150. Contact: Tracoustics, Inc., Austin, Tx 78764, 512-444-1961.

January 27-29

Occupational Hearing Conservation Workshop and Refresher Course, Presbyterian Hospital, San Francisco. Contact: Continuing Education, Presbyterian Hospital, P.O. Box 7999, San Francisco, Ca. 94120.

January 30-February 2

Midwinter Research Meeting, Assn. For Research In Otolaryngology, Happy Dolphin Inn, St. Petersburg Beach, Fl. Contact: David J. Lim, President, Assn. for Research in Otolaryngology, 4331 University Hospitals Clinic, 456 Clinic Dr., Columbus, Oh 43210.

February 10-11

Electronystagmography And The Dizzy Patient, The Marriott, Atlanta, Ga. A two-day workshop on testing, interpreting and understanding the dizzy patient, conducted by Darrel L. Teter, Ph.D. and Frederick H. Linthicum, M.D. Fee—\$150. Contact: Tracoustics, Inc., Austin, Tx 78764, 512-444-1961.

February 24-25

The Hearing Aid Workshop For The Three Professions, Fairmont Hotel, New Orleans, La.

February 25-March 4

Second Midwinter Symposium On Frontiers Of Pediatric Otolaryngology, Snowmass, Co. Contact: George E. Shambaugh, Jr., M.D., American Hearing Research Foundation, 55 E. Washington St., Suite 2105, Chicago, Il 60602.

March 3-5

Second National Conference On Otitis Media, Scottsdale, Az. Co-sponsored by University of Arizona, College of Medicine with the Indian Health Service. Meets criteria of 18 credit hours in Category I of Physician's Recognition Award of AMA. Fee—\$200 before 1/9/78; late fee \$225. Contact: Office of Continuing Medical Education and Outreach, University of Arizona, College of Medicine, Tucson, Az 85724.

March 4-11

12th Annual Colorado Otolaryngology Workshop, The Mark at Lionshead, Vail, Co. Contact: Jerry L. Northern, Ph.D. or Marion P. Downs, M.A., Workshop Committee, P.O. Box B210, 4200 East Ninth Avenue, Denver, Co 80262.

March 8-11

Second International Symposium On Pediatric Otolaryngology, Kansas City, Mo. Contact: Basharat Jazbi, M.D., Professor and Chief, Section of Otorhinolaryngology, The Children's Mercy Hospital, 24th at Gillham Road, Kansas City, Mo 64108.

March 22-25

International Hearing Aid Seminar, Islandia Hyatt House, San Diego. Contact: Dr. Robert E. Sandlin, 8001 Frost Street, San Diego, Ca 92123.

March 27-31

Industrial Noise Measurement, Evaluation And Control (Course #202), National Safety Council Headquarters, 444 N. Michigan Ave., Chicago, Il. Contact: Director of Registrations, Safety Training Institute, 444 N. Michigan Ave., Chicago, Il 60611, 312-527-4800 ext. 283.

April 7-8

Electronystagmography And The Dizzy Patient, Hyatt Regency, Washington, D.C. A two-day workshop on testing, interpreting and understanding the dizzy patient, conducted by Darrel L. Teter, Ph.D. and Frederick H. Linthicum, M.D. Fee—\$150. Contact: Tracoustics, Inc., Austin, Tx 78764, 512-444-1961.

April 13-14

Basic Electronystagmography, Columbus, Oh. Fee—\$100. For further information: Charles W. Stockwell, Ph.D., 4024 University Hospitals Clinic, 456 Clinic Drive, Columbus, Oh 43210.

April 15-22

The Eng and Oto-Allergy Cruise Symposium, (Aboard ship in Caribbean). Co-sponsored by American Hearing Research Foundation and Northwestern University Medical School. Contact: George E. Shambaugh, Jr. M.D., American Hearing Research Foundation, 55 E. Washington St., Suite 2105, Chicago, Il 60602.

May 8-10

Designing For Noise Control, Seventh Int'l. Conference on Noise Control Engineering, Jack Tar Hotel, San Francisco, Ca. Contact: Conference Secretariat, INTER-NOISE 78, P.O. Box 3469, Arlington Branch, Poughkeepsie, NY 12603.

May 12-13

Electronystagmography And The Dizzy Patient, Wilshire Hyatt House, Los Angeles, Ca. A two-day workshop on testing, interpreting and understanding the dizzy patient, conducted by Darrel L. Teter, Ph.D. and Frederick H. Linthicum, M.D. Fee—\$150. Contact: Tracoustics, Inc., Austin, Tx 78764, 512-444-1961.

June 13-16

Acoustical Society Of America, Kingston, Rhode Island.

June 23-27

Biennial Convention Of The Alexander Graham Bell Association For The Deaf, St. Louis, Mo. Registration information available early spring. Write Convention Department, A.G. Bell Association, 3417 Volta Place NW, Washington, D.C. 20007, 202-337-5220.

September 1-3

Third Annual Conference Audiological Society Of Australia, Macquarie University, Sydney, Australia. Contact: The Public Relations Officer, Mr. Gary Walker, Audiology Development Section, National Acoustic Laboratory, 5 Hickson Road, Millers Point N.S.W. Australia 2000.

September 10-11

American Academy of Otolaryngology, Las Vegas, Nevada

September 15-17

Annual Meeting Of Society For Ear, Nose and Throat Advances In Children, Santa Barbara, Ca. For information write to: Dr. Sanford Gerber, University of California, Santa Barbara, Ca 93106.

October 2-6

Auditory Evoked Response Workshop and Symposium, San Diego, Calif.

November 12-16

XIV International Congress Of Audiology, Acapulco Cultural and Convention Center, Acapulco, Mexico. For information: Organizing Secretariat, Instituto Mexicano de la Audicion y el Lengua je, Progreso 141-A, Escandon Mexico 18, D.F.-Mexico.

November 18-21

American Speech and Hearing Association, San Francisco, Calif.

November 26-Dec. 1

Acoustical Society of America, Honolulu, Hawaii

1979 May 17-19

International Symposium Of The Hearing Impaired Child, University of Cincinnati Medical Center. Contact: Dr. Allan B. Seid, Children's Hospital Medical Center, Elland and Bethesda Ave., Cincinnati, Oh 45229.

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Scoop!
Guidelines for
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of Children Page--3

AAS Directory
Complete in
This Issue... Page-4

American Audiology Society
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Dallas, Texas 75235

THIRD CLASS

CORTI'S ORGAN

(Audionews)

The Official House Organ of the American Audiology Society
Volume 3, No. 2 April, 1978

Noise Symposium Presents

Comprehensive Offerings

Glorig To Be Honored

A symposium covering all aspects of noise will be held at San Antonio, Texas May 7-9. Sponsored by the National Foundation for Noise, Hearing and Balance, it will feature a large array of faculty members representing numerous disciplines and reflecting all the aspects of Noise and its Control.

Aram Glorig, AAS's founder and first president, will be the guest of honor at the Symposium. In addition, there will be repre-

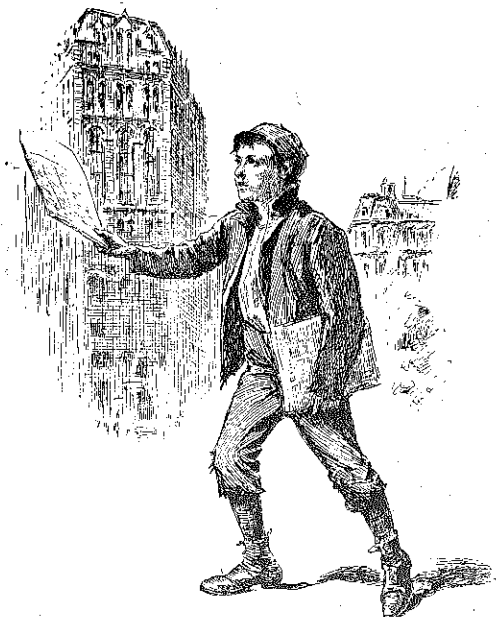
sentatives from Otolaryngology, Audiology, Psycho-acoustics, Law, the U.S. Senate, Insurance, Environment Control, Marketing, Psychology, Physiology, the Armed Forces, Industry and Industrial Hygiene.

Concurrent with the symposium's lecture program will be an Industrial Audiometric Technician's course leading to Accreditation by the CAOHC. A hearing screening course for schools and clinical offices will also be offered to non-audiologists on May 10.

San Francisco To Be AAS Annual Meeting Site

John Sinclair and Terri Grekin, this year's program co-chairmen for the 1978 annual meeting of The American Audiology Society, are actively setting up schedules and making arrangements. Any sug-

gestions that members have are very welcomed. The meeting will be held on Friday, November 17th. Further details will be published in the July issue of *Corti's Organ*. Call for papers will be sent to each member in May.



CUNY

Sponsors

Hearing Aid Conference

The Ph.D. Program in Speech and Hearing Sciences of the City University of New York Graduate School is sponsoring a three-day conference on the "Acoustical Factors Affecting Hearing Aid Performance and Measurement" from June 14-16, 1978. The purpose of the conference is to present and discuss the implications of recent findings concerning the acoustical factors that influence hearing aid performance and measurement. The conference should be of interest and relevance to all persons involved in the design, manufacture, measurement and fitting of hearing aids.

The conference is designed to facilitate a dialogue among the various contributors and between the audience and the contributors. The practical application of research findings will be emphasized by the participation of experienced clinicians, engineers and scientists in "round table" discussions.

Participants will include researchers from the United States and abroad. A sampling of topic areas include:

Acoustics of the ear; influence of diffraction on hearing aid performance; room acoustics and intelligibility; earmold acoustics; hearing aid processed signals; hearing aid measurement standards; modeling the acoustic system; and hearing aid response characteristic selection strategies. For more information contact Gerald A. Studebaker or Irving Hochberg, Ph.D. Program in Speech and Hearing Sciences, Graduate School, CUNY, 33 W. 42 Street, N.Y., N.Y. 10036.

President's Message

F. Blair Simmons

Insofar as one can fix such things, this Society began as an outgrowth—not a tumor—of a meeting held in a Dallas hotel room years ago. Those of us who happened to be present (the meeting wasn't all that formal) earned our livings by about as many different ways as were possible to squeeze into one room (at least one each of the species known as deaf educators, otologists, hearing aid manufacturers, physiological psychologists (human and inhuman) and audiologists. The thing we had in common was an interest in people with hearing losses. Most of us or our counterparts found that while we were easily able to work together daily when dealing with an individual patient/client, it wasn't as easy when it came to our professional organizations. (Some of us also had strong feelings that we needed badly to recruit the interests of so-called basic scientists into becoming personally involved with the problems of deafened people). We had more than enough frustrations by the hierarchy of the status quo in the several separate professional organizations. Many times our organizations seemed to have dialogue only on, "who's in charge of what," or, "who owns what piece of the professional pie." We felt all us "professionals" got along pretty well on an individual basis, but in the separate societies one group tended to become the tactical "enemy" of the others. Thus in a sense the beginning of this Society was a protest movement.

Having decided that a mutual forum was an idea we could all be enthusiastic about, the next inevitable question became: who gets to belong to our club? Things got sticky right away. My vote was for anyone who had a documentable interest in hearing. I lost. The by-laws called for some sort of institutional degree. (I do admit that such a requirement is reasonable. One simply must establish a minimum standard to keep the natives peaceful—and the Society prestigious). Next we needed a name. We all thought the American Audiological Society seemed good. We have since learned that it isn't. ASHA said we couldn't use "audiology". That word belongs to them. (We heard no formal objections to "borrowing" the word, "american"). This picaresque problem of our Society's name was the first real challenge towards our goals, and we failed it. Professionalism, won once again.

My "president's message" is, let's not forget the enthusiasms of our beginnings, the reasons we felt this Society was needed. Part of this can be done by a continuing effort to recruit new members whose sympathies are similar, and to continue reminding old members that membership itself should be a clear statement in favor of less professionalism and more communication. And, we can communicate. We've got a first-class newsletter in *Corti's Organ* (which I suspect becomes Corti's orgasm near the publishing deadline), the beginnings of a fine journal, and an annual meeting. Use them.



CORTI'S ORGAN is a quarterly publication of the American Audiology Society, printed in Dallas, Texas.

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Editorial

In a short while you will receive ballots for the New By-Laws that have been proposed for AAS. We hope you have read them carefully and are prepared to cast a well-considered vote. The By-Laws committee wanted particularly to have the new document reflect the chief goal of the Society: to provide a forum and meeting ground for all the various disciplines concerned with audition. In order to accomplish that goal the membership requirements have been made more lenient, and it has been made easier to effect policy changes. A great deal of flexibility will result, leaving the organization ready for whatever its destiny may be.

Of course, destiny is shaped by individuals, and we hope that the AAS officers and members will be inspired to request

innovative activities for the organization, such as the national meeting that was proposed at the Miami convention. Such an activity will give the Society the stature it should have.

So we conjure the membership to vote advisedly on the By-Laws, and to give support to Norma Hopkinson, Bruce Graham and Dix Ward in their planning for a national conference that will give AAS visibility. We may soon see AAS making a substantial, non-political, scientifically-based contribution to knowledge of the auditory function.

If you did not read the proposed By Laws in the January issue of Corti's Organ, we have reprinted them in this issue on pg. 12-MPD. RJR.

Letter

from England

The importance of immunology in otorhinolaryngology has been greatly enhanced; but there exists a great deal of confusion or difficulty in the interpretation of a vast amount of rapidly accumulating experimental and clinical findings.

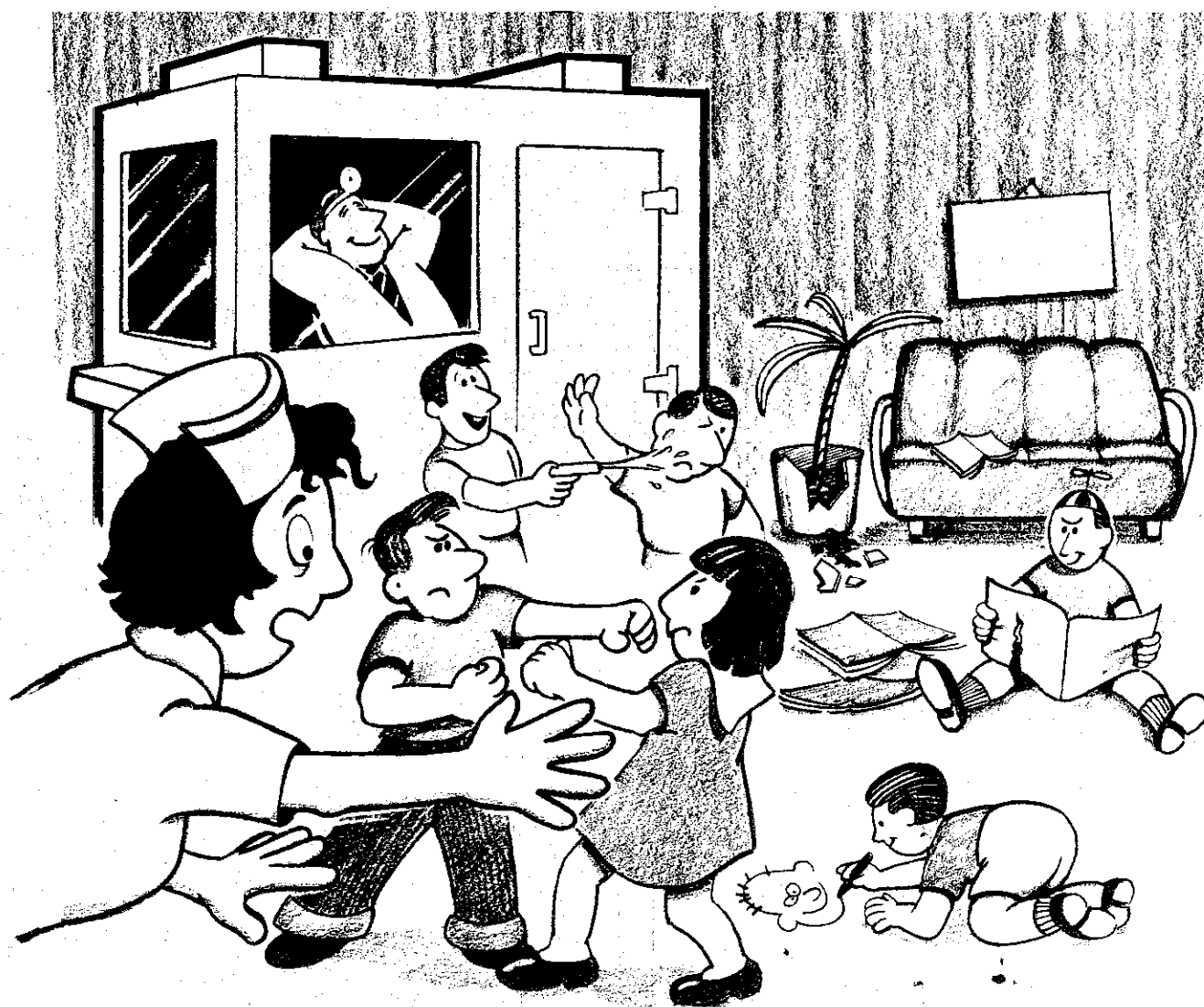
A lecture at the Department of Immunology of the Clinical Research Center and Northwick Park Hospital in Harrow (England) on March 3d by Henry Claman, Professor of Immunology, University of Colorado Medical Center in Denver was most stimulating and illuminating in this respect. A pioneer in this field he has guided his audience with masterly clarity towards a better understanding of the

immunological mechanisms of tolerance without disguising the not negligible obstacles still to be surmounted. The lecture was acclaimed by a large and knowledgeable audience headed by Dr. Geoffrey Asherson himself an immunologist of world-wide repute.

I am glad to mention that the Journal of Laryngology will be under the joint Editorship of Sir Geoffrey Bateman and John Ballantyne a strong team supported by occasional anonymous advisers.

The crocuses are blooming in our garden and Spring cannot be far away. The itinerant symposiasts have started packing their slide-boxes.

Imre Friedmann



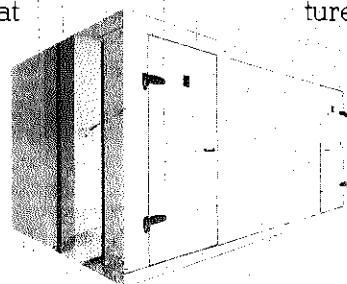
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Sentac Meeting Announced

Sentac Meeting, Announced
The annual meeting of the Society of Ear, Nose and Throat Advances in Children (SENTAC) will be held at El Encanto, Santa Barbara, California on December 7 and 8, 1978. The deadline for abstracts for papers will be on June 15, 1978. Papers on 1.) Central Auditory Dysfunction 2.) The Effect of Moderate Hearing Loss on Language Development and Educational Achievement will receive preferential consideration. For further information, please write to Dr. Robin Cotton, Children's Hospital Medical Center, Elland & Bethesda Avenues, Cincinnati, Ohio 45229.

Report of Vanderbilt Impedance Symposium

USE OF ACOUSTIC IMPEDANCE MEASUREMENT IN SCREENING FOR MIDDLE EAR DISEASE IN CHILDREN**

This report is based on formal presentations and discussions at a Symposium on Impedance Screening for Children held at Vanderbilt University School of Medicine, Nashville, Tennessee, June 20-22, 1977. The Symposium began with invited "state-of-knowledge" reports on the following aspects of middle ear disease and impedance testing in children:

Epidemiology and Natural History of Middle Ear Disease—Jerome O. Klein, M.D. Morbidity of Middle Ear Disease—Charles D. Bluestone, M.D. Methods of Identification of Middle Ear Disease—Gunnar Liden, M.D.

The remainder of the Symposium addressed the issue of using impedance for screening four categories of children. Each category was introduced by a state-of-knowledge report on impedance screening of:

Infants—Robert H. Margolis, Ph.D. Preschool Children—Jack L. Paradise, M.D. School Age Children—Denzil N. Brooks, M.Sc. Special Populations of Children—Jerry L. Northern, Ph.D.

In addition, 20 papers were presented from among those submitted by investigators concerning recent studies of impedance screening in children. The Symposium had an open registration with more than 300 health professionals of varying disciplines in attendance. The format of the Symposium allowed for open discussion of both invited and selected papers. At the conclusion of the formal presentations a Task Force of 28 experts from the fields of audiology, otolaryngology, pediatrics and epidemiology met to formulate recommendations for the use of impedance screening for the detection of middle ear disease in children. In order to obtain the reactions of all persons attending the Symposium, the recommendations of the Task Force were presented and discussed at an open meeting. Although not all members of the Task Force agree with every point, the following is the consensus of the Task Force.

RECOMMENDATIONS FROM THE TASK FORCE

INTRODUCTION

Otitis media with effusion is prevalent among infants and young children. The disease is often associated with conductive hearing impairment, but the degree of this impairment varies. Moreover, the course of this type of middle ear disease is also highly variable and generally unpredictable. Some cases resolve spontaneously within short periods of time while others

continue for months or longer. In part for these reasons, controversy exists concerning the advisability of treating this type of middle ear disease if, as is often the case, it is unaccompanied by symptoms. There is some evidence that early treatment may be of advantage in preventing certain unfavorable long-term developmental consequences in some children, but the evidence for this is not conclusive and more studies are necessary to confirm this possibility.

Of particular concern are those infants and children in whom middle ear effusion is accompanied by hearing impairment that goes unnoticed for long periods. As the number of such infants and children is thought to be large, it appears desirable to develop screening methods for identifying them. In recent years measurements of the acoustic impedance of the ear, a technique for identifying middle ear effusion and certain related disorders, has attracted widespread interest among health professionals, educators, and legislators because of its potential as a screening method.

This report is based on available information and gaps in knowledge regarding the use of impedance measurements for screening children. It suggests interim conclusions and recommendations concerning the use of impedance for screening and implies areas for future research. Since new information on this subject is being acquired rapidly, the recommendations in this report probably will require early revision.

IMPEDANCE SCREENING FOR CHILDREN

Screening is a process by which individuals are identified who may have diseases or disorders that are otherwise undetected. Middle ear disease is a disease that may prove suitable for screening because 1) it is an important health problem; 2) it is prevalent; 3) there are accepted criteria for its diagnosis; and 4) facilities are available in many communities for its confirmatory diagnosis and its management (although in other communities such services are deficient). A fifth important criterion for suitability of the disease for screening has not been established: namely, that there is value in treating apparently non-symptomatic children or children with little or no hearing impairment.

Impedance screening comprises either tympanometry or measurement of the acoustic reflex or both, carried out by means of electroacoustic impedance instruments, and is intended to detect the presence of middle ear effusion or of certain other less common otologic disorders. These diseases have a high degree of association with conductive hearing loss, the most common type of hearing impairment in children.

The extent varies to which im-

pedance screening fulfills the principal criteria for an effective screening test—acceptability, reliability, validity, and reasonable cost. Impedance testing is acceptable to both the child and the provider of health care because it is safe, non-invasive, and simply executed. Studies

have shown impedance measurement to be reliable, but these studies have not involved subjects of all age groups or instruments of all types in current use. The validity of referral criteria based on impedance measurements (i.e., their association, singly or in combination, with the presence or absence of middle ear disease) has not been established completely, and further studies are needed. In these studies, tests results should be correlated with either (a) otologic findings by observers whose otoscopic diagnoses have themselves been validated, or (b) myringotomy findings. Minimum performance standards and design objectives of electroacoustic impedance devices are being studied by the American National Standards Institute, S-3 60. The costs of impedance screening are reasonable if overreferral rates are not excessive.

RECOMMENDATIONS

Because of the importance of middle ear disease in infants and children and in view of the need for additional information concerning its natural history and optimal management, the Task Force recommends that such information be sought as rapidly as possible through appropriate studies. At the present time, and until additional information has been developed, the Task Force does not recommend the use of impedance measurements for universal (mass) screening on a routine basis for the detection of middle ear disorders in children of any age group. Although not now recommending mass screening, the Task Force recognizes that in some locales screening programs have already been, or will be, established. Because these programs may afford opportunities to gain additional knowledge about the utility of im-

pedance screening, the Task Force recommends that wherever possible they be designed, or their designs be modified, to accomplish this purpose. Further, the Task Force strongly recommends additional research specifically designed to evaluate impedance testing as a screening method for infants and children.

Infants (0-24 months). Middle ear effusion has its highest incidence and prevalence in the age group 6 to 24 months. Following episodes of acute infection, asymptomatic middle ear effusions continue for extended periods in a large number of infants, and there is concern about the possible effects of undetected effusions on their function and development.

Below the age of seven months the relations between the tympanometric findings (using instrumentation thus far studied in this age group) and middle ear disorders are not well understood, although the limited data now available indicate that the sensitivity of tympanometry as usually performed is relatively low. Preliminary data, employing a probe tone of 660 Hz, suggest that in such infants acoustic reflex measurements may be of value in detecting middle ear effusion, and if so, might constitute an effective screening method. Additional studies on this population are required.

There are also feasibility problems associated with impedance screening of infants. Logistically it may be difficult to gather infants for testing after they leave their place of birth. Moreover, impedance testing in infants may sometimes be difficult and time consuming. Research is needed to develop screening methods for infants that have high degrees of sensitivity, specificity, and feasibility.

Preschool and School Age Children: Even though mass screening of preschool and school age children by impedance measurements is not recommended at present, such screening is already being performed, planned or contemplated in many communities. In situations where screening is or becomes a reality, the following

procedures and criteria have been judged to be minimal:

1. A combination of tympanometry and acoustic reflex measurement should be used.

2. For eliciting the acoustic reflex, a signal of 105 dB HTL should be used in the contralateral mode, or a signal of 105 dB SPL in the ipsilateral mode, or both.

3. Whether broad-band noise or pure tone is preferable as an eliciting stimulus for the acoustic reflex remains to be established. A pure tone between 1000 Hz and 3000 Hz would be acceptable for this purpose. The stimulus should be specified or described, or both.

4. Acoustic reflex measurements can be obtained either with the ear canal air pressure that results in minimum acoustic impedance or with ear canal air pressure equal to ambient pressure. The condition used should be specified.

5. For tympanometry, a 220 Hz probe tone is preferred. However, other low frequency probe tones, up to 300 Hz, are acceptable.

6. For tympanometry, an air pressure range of -400 to +100 mm(H₂O) is preferred. However, a range of -300 to +100 (H₂O) is acceptable. Automatic recording should be used whenever possible and the rate of air pressure change should be specified.

7. Failure on the initial screening test is denoted by either an absent acoustic reflex or an abnormal tympanogram. An abnormal tympanogram is defined as one that either, a) is flat or rounded (i.e., without a definite peak), or b) has a peak at, or more negative than, -200 mm (H₂O). Flat or rounded tympanograms appear to be more highly correlated with middle ear effusions than do tympanograms with peaks at negative pressure readings.

8. Any child failing the initial screening should be retested in four to six weeks. Parents or guardians should be advised accordingly. Any child who has an acoustic reflex and a normal tympanogram on the initial screening passes and is "cleared."

9. The following schema is recommended for various screening findings:

Cont. on page 10

CLASSIFICATION	INITIAL SCREEN	RETEST	SUBJECT OUTCOME
I	Acoustic reflex present and Tympanogram normal	Not required	Cleared
II	Acoustic reflex absent and/or Tympanogram abnormal	Acoustic reflex absent and/or Tympanogram abnormal	Referred
III	Acoustic reflex absent and/or Tympanogram abnormal	Acoustic reflex present and Tympanogram normal	At risk Recheck at later date

American Audiology Society Directory

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BORTON, T. E.
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SHEELEY, EUGENE C.
TRAHAN, HENRY PAUL

ALASKA

KIMBALL, B. D.
MC CARTY, JR., THOMAS A.

ARKANSAS

ANDERSON, VIRGINIA S.
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IVEY, ROBERT G.
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CLUFF, GORDON L.
GOERING, DANIELLE
HIRSHBURG, SANDRA T.
KELLEY, LAURA NICHOLL
LOUI, CALVIN M.
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STAAB, WAYNE J.
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ARNST, DENNIS JAMES
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BARTOLOMEO, JOSEPH DI
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BERGSTROM, LAVONNE
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BRACKMANN, DERALD E.
BRITTON, JR., BLOYCE HILL
BURT, PHYLLIS JAFFE
CALAVANO, JOCELYN
CALLAWAY, DANIEL B.
CHIN, MAY ELIZABETH
CHOYCE, JOHN C.
CLEVER, CAROL E.
COHEN, IVAN J.
COLEY, KAREN E.
COOPER, KATHERINE
CRUZ, ANTONIO DE LA
CULLEN, PATRICK EDWARD
DAVIS, MARGARET WILSON
DELK, JAMES H.
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FIREMARK, ROSALYN
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FOLMAR, CECIL J.
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FURUYA, YOSHIO J.
GARWOOD, VICTOR P.
GERBER, SANFORD E.
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HOUSE, JOHN WILLIAM
HOUSE, HOWARD P.
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JOHNSON, ED W.
KALBFLEISCH, KATHLEEN E.
KINSTLER, DONALD B.
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SIMMONS, F. BLAIR
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SOLOW, LAWRENCE J.
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WILSON, RICHARD H.
VREELAND, RICHARD S.

COLORADO

ALPNER, JEROME G.
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MC KINLEY, SUSAN H.
MISCHKE, ROBERT E.
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NUNLEY, JAMES A.
OSTERGARD, CARYN
ROSSI, DOMINICK F.
SKINNER, BARBARA K.
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INN, EVALYN K. S.
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MILLER, WILLIAM E.

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FRANCO, BONNIE FORMAN
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KLIGERMAN, ANNE BARBARA
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STUART, ROYAL
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GOLDSTEIN, BEVERLY
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OREGON

ARTZ, FREDERICK J.
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JOHNSON, WARREN E.
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PENNSYLVANIA

ANGELELLI, ROGER M.
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BLACK, F. OWEN
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GEADAH, FOUAD A.
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HARMON, ROBERT R.

MEXICO

SWOLER, JOSE

NETHERLANDS

LINDEMAN, HANS E.

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PIZARRO, PAULD MORONHA

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MC DOWALL, MARK T.
ROSADO, HILDA
VICENS, ENRIQUE A.

SWEDEN

ROSENHALL, ULF

SWITZERLAND

CONSTAM, ALFRED G.

THAILAND

AMATYAKUL, POONPIT

VENEZUELA

CHIOSSONE, EDGAR

Classifications I and II should constitute the majority of children in a given population. Referral, when indicated after confirmatory retest, should be made to an appropriate health care provider in the community. Classification III constitutes a group of children that requires special monitoring by the agency responsible for the screening program. These "at risk" children should be retested periodically to determine the possible need for future medical referral. The Task Force emphasizes that more data are needed in order to further refine these screening criteria. Information concerning otologic findings and disposition in referred children is required in order to evaluate the utility of the screening process.

10. An optimal time and frequency for screening or referring particular populations cannot be advised at present because of lack of adequate information.

11. Headbands, if used, should be designed and manufactured to fit infants and small children. Probe tips should be soft and remain soft after use and cleaning. The entire probe assembly, including the tubing, should be durable.

12. Calibration of instruments should be performed routinely. This calibration should involve the intensity and frequency of the probe tone, the manometer for pressure variation, and the reflex-activating stimulus.

13. The agency responsible for a testing program must have facilities available for referral that include expert management. Prior to the initiation of a screening program, referral and management procedures must be defined.

14. Impedance testing should be supervised by professionals who are qualified by training and experience to perform and interpret impedance measurements. Because acoustic impedance testing may be performed by a variety of health specialists or paraprofessionals, there is a need for such individuals to receive specific training in the application of impedance measurements. A course, similar to that used for training industrial audiometric technicians, would offer some control of the competency of persons administering impedance measurements. A course, similar to that used for training industrial audiometric technicians, would offer some control of the competency of persons administering impedance screening tests. Need exists for a program similar to that of the Council for Accreditation in Occupational Hearing Conservation (COAHC). Since a nationally accepted program for training in impedance testing does not now exist, the Task Force recommends that such a course be designed by a group of professionals with recognized qualifications. This group should specify course content, format and length, qualifications of instructors, and other related

matters.

15. The cost of any screening program should be documented and should include the cost of confirmatory diagnostic tests.

16. Programs should be designed to gather information of value in defining the role of impedance measurement screening children for middle ear disease.

Special Populations. Because of high risk, serious consequences or known high prevalence, certain populations of children warrant special consideration for early detection of, and surveillance for, middle ear disease beginning soon after birth. These populations are:

Children with known sensorineural hearing loss*

Developmentally delayed and mentally impaired children*

Children with cleft palate and other cranio-facial anomalies

Native American children (Indian and Eskimo)

Children with Down Syndrome*

CONCLUSIONS

The Task Force strongly encourages continued investigation of this method for detecting middle ear disease in infants and children. The Task Force does not endorse universal (mass) impedance screening at this time. Finally, the Task Force emphasizes the need for research to further clarify the epidemiology, natural history and optimal clinical management of middle ear disease.

*Interpretation of acoustic reflex measurements should be made with caution in this group.

PLANNING COMMITTEE

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The Effect of Prolonged Noise Exposure on a Battery of Tests

Paper presented at the annual meeting of The American Audiology Society
December 12, 1977
Miami Beach, Florida
Gordon R. Bienvenue
Thomas A. Bennett
Adam Anthony
Paul L. Michael

INTRODUCTION

Recent research at the Environmental Acoustics Laboratory (EAL) has revealed the usefulness of a test battery including threshold, differential loudness sensitivity and masking tests for evaluating noise effects upon an (Bienvenue and Michael, 1977). When subjects were exposed to 95 dB SPL of noise for 15 minutes, 91% of them showed observable hearing changes using the testing battery. By contrast, only 64% to 67% of subjects showed hearing changes on individual tests in the battery.

It has been suggested that the testing battery advantage might be a temporary situation that would not be maintained for longer exposure durations. In considering this problem we turned to the observation (Mills et al, 1970; Carder and Miller, 1972) that prolonged exposure to a given sound gives rise ultimately to a maximum amount of threshold shift and that threshold shifts do not grow beyond this "asymptotic" value when noise exposure is continued. Therefore, with prolonged exposure duration, the varying effects of noise exposure upon different measures of hearing is reflective of differential amounts of noise induced hearing change and not of varying rates of growth of these effects. It was, therefore, determined to examine the effect of prolonged noise exposure upon our battery of hearing tests.

Asymptotic threshold shifts have been observed with exposure durations between eight and sixteen hours (Mills et al, 1970; Melnick, 1974; Melnick and Maves, 1974; Ward, 1975) and an exposure duration of 16 hours was selected for the present study.

Some temporary hearing effects of noise exposure may be due to the body's reaction to noise as a stressor. This stress response of the body alters the output of adrenal cortical hormones (principally cortisol) which in turn regulate other bodily functions. In order to assess the underlying physiological reaction to the noise exposure, blood samples were taken and analyzed for cortisol throughout the experiment. Subjects were 15 normal hearing young adults with a negative history of noise exposure and otologic disease. One ear of each subject was tested under earphones using the proposed test battery; then, (after a 1/2-hour break) the subject was exposed to the noise, and finally retested with the test battery in the period from 10 to 25 minutes after noise cessation. A follow up test was presented to each subject two days after noise exposure to insure that their hearing had returned to its pre-exposure state.

The masking test included in

the test battery was designed to measure the Level of Initial Masking (LIM) of a 4000 Hz test tone by several frequencies of masker tone. The Level of Initial Masking is defined as the logarithmic ratio of masker-to-test-tone that corresponds to the highest level of masker than can be tolerated by a listener while keeping a low-level tone barely audible. The subject was instructed to keep a 4000 Hz, 5 dB sensation level, pulsed tone barely audible by controlling the level of a continuous masker tone sweeping through the range from 100 Hz through 10,000 Hz. A Bekesy (1947) audiometer was used to produce the masker tone so that the subject could control the level of the masker while its frequency changed slowly. The sound pressure levels of the masker tones at the frequencies 250, 500, 1000, 1500, 2000, and 3000 Hz were determined and the sound pressure level of the test tone at 4000 Hz was then subtracted from these masker levels giving the noise-to-signal ratio we have called the Level of Initial Masking.

The differential sensitivity test was the Loudness Discrimination Test described by Michael and Bienvenue (1976; also Bienvenue et al, 1976 and 1977). The testing device randomly produced increments selected by the tester were 2.0, 1.5, 1.0, 0.8, 0.6, 0.4, and 0.2 dB. Each increment had an on duration of 200 msec with 50 msec rise and fall times. For loudness discrimination testing a tone of 4000 Hz was presented at 50 dB above normal reference threshold for that frequency (50 dB HL) and ten test items were presented at each increment magnitude. The subject was instructed to signal whenever he heard an increment in the 4000 Hz tone. The percentage of items correctly identified at each increment magnitude was recorded as the subject's score for that condition.

Blood samples were obtained from all subjects before, during and after the 16 hour noise exposure period. Cortisol levels were determined from the plasma fraction of each sample using a radioimmunoassay procedure.

RESULTS AND DISCUSSION:

Tests results were examined for magnitude of noise-induced shifts as well as for repeatability. Certainly, differentiation among those subjects who show a noise-induced hearing shift and those who simply vary due to test-retest error requires that testing error be significantly smaller than the shifts being examined. Repeatability of the data was evaluated using the two-day, post-exposure results for two listeners. The retest results were compared to pre-exposure data for each individual subject and the differences between initial and retest data were calculated.

The threshold data showed a 95% confidence interval of +6.8 dB (see Table I) and it was determined that a threshold shift must be greater than 7 dB in order to distinguish it from testing error.

The loudness discrimination

variability at each of the test increment magnitudes demonstrated 95% confidence intervals of +28% or smaller (see Table I) and it was determined, based on these results, that loudness discrimination shifts should exceed 30% in order to be distinguishable from testing error.

Finally the Level of Initial Masking data were examined and it was found that the 95% confidence interval for shifts in LIM was +3.2 dB or less (see Table I) and a criterion of 4 dB of shift at three of the six test frequencies was selected as the minimum shift which could be discriminated from test-retest error.

Keeping these criteria in mind, we will now consider noise-induced shifts in the test battery scores. The mean threshold shift at 4000 Hz following the 16 hour 85 dB (A) noise exposure was 10 dB. This shift was statistically significant at the .05 level.

Table II shows the mean loudness discrimination shifts observed at 4000 Hz. Noise-induced shifts were significant for loudness discrimination scores at the 0.2, 0.4, 0.6, and 0.8 dB increments.

TABLE I: TEST-RETEST DATA ON A BATTERY OF HEARING TESTS

Test Procedure	Thresh. (dB)	LD (%)	LIM (dB)
95% Confidence Interval	+6.8	+28	+2.7
Criterion*		7	30

*criterion is the value which must be exceeded for a shift to be measurable.

Thresh: Threshold

LD: Loudness discrimination score

LIM: Level of Initial Masking

TABLE II: NOISE-INDUCED SHIFTS IN LOUDNESS DISCRIMINATION AT 4000 HZ

Increments (dB)	Mean Shift (%)
0.1	7
0.2	29*
0.4	44*
0.6	28*
0.8	17*
1.0	3
1.5	0
2.0	0

LDI

54*

*shifts marked with an asterisk are significant with OL = .05

Although the proposed criterion was only exceeded at the 0.4 dB test increment, of particular interest is the row labelled Loudness Discrimination Index (LDI). This value is a record of the largest loudness discrimination shift for each listener regardless of the increment magnitude at which it occurred. Due to ceiling effects arising out of the baseline, loudness discrimination function, subjects vary greatly in the increment magnitude at which they show maximum shift. This tends

to obscure the loudness discrimination shift of statistical analysis. The Loudness Discrimination Index (LDI) characterizes the loudness discrimination shift independently of the baseline function (Bienvenue et al, 1977). Examination of Table II shows that the LDI for this group was 54% and was statistically significant.

Table III shows the mean Level of Initial Masking (LIM) shifts observed. The noise-induced shift in the Level of Initial Masking was significant at each frequency examined. Shifts in the Level of Initial Masking exceeded the proposed criteria at all masker frequencies except 2000 and 3000 Hz.

The data reported so far allow the conclusion that the three tests included in our test battery are sensitive to noise-induced, temporary hearing change. If we apply our previously developed criteria to the interpretation of individual test results in the 15 cases tested, we find that:

- 67% of the cases showed a measurable threshold shift,
- 73% of the cases showed a measurable Loudness Discrimination Index,

TABLE III: NOISE-INDUCED SHIFTS IN LEVEL OF INITIAL MASKING (LIM) AT 4000 HZ

Masker Frequency (Hz)	Mean Shift (dB)
250	-4.5*
500	-5.0*
1000	-5.6*
1500	-5.6*
1500	-4.1*
2000	-3.7*
3000	-3.0*
Average Across Frequencies	-4.4*

*shifts marked with an asterisk are significant with OL = .05

- 67% of the cases showed a measurable shift in the Level of Initial Masking, but

- 93% of the cases met the noise-induced shift criterion on at last one of the three tests in the battery.

While the signal tests are quite promising for the early detection of noise-induced hearing change in individuals, the combination of the three tests into a test battery is clearly a superior technique for this purpose EVEN WHEN EXPOSURE DURATIONS ARE PROLONGED. This conclusion is further supported by the correlations among the various component tests of the battery as shown in Table IV. Note that the LDI is poorly correlated to the TTS measure, indicating that these two measures do not duplicate one another. Thus, they can be expected to provide independent and useful information if they are both included in a test battery. The average LIM shift shows significant correlations to both the TTS and LDI measures indicating that LIM may be related to phenomena of both threshold and

loudness discrimination. The LIM may, then, provide supportive data for the other two procedures if included in the testing battery.

Finally, the average, percentage rate of change in the cortisol level was a 19% decrease. Correlation among individual shifts in cortisol level and in various parameters of hearing are reported in Table V. Note that significant correlations were obtained between cortisol level shift and LIM as well as between cortisol level shift and TTS.

TABLE IV: CORRELATIONS AMONG CHANGES IN THE COMPONENT TESTS OF THE HEARING TEST BATTERY

Tests being Compared	Correlation Coefficient
LDI with TTS	.10
LDI with LIM	.54*
LIM with TTS	.71*

*correlations marked with an asterisk are significant with OL = .05.

TABLE V: CORRELATIONS BETWEEN CORTISOL LEVEL CHANGES AND CHANGES IN PARAMETERS OF HEARING

Comparison of Cortisol Level shift with:	Correlation Coefficient
LDI	.05
LIM	-.67*
TTS	.82*

*correlations marked with an asterisk are significant with OL = .05.

In general, two conclusions may be derived from the results of this study:

- The superiority of the hearing test battery over individual hearing tests for the examination of noise-induced hearing impairment is observed for prolonged noise exposures as well as for brief duration exposures, and

- continued study of possible causal relationships between changes in serum cortisol levels and in parameters of hearing is warranted. A continuation of this research is currently underway with funding support from the Environmental Protection Agency.

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Proposed By-Laws...

ARTICLE I. NAME

1.1. The name of this organization shall be The American Auditory Society, formerly known as The American Audiology Society.

ARTICLE II. AIMS

2.1. The aims of the Society are to increase knowledge and understanding of the auditory process, promote conservation of hearing, and foster habilitation and rehabilitation of persons with hearing impairments. The Society shall coordinate the exchange and dissemination of information, particularly by holding regular meetings and publishing reports.

ARTICLE III. MEMBERSHIP

3.1. **Classes of Membership.** The Society shall be composed of Active Members and Life Members.

3.2. **Active Membership.** To become an Active Member of the Society, the applicant must (a) possess a Bachelor's degree from a recognized academic institution or (b) have had the equivalent of an academic degree in scientific experience or in professional experience in the field of audition, and must have demonstrated an interest in the field of hearing. Admission to the Society may be granted by the Executive Committee after the candidate has submitted an application.

3.3. **Life Membership.** An Active Member who has attained the age of 70 years, and who has been an Active Member of the Society for not less than 10 years, may become a Life Member by submitting a written request to the Secretary-Treasurer.

3.4. (a) **Dues.** Membership dues shall be established, upon the recommendation of the Executive Committee, by a majority vote of the Members present and voting at a regular business meeting of the Society. The annual dues may or may not include a yearly subscription to the official journal of the Society (known in 1977 as the *Journal of the American Audiology Society*).

(b) Dues shall be payable on the first day of each year and shall be considered delinquent if not paid by the last day of March of that year.

(c) Life Members shall be exempt from all dues except that portion covering subscription to the official journal of the Society. However, the Executive Committee may waive, on a year-to-year basis, such subscription costs, if the Society's financial condition permits.

3.5. (a) **Termination of Membership.** Members whose dues are delinquent shall be notified by the Secretary-Treasurer of such delinquency by the end of April of the year concerned. If the dues remain delinquent 30 days after such notification, membership shall be terminated. A Member whose membership has been so terminated may become a Member of the Society again only by applying for membership and being elected thereto in the manner herein prescribed. A penalty may be assessed for reinstatement.

(b) Any Member who is not delinquent in the payment of dues may file his resignation, in writing, with the Secretary-Treasurer, and shall cease to be a Member of the Society as of the date such resignation is filed. Dues paid are not refundable.

(c) The Executive Committee may expel from the Society a Member whose conduct it deems contrary to the best interests of the Society. Expulsion shall require concurrence by two-thirds (2/3) of the Executive Committee.

3.6. **Privileges.** Members and non-members may attend general meetings of the Society and may submit papers for presentation at meetings and/or for publication in a Society publication. Members shall receive publications, programs of Society meetings, membership lists and such other publications as may be authorized by the Executive Committee. Only Members shall be entitled to vote, to hold office in the Society, or to serve on its committees. Members may recommend subjects for study by the Executive Committee, may present resolutions or reports, may submit petitions for amendment or revision of the Bylaws, and may recommend locations for future meetings.

ARTICLE IV. MEETINGS

4.1. **Time and Location.** The Society shall ordinarily meet at least once a year and also at such other times and places, upon such notice as the Executive Committee may determine.

4.2. (a) **Business Meetings.** A business meeting shall be held during every ordinary meeting of the Society. Twenty Members present in person shall constitute a quorum at a business meeting. Policy decisions shall be made by a simple majority vote of those present and voting at a business meeting. In the event of a tie vote, the President shall cast the deciding ballot. However, the Executive Committee, when it deems necessary, may authorize a letter ballot to the entire membership for the purpose of establishing any decision.

(b) At each business meeting, Members shall be informed of all actions taken by the Executive Committee since the last meeting of the Society.

4.3 **Rules of Order.** The meetings of the Society shall be governed by the rules contained in the then current edition of Roberts Rules of Order in all cases in which they are not inconsistent with the other provisions of the Bylaws of the Society.

4.4 **Minutes.** Minutes of all business meetings shall be recorded. They shall be signed by the President and the Secretary-Treasurer. They are to be subject to correction at the next following business meeting. The minutes are to be kept at the office of the Secretary-Treasurer, where they may be inspected by any Member. A summary of the proceedings of each business meeting shall be sent to all Members.

ARTICLE V. EXECUTIVE COMMITTEE

5.1. **Purpose.** The affairs of the Society shall be managed by an Executive Committee, as authorized by the Membership.

5.2. (a) **Composition.** The voting membership of the Executive Committee shall consist of fifteen Members of the Society.

(b) Fourteen members of the Committee shall be elected for a term of four years; seven shall be elected on odd-numbered years in a manner specified in the Statutes of the American Audiology Society. Each Member may be elected for two consecutive terms of office. Following a lapse of two years the Member may be reelected for two additional terms.

(c) For each election, the Executive Committee shall appoint a Nominating Committee representing insofar as possible the professions and interests of the entire Society. No more than one member of the Executive Committee can serve on the Nominating Committee. Before February 1 of odd-numbered years, the Nominating Committee will present not less than ten and no more than fourteen candidates to fill the seven available positions of the Executive Committee. These candidates should also be representative of the professions and interests of the entire Society. Candidates may also be nominated by a written petition signed by not less than ten Members and filed with the Secretary-Treasurer by June 1 of election years. Names and a brief biographical history of candidates shall be made available to the Membership prior to the election. Voting shall be performed by mail ballot in September of odd-numbered years and returned to the Secretary-Treasurer.

(d) In the event of the death or resignation of a member of the Executive Committee, the President shall appoint a replacement to complete the term of office concerned. This Member shall be eligible for election to two further consecutive terms of office.

(e) The fifteenth member of the Executive Committee shall be the Secretary-Treasurer, who shall be a Member appointed by the Executive Committee for a two-year term, to be renewed annually.

(f) Editors of Society publications shall be members ex officio of the Executive Committee, without vote.

(g) No remuneration for services shall be paid to any member of the Committee, except the Secretary-Treasurer. Renumeration for the office of Secretary-Treasurer shall be determined by the Executive Committee.

(5.3.) (a) **Officers.** The Executive Committee shall elect from among its members a President, a President-Elect, and an Assistant Secretary-Treasurer, all of whom, together with the Secretary-Treasurer, shall serve as the officers of the Society.

(b) The President of the Society shall be responsible for administration of the Society business and shall preside at all sessions of the Executive Committee and at Society business meetings.

(c) The President-Elect shall assist the President, shall perform the duties and responsibilities of the President in his absence, and shall assume the duties and responsibilities of the President if this office is vacated.

(d) The Assistant Secretary-Treasurer shall assist the Secretary-Treasurer, and shall perform the duties and responsibilities of the Secretary-Treasurer in his absence.

(e) The President and Assistant Secretary-Treasurer shall serve terms of one year each.

5.4. **Meetings.** The Executive Committee shall convene at least once during each Society meeting. It may also meet exceptionally on invitation by the President or at the request of six or more of the Executive Committee members. A quorum shall consist of eight voting members. Minutes of all meetings shall be recorded.

5.5. (a) **Decisions.** The decisions of the Executive Committee shall be determined by a majority of the members voting; should an equality of votes occur, the President shall cast the deciding vote.

(b) The Executive Committee shall determine its own internal rules.

5.6. (a) **Duties.** The Executive Committee shall act on behalf of the Society; it shall undertake all appropriate duties of management and of administration.

(b) The Executive Committee shall grant Membership to those applicants whose qualifications, in the Committee's judgment, meet the requirements specified in Article III, Section 3.2.

(c) The Executive Committee shall decide when and where the Society shall meet and shall elect a Program Chairman for that meeting. The Program Chairman shall be responsible for organizing the program and conducting the meeting. To this end, a Program Committee may be appointed by the Program Chairman.

(d) The Executive Committee, as directed by the Society Membership, shall have the authority to administer Society funds. Funds of the Society shall be managed by the Secretary-Treasurer.

(e) The Executive Committee shall report its activities and decisions to the Membership at least once a year.

ARTICLE VI. SECRETARY-TREASURER

6.1. (a.) **Duties.** The Secretary-Treasurer shall coordinate all correspondence and, in conformity with directives issued by the Executive Committee, shall attend to the daily administrative and financial affairs of the Society, and shall take an active part in all committees dealing with publications. If, for some reason, the Secretary-Treasurer is prevented from carrying out his duties, he shall be replaced temporarily by the Assistant Secretary, or by a member of the Executive Committee designated by the President. Should the Secretary-Treasurer deem it necessary, personnel may be recruited to assist with Society work, subject to approval of the Executive Committee.

(b) The Secretary-Treasurer shall undertake the duties of Secretary to the Society Membership during the business meeting, and to the Executive Committee, as well as to any committees that may be set up by one or the other of these bodies. The Secretary-Treasurer or a person designated by him shall represent the Executive Committee on local organizing committees of Society meetings.

(c) The Secretary-Treasurer shall establish a bank account in the name of The American Auditory Society and shall conduct the necessary financial transactions of the Society. An audit of the financial status shall be performed annually by a certified public accountant and reported to the Membership.

ARTICLE VII. DEALINGS WITH THIRD PARTIES

7.1 **Representation.** The Executive Committee shall represent the Society in all its dealings with third parties.

7.2 **Signatures.** The Executive Committee shall designate those persons authorized to sign on behalf of the Society and shall decide on the title of signature.

7.3 **Obligations.** Members of the Society, as well as its agents and assignees, shall incur no personal financial obligation when acting on the Society's behalf.

ARTICLE VIII. RULES

8.1 **General.** The Executive Committee may, by majority vote, interpret the meaning of these Bylaws and adopt Rules, not inconsistent with the Bylaws, to govern the activities of the Society.

ARTICLE IX. LIQUIDATION

9.1 **Procedure.** In the event of dissolution of the Society, for whatever reason and whenever this might be, this step will be undertaken by a Liquidator appointed by action of the Members at a business meeting, who shall also decide on his powers and, if applicable, fix his remuneration. In default of such an appointment, the liquidation shall be carried out by the Executive Committee in office at the time acting as Liquidators.

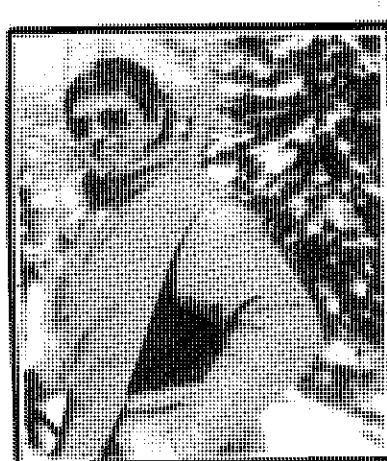
ARTICLE X. AMENDMENTS AND REVISIONS

10.1 (a) **Procedure.** Amendments or revisions of these Bylaws may be proposed either by the Executive Committee or by a petition signed by at least 40 Members.

(b) Notice of the general nature of any proposed amendments or revisions shall be given in a Society publication at least four months prior to a mail ballot.

(c) To become effective, such amendments or revisions must be approved by affirmative written ballot of two-thirds of the Members voting.

Playpersons of the Month At Vail



Jim Curran



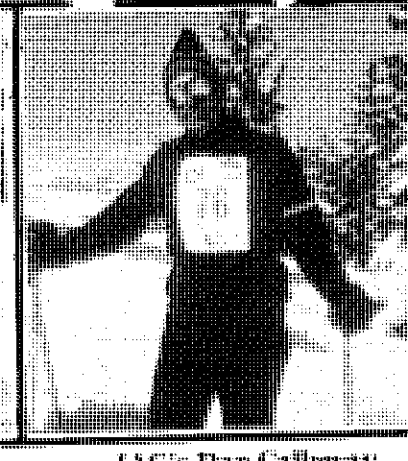
Collette Ramsey



Tana Trianos



Herman Wallenfels



IAC's Dan Calloway



Jo Miller



Mike Paparella, Paul Ward and David Hanson



Ex-presy Geary McCandless and Cary Ormson



Earl Harford



English visitor Donald Brooks with Presy Blaise Simmons



Dan Worthington and Gary Gordon



Jennifer Harford and Debbie Smith



Jan Zaroch and Joanne Rosenberg



Swedish visitors Jorgen Holmquist and Gunnar Liden



Chuck Berlin and George Lynn



Shirley Simmons and Ray Battin



Dave Lipscomb and Dave Lim



Asst. Journal Editor Jack Vernon

NEWS ON NOISE MEETINGS

26th Annual Institute in Occupational Hearing Loss

The University of Maine at Orono (Bangor) announces that the 26th Annual Institute in Occupational Hearing, directed by Joseph Sataloff and David Lipscomb, will be held July 17 to July 21, 1978.

The facilities of the University of Maine provide excellent accommodations for the participants.

The Institute is designed for industrial physicians, safety engineers, otolaryngologists, audiologists, health management executives and administrative personnel. Covers total field of conservation of hearing programs, medicolegal and compensation aspects, and OSHA developments. Awards 27 credits in PRA Category 1 of AMA for physicians. Tuition is \$275.00 and Room and Board is \$25.00 per day.

For descriptive brochure and application write or phone: UMO Coordinator, 1721 Pine St., Philadelphia, Pa. 19103 (215) 735-0205.

Noise Control Engineering begins 6th Year of Publication

NOISE CONTROL ENGINEERING, the only referred technical publication in the United States devoted exclusively to noise control, begins its sixth year of publication in 1978. NCE is published bimonthly in cooperation with the Acoustical Society of America. In-depth articles appearing in NCE cover topics such as techniques for machinery noise control, community noise, aircraft noise, standards and measurements and engineering

criteria for noise control. NCE was first published in 1973, and in October of that year Malcolm J. Crocker, Professor of Mechanical Engineering at Purdue University, was named Editor. Since that time Dr. Crocker has made NCE a leading technical journal with a world-wide circulation.

NOISE CONTROL ENGINEERING is published by the Institute of Noise Control Engineering (INCE), a non-profit organization for professionals in the

field. One of the purposes of the Institute is to advance the technology of noise control with emphasis on engineering solutions to environmental noise problems. The publication is available to libraries and to individual subscribers who may become Associates of the Institute.

Further information on NCE and other INCE publications may be obtained from the Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, NY 12603.

1st Annual Noise Measurement And Control Course

The University of Maine at Orono (Bangor) announces the 1st Annual Course in Noise Measurement and Control, directed by James L. Parsons, will be held July 17 to July 21, 1978.

The facilities of the University of Maine provide excellent accommodations for the participants.

Oriented to engineers, industrial hygienists, safety personnel and Federal and State inspectors, the course is presented to acquaint the participants with the methods for evaluating noise problems and working out solutions. The subjects of acoustics measurement, instrumentation, noise control, regulations, compliance programs, hearing damage and hearing conservation programs are treated and discussed thoroughly.

Laboratories provide practice in the use of sound measuring systems. Ample opportunity is

provided students to discuss individual problems with faculty members. Panel discussions with regulatory authorities and experts will be a special feature of the program. An excellent and renowned staff has been assembled to conduct this course. Tuition is \$300.00 and Room and Board is \$25.00 per day.

For descriptive brochure and application write or phone: NMC Coordinator, 1721 Pine St., Philadelphia, Pa. 19103 (215) 735-0205.

Inter-Noise Seminar

An intensive short course on principles and applications of noise control will be presented on 4, 5, and 6 May 1978 at the Jack Tar Hotel in San Francisco, California, immediately preceding INTER-NOISE 78. Seventh International Conference on Noise Control Engineering. The presentations on the first day will cover fundamentals of acoustics and noise control and will be given by Malcolm J. Crocker, Editor-in-Chief, NOISE CONTROL ENGINEERING and Professor, Purdue University and by William W. Lang, Program Manager, Acoustics Technology,

IBM. The presentations on the next two days will be given by noise control specialists from industry, government and universities and will cover: in-plant noise control, design of facilities for noise control, noise measurements and data reduction, and acoustical standards used in noise measurements. The registration fee for the Seminar is \$325.

Further details may be obtained from the INTER-NOISE 78 Conference Secretariat, P.O. Box 3469, Arlington Branch, Poughkeepsie, NY 12603 or telephone 914 462-6719.

Inter-Noise 78 to Discuss Progress in Noise Control

Two special sessions on European progress in noise control will be featured at INTER-NOISE 78, the seventh International Conference on Noise Control Engineering to be held at the Jack Tar Hotel, San Francisco, California, U.S.A. next May 8-10. During the Fall of 1977, Swedish industry initiated a campaign to reduce significantly the noise levels in working environments. A detailed description of this campaign will be given in a special session to focus on:

- Sweden's new approach to noise control in industry

The Swedish Foundation for Improving Worker Environments provided the funds to support this intensive campaign. A specially-prepared handbook on noise control principles and applications was circulated widely throughout Swedish industry. A number of industries were targeted for special consideration by task teams consisting of noise control engineers and industrial specialists. The INTER-NOISE 78 special session

will focus on the objectives of the new Swedish program and reports will be given on noise control in the targeted industries, including the stone processing industry, the mechanical industry, the food industry, the concrete prefabrication industry, the graphic arts industry, the textile industry and the pulp and paper industry.

Another special session at INTER-NOISE 78 will focus on:

- European noise regulations

The Environmental Action Program (covering the period 1977-81) of the European Community (Common Market) calls for the development of an anti-noise plan to control noise at its source and to take account of the environment in which the source operates. Papers to be presented at INTER-NOISE 78 from Austria, Denmark, France, Germany and the Netherlands will focus on activities within these countries to control noise, primarily at its source. Particular emphasis will be placed on the use of sound power levels to classify and regulate the

noise emitted by industrial noise sources as well as by household appliances. In the last decade, considerable progress has been made in Europe on classifying noise emissions in terms of the sound power levels of the sources and in controlling the emissions at the source. The European specialists who will be describing their programs will present to the INTER-NOISE 78 audience the latest advances from Europe in regulating and controlling noise at its source.

These two special sessions amplify the theme of INTER-NOISE 78 which is "Designing for Noise Control." Three other special sessions will also be given on the theme and five Distinguished Lecturers will present reviews of key topics in noise control engineering. A three-day Seminar will precede INTER-NOISE 78 to introduce newcomers to the fundamentals of the technology. Information on INTER-NOISE 78 and the Seminar which precedes it may be obtained from the Conference Secretariat at the address and telephone number above.

Third International Conference on Biological Effects of Noise

The International Commission on Biological Effects of Noise is pleased to announce the Third International Congress on Noise as a Public Health Problem: Biological and Behavioral Effects. The Congress is scheduled to be held during the week of September 25-29, 1978, in Freiburg, Federal Republic of Germany (West Germany). The official language of the Congress is English; simultaneous German translations will be provided. In addition to the invited and contributed papers on scientific research and applications, major discussions are planned on governmental and industrial needs and problems. Other discussions will be held on ways to develop procedures that will permit practical solutions both for

governments and for industries. Inquiries should be addressed to:

International Commission on Biological Effects of Noise; Institut für Arbeits- und Sozialmedizin; Universitätsklinikum; Johannes Gutenberg Universität; Obere Zahlbacher Strasse 67; D-6500 Mainz; Federal Republic of Germany.

The major topics that will be treated during the Congress are Community Response to Noise, Effects of Interactions between Noise and Physical or Chemical Agents, Influence of Noise on Performance and Behavior, Noise and Animals, Noise and Communication, Noise-Disturbed Sleep, Noise-Induced Hearing Loss, and Non-auditory Physiological Effects Induced by Noise.

International Audiology Congress Meets In November

XIV INTERNATIONAL CONGRESS OF AUDIOLOGY

CULTURAL AND CONVENTION CENTER

ACAPULCO - MEXICO November 12-16, 1978

Under the auspices of the International Society of Audiology.
Organized by the Instituto Mexicano de la Audición y el Lenguaje.

Organizing Secretariat:
Instituto Mexicano de la Audición y el Lenguaje
Ave. Progreso 141-A
Mexico 18, D.F. - MEXICO
Phone: 2776-444

For European countries:
Organizzazione Internazionale Congressi (OIC)
Via dei Bardi, 52
50125, Florence ITALY
Phone: (055) 212-590

President: Pedro Berruecos Jr., M.D.
General Secretary: Luis M. Valdés O., M.D.

GENERAL INFORMATION

The XIV International Congress of Audiology will be held at the Cultural and Convention Center in Acapulco, Mexico. The Convention Center covers a 14 hectares area and has everything to realize any type of convention or exhibition: travel agencies, post and telegraph offices, telex, long distance telephones, closed circuit television, restaurants, cafeterias, press halls, theaters, auditories and more of twenty assembly rooms. It is located in the best zone of the Acapulco bay and surrounded by gardens and hotels. In Acapulco, there are facilities for practicing all kinds of sports. The international airport and the highway from Mexico City to Acapulco are two of the principal means of access. The temperature is usually warm and during the month of November it varies between 24 and 30°C. (75-85°F)

PRELIMINARY PROGRAM

SUNDAY, NOVEMBER 12

Registration.
Meeting of the Executive Committee.
Opening ceremony.
Welcome cocktail.

MONDAY, NOVEMBER 13

First Round Table:
VALUE OF ELECTROPHYSIOLOGICAL DIAGNOSTIC TECHNIQUES IN CLINICAL ASSESSMENT OF AUDITORY DISORDERS.
(Moderator: Prof. Dr. G. Salomon, Denmark)

Invited Pannelists:

N. Yoshie, Japan; J.J. Eggermont, Holland; H. Sohmer, Israel; A. Starr, USA; M.E. Mendel, USA; C. Elberling, Denmark.

TUESDAY, NOVEMBER 14

Second Round Table:
AUDITORY REHABILITATION: PHYSIOLOGICAL ASPECTS.
(Moderator: Prof. Dr. W.D. Keidel, W. Germany)

Invited Pannelists:

F.B. Simmons, USA; K. Burian, Austria; A.C.-H. Chouard, France; T. Spillman, Switzerland; M.M. Merzenich, USA; P. Finkenzeller, W. Germany.

WEDNESDAY, NOVEMBER 15

Third Round Table:
AUDITORY REHABILITATION: PSYCHOLOGICAL ASPECTS.
(Moderator: Prof. Dr. P. Berruecos Jr., Mexico)

Invited Pannelists:

I. Nervi, Argentina; H.S. Lane, USA; T. Lundborg, Sweden; J. Rosenstein, U.S.A.; S.S. Stevens, U.K.; S. Borel-Maisonny, France.

THURSDAY, NOVEMBER 16

Free Papers
Free paper sessions will be held each afternoon during the first three days of the Congress, and in the morning of November 16. There will be divided into the following general subjects: Diagnosis and prevention; Research and Training Programs; Medical and surgical treatment; Rehabilitation and Special Education; Psychology of the deaf child and of the hard of hearing and Philosophical and Social Aspects of Audiology.

REGISTRATION

All the people interested in attending the Congress must send the enclosed registration form (Form "A") to the Organizing Secretariat (or to the OIC for European participants). All registered members will be able to take part in all the scientific, social and cultural activities of the Congress. The registration fee includes transportation in Acapulco. Registration fees for accompanying persons include participation in all social and cultural activities besides the ladies program.

The Organizing Secretariat has planned to send this first bulletin and subsequent information as follows:

- a) Audio Expo 78 bulletin: December, 1977
- b) Second bulletin: February, 1978
- c) Scientific program: May, 1978

HOTEL ACCOMODATION

The Organizing Secretariat has designated an official travel agency. It is necessary to send to the Organizing Secretariat (or to the OIC for European members of the congress), the registration form (Form "B"). The assignment of rooms will be made by order of arrival. Prices of the official hotels in Acapulco are the following:

HOTEL CONDESA DEL MAR (De luxe)	Single	US \$ 25.-
	Double	US \$ 29.-
	Triple	US \$ 39.-
HOTEL EL PRESIDENTE (First class)	Single	US \$ 20.-
	Double	US \$ 24.-
	Triple	US \$ 34.-
HOTEL FIESTA TORTUGA (Standard)	Single	US \$ 15.-
	Double	US \$ 18.-
	Triple	US \$ 23.-

or its equivalent in Mexican Pesos at the date of reception of all documents. All the rooms have private bath and are subject to a 4% federal tax.

A one night deposit must be sent with the reservation form. The Organizing Secretariat will not be able to guarantee the hotel rates if the reservations are received after March 31, 1978. All congress members that would like to have another type of accommodation or hotel rates must indicate so to the Organizing Secretariat without any compromise.

PAPER PRESENTATION

All persons interested in presenting free papers, must send the title with forms A and B and the registration fee, before March 31, 1978. The second bulletin will include all the instructions for the presentation of abstracts (deadline: May 31, 1978), and complete papers (deadline: August 31, 1978).

WORKING LANGUAGES AND SIMULTANEOUS TRANSLATION

The working languages will be Spanish, English and French. Simultaneous translation in these languages will be provided.

AUDIO-EXPO 78

A scientific, technical and cultural exhibition will be held in one of the halls of the Convention Center. The scientific participation and the cultural aspects of the exhibition will be detailed in the second information bulletin.

SOCIAL AND CULTURAL ACTIVITIES

This program will be offered to all the members of the Congress and accompanying persons. It will include a welcome cocktail, a Mexican Folkloric Ballet Show and the official closing dinner. An additional program for accompanying persons is being prepared. A visit to the diving show of La Quebrada, an exhibition of Mexican typical costumes and a general sightseeing of Acapulco will be included.

TRANSPORTATION

Transportation to all members and accompanying persons will be offered from the official hotels to the Cultural and Convention Center and viceversa as well as the transportation to all the social and cultural activities.

It will not be possible to offer transportation to those members lodged at different hotels from the official ones.

CANCELLATION

In case of cancellation of registration and hotel reservation that arrives to the Organizing Secretariat before August 10, 1978 will be refunded with a 25% less. Cancellation received after this date, will not be considered and it will not entitle to any refund.

XIV INTERNATIONAL CONGRESS OF AUDIOLOGY Acapulco, Mexico, 12-16 November, 1978

HOTEL ACCOMODATION

FORM "B"

This form and the one night deposit must be send by certified air mail to the Organizing Secretariat (or to the OIC for European Members). All cheques or postal money orders must be drawn to the XIV INTERNATIONAL CONGRESS OF AUDIOLOGY before March 31, 1978.

FIRST NAME _____ MIDDLE NAME _____

LAST NAME _____

ADDRESS _____

Street _____ Town _____

Country _____ Postal Code _____

Accompanying persons _____

I plan to arrive in Acapulco the _____ I plan to leave Acapulco the _____

Please make the following reservation

No.	Single room (s)
No.	Double room (s)
No.	Triple room (s)

The Organizing Secretariat is committed to respect all the choices of the members in accordance to the number of rooms available and with the date of reception of the documents.

First choice

Second choice
(In case the first is not available)

Third choice
(In case the second is not available)

I am sending Dlls. _____ U.S. Cy. _____

by cheque No. _____ Bank _____

postal money order No. _____ Through _____

Date _____

Signature _____

Calendar of Events

APRIL
15-22

THE ENG & OTO-ALLERGY CRUISE SYMPOSIUM, (Aboard ship in Caribbean). Co-sponsored by American Hearing Research Foundation and Northwestern University Medical School. Contact: George E. Shambaugh, Jr., M.D., American Hearing Research Foundation, 55 E. Washington St., suite 2195, Chicago, IL 60602.

MAY
7-9

5TH NATIONAL SYMPOSIUM ON NOISE, San Antonio, Texas. Write to: P.O. Box 29482, San Antonio, Tx 78229.

7-9

EARLY DIAGNOSIS OF HEARING LOSS: 2ND INTERNATIONAL CONFERENCE. Saskatoon, Saskatchewan. Sponsored by Elks Club of Canada.

8-10

DESIGNING FOR NOISE CONTROL, SEVENTH INT'L. CONFERENCE ON NOISE CONTROL ENGINEERING, Jack Tar Hotel, San Francisco, Ca. Contact: Conference Secretariat, INTER-NOISE 78, P.O. Box 3469, Arlington Branch, Poughkeepsie, NY 12603.

12-13

ELECTRONYSTAGMOGRAPHY AND THE DIZZY PATIENT, Wilshire Hyatt House, Los Angeles, Ca. A Two-day workshop on testing, interpreting and understanding the dizzy patient, conducted by Darrel L. Teter, Ph.D. and Frederick H. Linthicum, M.D. Fee—\$150. Contact: Tracoustics, Inc., Austin, Tx 78764, 512-444-1961.

JUNE
13-16

ACOUSTICAL SOCIETY OF AMERICA, Kingston, Rhode Island

13-16

XII WORLD CONGRESS OF OTORHINOLARYNGOLOGY, Budapest, Hungary.

23-27

BIENNIAL CONVENTION OF THE ALEXANDER G. BELL ASSOCIATION FOR THE DEAF, St. Louis. Registration information available early spring. Convention Department, A. G. Bell Association, 3400 M Place NW, Washington, D. C. 20007, 202-337-5220.

AUGUST
30-Sept 2

SOUTHERN AUDIOLOGICAL SOCIETY, New Orleans

SEPTEMBER

1-3

THIRD ANNUAL CONFERENCE AUDIOLOGICAL SOCIETY OF AUSTRALIA, Macquarie University, Sydney, Australia. Contact: The Public Relations Officer, M. Walker, Audiology Development Section, National Audiology Laboratory, 5 Hickson Road, Millers Point N.S.W. Australia 2000.

10-14

AMERICAN ACADEMY OF OTOLARYNGOLOGY, Las Vegas, Nevada.

15-17

ANNUAL MEETING OF SOCIETY FOR EAR, NOSE & THROAT ADVANCES IN CHILDREN, Santa Barbara, California. For information write to: Dr. Sanford Gerber, University of California, Santa Barbara, Ca 93106.

OCTOBER
2-6

AUDITORY EVOKED RESPONSE WORKSHOP, San Diego, Ca.

NOVEMBER
7-Dec. 1

XVI PAN AMERICAN CONGRESS OF OTOLARYNGOLOGY, Acapulco, Mexico.

12-16

XIV INTERNATIONAL CONGRESS OF AUDIOLOGY, Acapulco Cultural and Convention Center, Acapulco, Mexico. For information: Organizing Secretariat, Instituto Mexicano de la Audición y el Lenguaje, Progreso 141-A, Esq. Reforma, Mexico 18, D.F.-Mexico.

17

AMERICAN AUDIOLOGY SOCIETY, San Francisco

18-21

AMERICAN SPEECH AND HEARING ASSOCIATION, San Francisco, Cal.

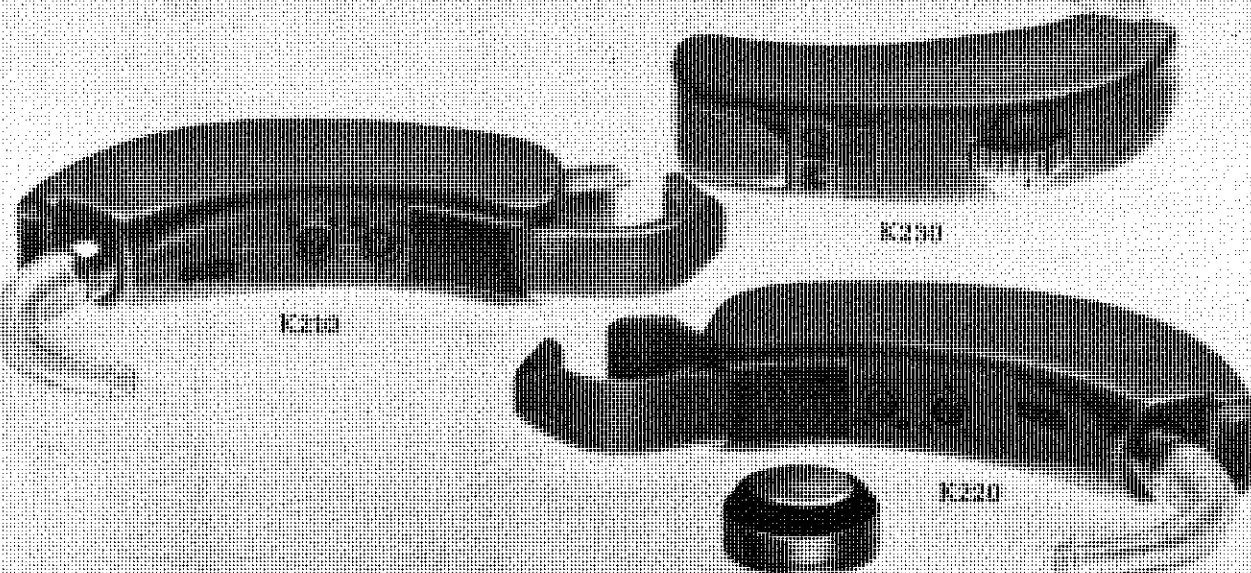
26-Dec. 1

ACOUSTICAL SOCIETY OF AMERICA, Honolulu, Hawaii

1979
MAY
17-19

INTERNATIONAL SYMPOSIUM ON THE HEARING OF THE IMPAIRED CHILD, University of Cincinnati Medical Center. Contact: Dr. Allan B. Seid, Children's Hospital Medical Center, Elland and Bethesda Ave., Cincinnati, OH 45229.

The Maico Series K. Choice of performance for mild to moderately severe losses.



The Maico Series K is more than just a collection of behind-the-ear hearing aids. It's an articulated concept of hearing aid design that offers excellent flexibility... an integrated system of complementary hearing instruments.

The Series K consists of three basic instruments — K210: ultra-soft performance, K220: non-directional amplification, K230: ultra-high frequency emphasis.

To each of these instruments the following options may be added:

- Choice of telephone switch or...
- User-operated Response Selector Switch to reduce low frequency background noise or...
- No external switching.

- Choice of three earhooks to suit the individual ear contour.
- Choice of two standard colors in all versions, light or dark skin tone.
- Either CRDS or B-CRDS available.

Once the desired options have been chosen the performance of the aid may be further adapted with two standard controls: a continuously variable low cut control, and a continuously variable output gain control.

And, unique to the Series K is Maico's exclusively designed, color-coded, easy-to-feel volume control with indexing that shows the amount of rotation at a glance.

The flexibility, performance, and quality of the Series K are worth investigating. For more information on the Series K, write Maico or call our toll free number, (800) 320-6366.

MAICO HEARING INSTRUMENTS INC.



7375 Bush Lake Road
Minneapolis, Minnesota 55435
(612) 835-4400

AAS Goes
AUDITORY!
Results of ballot, page 1

AAS Salutes the
**Deafness Research
Foundation**
in its 20th year
pages 1, 9

American Audiology Society
1966 Inwood Road
Dallas, Texas 75235

FIRST CLASS

CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 3, No. 3

July, 1978

Salute to Twenty Years of DRF

This issue of Corti's Organ is dedicated to The Deafness Research Foundation. For 20 years DRF has quietly and efficiently supported sound scientific research on the Ear and Hearing. An "American Auditory Society" should be the staunchest supporter of such an organization.

But organizations are made up of people who bring their distinctive styles to the functioning of the group. Two people in particular are contributing a particular flair to DRF: Mrs. Collette Ramsey, its founder and Mr. Ted Beck, its present Executive Director. They are featured in exclusive interviews with C. O. in this issue.

In addition, the distinctive nature of the research that is supported by DRF should be pointed out, because it is consonant with the aims of the A.A.S.

The Deafness Research Foundation has awarded grants to 32 research projects for 1978, the total dollar sum awarded representing the third highest in DRF history. The research projects are set at 25 institutions in 17 states and Canada.

The 94 applications received for these grants from medical centers and universities exceeds the record of 91 set last year. More striking, the general quality of the proposed and continuing research described in these applications was—in the judgment of the Scientific Review Committee members—the most impressive

that the DRF has ever seen. Had DRF funding resources been greater, considerably more projects would have received grant support.

Over half of the applications were for projects that were clinically oriented. Their proportional quality was as high, and over half of the grants are funding projects from this group. This demonstrates the advances in certain areas of otological research, where our basic knowledge now allows investigators to study its effective clinical applications.

Such advances give immense encouragement to otolaryngologists, to the other professionals involved with hearing and deafness, and to the millions of men and women who are intimately familiar with the diseases and disorders of the ear.

The following data give a general profile of the principal investigators on the research projects receiving 1978 DRF grants.

Principal investigator's degree:			
M.A.-1	M.D.-12	Ph.D.-19	
Principal investigator's age:			
26-30	1	41-45	5
31-35	14	46-50	2
36-40	9	50-	1

Principal investigator's department (overlapping for joint appointments): Otolaryngology

Continued on page 4

AAS Becomes the American Auditory Society

With this issue, the AAS changes its name to the American Auditory Society. The name change is incorporated in the new by-laws which were recently voted on by the membership. The result of the balloting is as follows:

To Adopt By Laws:	282
To Keep Original	
By Laws:	52
Inappropriate	
Mailings:	9
Abstention:	1
Total	344

The name change, plus the more flexible By-Laws, will allow the AAS to extend into all fields of inquiry and to allow a larger variety of disciplines to hold dialogue together.

This issue of Corti's Organ is addressed to prospective members of AAS. We want particularly to increase the numbers of otolaryngologists who are interested in the varied approaches to hearing that are represented in this organization. To this end we are simplifying the membership applications. All one needs to do is to send in the form on page 14, and the Society's secretary will obtain signatures from present members in the same geographical area.

So we urge all professionals, whether they be otologists or audiologists or psycho-acousticians, or linguistics, or engineers—if you care about hearing, join the American Auditory Society!

The Life and Times
of
Alfonso Giacomo
Gaspar Corti
page 3

Collette Ramsey's Magnificent Obsession



Collette Ramsey
(Mrs. Hobart C. Ramsey)

The Deafness Research Foundation ("DRF") first began as a glimmer in the mind of a beautiful young woman who had been hard-of-hearing since age 13. Collette Ramsey was already mature beyond her years, with the maturity that comes from carrying the burden of a handicapping hearing loss—from having known as a youngster the frustration and isolation a hearing loss imposes upon its victims and how difficult it can make life for an otherwise healthy, normal young lady, wife and mother. Always in her mind must have been the thought, "If only a miracle could happen and I could hear..." This thought, growing in the brain of a deeply contemplative and quietly religious young woman, was the seed of a "Magnificent Obsession" that would help thousands of people afflicted with deafness.

In a recent interview, Collette Ramsey told Corti's Organ about her experiences:

C.O.: How did you get the idea of establishing the DRF?

Ramsey: It first solidified the day I learned that my hearing loss was due to otosclerosis and that there was now an operation that might help it. You can't imagine what it had been to have a sense of hopelessness all my life—to believe that I would never hear well and that nothing could be done about it. And then suddenly to learn that medical science had developed an operation that could help—it was like a great burden being lifted from my life that had been weigh-

ing me down. I was filled with a profound sense of gratitude. Right then and there I made a vow to myself that if this new surgery were successful in my case I would devote as much of my life as I possibly could to further the development of ear research. This was an agreement with myself that I was obligated to honor.

Q.: Tell us about the surgery?

Ramsey: That was in 1952, (the second ear in 1954), when Dr. Julius Lempert had perfected the fenestration operation. I was found to be a suitable candidate for surgery, and I asked him to perform it on me. The chances of improvement that were quoted to me were "two out of three" chances. That was good enough for me. I went in for the surgery eagerly and hopefully. At first I had the usual dizziness following surgery, but thank the Lord, when the packings and dressing were removed I COULD HEAR! I perhaps had as good a result from the fenestration operation as it's possible to obtain: from over a 60 dB loss to better than 25 dB. I heard sounds I'd never heard before and many that I'd long forgotten existed. At first it might have been bewildering or confusing if I hadn't been so enormously grateful to be able to hear well for the first time that I could remember! I was simply filled with gratitude that this miracle could have happened to me. Grateful that I had a conductive type deafness that could be helped by modern surgery rather than nerve deafness for which there was no medical or surgical means to restore hearing.

C.O.: And then you remembered your vow?

Ramsey: Indeed I did. That commitment was a private thing between myself and my Maker, but I have been mindful of it ever since. Actually it hasn't been "binding"—it has been a great joy and a source of deep inner satisfaction. Next to my husband and family, DRF has been the main-spring of my life. The help that already has come to thousands and the hope that lies ahead for millions of the deafened, as

Continued on page 3

JOIN UP!

Become a member of the
American Auditory Society

Fill out the form on page 14
for application for membership.

CORTI'S ORGAN is a quarterly publication of the American Audiology Society, printed in Dallas, Texas.

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F. Blair Simmons, M.D.

Editorial...

On the occasion of the name change to **American Auditory Society**, Corti's Organ would like to pay tribute to some big-minded people in the organization. There was indeed a group—largely Audiologists—who felt that the term "Audiology Society" was not appropriate for an open membership society such as this. And we can understand the feeling of many—largely otologists and psychologists and psychoacousticians—that this attitude was petty and "picayune", to borrow our president's, Blair Simmon's, term. In addition to Blair there was Dix Ward, Aram Glorig, Jack Vernon, and our editor of JAAS, Don Harris—and all the otologists on the Board certainly—who felt the same way. Yet with great-mindedness they all refrained from making an issue out of the name change proposal. Indeed, they gave it tacit support by not opposing it and by allowing it to go through as a part of the By-Law Change. We want to acknowledge this group of members who were able to transcend pettiness themselves and thereby save the

I am trying to follow in the footsteps of the great Alistair Cooke whose world famous "Letters From America" have occasionally been written from England. My letter similarly will not be written "from England" but "from America".

Spring this year has reminded us strongly of England and it has been more like "rainy California"

Centurion Club Open to Professionals

DRF is unique among foundations in that its operational expenses are borne by a group of professionals called the Centurions. In the past the Centurion Club has been largely supported by otolaryngologists who have contributed \$100 annually to the Club. What has not been generally known is that it is also open to non-medical professionals at a reduced rate of \$25.00 per year. Thus, audiologists, psychoacousticians, speech pathologists, electronic engineers—indeed, anyone interested in the hearing field—can contribute to the support of his worthy organization. The payoff is the knowledge that all of the income from the capital funds of DRF can be devoted to its chief goal: the support of ear research. Many non-medical professionals have been the recipients of DRF research funds. It is time that this group lend its support to the Centurions. We urge every AAS member, whatever his interest, to become a Centurion by sending his \$25.00 to:

The Deafness Research Foundation
342 Madison Avenue
New York, New York 10017

Sentac Meeting Announced

The annual meeting of the Society of Ear, Nose and Throat Advance, in Children (SENTAC) will be held at El Encanto, Santa Barbara, California on December 7 and 8, 1978. The deadline for abstracts for papers will be on June 15, 1978. Papers on 1.) Central Auditory Dysfunction 2.) The Effect of Moderate Hearing Loss on Language Development and Educational Achievement will receive preferential consideration. For further information, please write to Dr. Robin Cotton, Children's Hospital Medical Center, Elland & Bethesda Avenues, Cincinnati, Ohio 45229.

Society from what might have become a bad schism in its ranks.

So from the "picayunes": We salute you gentlemen and ladies and thank you for being the kind of people we want to continue to associate with in this organization. We hope you'll find the "Auditory Society" a little more comfortable to live with, as we believe, we will.

Saludos, amigos!-MPD-RJR

Letter from England

than sunny California. We came prepared for a heatwave and have brought our light weight clothing bought in Denver (Sears) last year, but we should have stuck to our British tweeds and woolies...

The weather has at least not distracted me and I have been able to concentrate on the real purpose of my visit: electron microscopy at the famous Ear Research Institute in Los Angeles. The Department has been developed to a very high standard of equipment offering excellent facilities which have not been fully exploited.

The Institute has kindly invited

me and Dr. P. G. Lundquist from Stockholm a renowned expert in this field and a fine surgeon whose advice will be of invaluable help for the future development of the department (now that its former director Dr. M. D. Graham has been lost to Ann Arbor).

I have been concentrating my interest on the apparently simple problems such as the ultrastructure of cholesterol granuloma and tympanosclerosis in addition to the ultrastructure of acoustic tumours (Schwann cell tumours of the ear) of which this place abounds. I have tried to 'smuggle'

in the otocyst which, I am sure, would serve as an excellent model for the study of the problems of innervation in conjunction with Bill House's famous investigations on cochlear implants.

There was a fine Conference on scanning electron microscopy in L. A. I have been able to attend in the company of a thousand participants, all keen types and enthusiasts. The exhibition was unusually interesting and one could have spent not only time but a great amount of money on useful equipment.

Imre Friedmann,
Foreign Editor

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The Life and Times of Alfonso Giacomo Gaspar Corti

By Ross J. Roeser
Associate Editor

Most audiologists, otolaryngologists, and others who have studied auditory anatomy and physiology, when thinking of Corti remember him only for his organ; the organ of hearing that he is credited with first describing. Born June 22, 1822 near Pavia, Italy, the Marchese Alfonso Giacomo Gaspar Corti was the oldest son of the Marchese Gaspare Giuseppe Corti di San Stefano Belbo and the Marchesa Beatrice Malaspina di Carbonaro.

Ullman (1951) states that the Corti family had an old and impressive lineage. In fact, a young nobleman bearing the Corti name was present when the conqueror Henry II rode into the city of Pavia. Another Corti was a Ghibelline Castellan, and another a friend at court to Galeazzo, Charles IV's vicar. Another, Young Alfonso's grandfather, had taken up his sword against Napoleon.

Although many of the Corti family had fought in battle, most were fond of the arts and the pursuits of intellect. They were scholars, artists, and, often, physicians. In fact, in Pavia it was often said that all of the Cortis were "born to be physicians." Of Matteo Corti, physician to Pope Clement VII and Cosimo I and Professor of Medicine at Pavia, Pavia and Bologna, the historian Guazzo wrote that he could be compared only with the great Hippocrates and Galen.

But Alfonso's father had other plans than medicine for him. Instead of fostering his love for the natural sciences, biology, zoology, botany, and physics, the Marchese made him study the humanities. In this area his parents planned for him to add to the name of Corti and in doing so it would also enhance his mother's name as well. The Malaspini family had several noted historians in its past.

Corti probably spent his formal school years in Pavia, Italy, from 1841 to 1845, where he studied medicine. He was 23 years old when he left Pavia and set out by coach on a journey that was to last eleven years with numerous and frequent stops by the way. In September, 1845, Corti continued his studies in Vienna. Within a week or two he found that he could pursue his medical studies, visit the clinics on a daily basis as required, and still have time to pursue his fanatical interests in anatomy and physiology with the famed Dr. Josef Hyrtl. On August 6, 1847, Corti received his doctor's degree and at the end of December of that year he was chosen as Hyrtl's second prosector.

Ullman (1951) states that Corti's interest in the auditory system was initiated one afternoon when he was visiting with Dr. Hyrtl, when the great professor was gazing at a beautiful specimen of two crosscuts through the petrous bone. One of the crosscuts was through the cochlea and the other the labyrinth.

Upon questioning Hyrtl about the specimen, Corti was told that after spending fifteen years on the work that Hyrtl had barely scratched the surface on discovering how the ear worked. In fact, it was not even known what sections of the ear were responsible for hearing. Hyrtl did not even know if it was the cochlea or the semi-circular canals that was responsive to sound.

The real difficulty it seemed was that there was no way to view the inner ear before it perished. Before the specimen could even be put under the microscope it was only an indistinguishable mass of tissue and bone.

Following that day Corti began his studies with keen anticipation of an early discovery of the mechanisms of hearing. In his first endeavor he sliced the petrous bone of a freshly killed guinea pig and with his microtome, a tool just devised in 1847, working very fast in fifteen minutes. Upon examination he found a shapeless unrecognizable mass of decomposed matter. Alas, he probably thought to himself, the solution to the problem was speed. He must devise a way to view the delicate parts of the cochlea in less time. However, little did he know that this was not to be the answer to the riddle.

Due to the war that broke out between the Kingdom of Sardinia and Austria on March 23, 1848, Corti had to relinquish his position with Hyrtl and from February 2 to August 3, 1849 began his own microscopic studies in Bern with Gustav Gabriel Valentin. During this period he met some important microscopists including James Paget, Thomas Wharton Jones, and Richard Owen. From August 3, Corti spent the rest of 1849 with relatives in Paris.

In January, 1850, Corti began to work with Albert Kolliker in Wurzburg and mastered normal histology. His primary work was on the structure of the retina. He demonstrated the connection of the nerve cells with the optic nerve fibers through isolation, verifying A. H. Hossall's earlier disputed observations. He also completed several studies on the ciliary epithelium in the digestive organs of the larvae of frogs and toads.

Corti must have been occupying his time with studies on the inner ear while in Wurzburg, but had not completed them when he left in August, 1850. In that month he was invited to be a member of the wedding of his long time friend Rudolph Virchow in Berlin, and took the occasion to visit with Schroeder Van der Kolk and Harting in the Netherlands.

During the visit Harting, Corti, and three or four others were talking and in discussing the preservation of delicate specimens it was stated that to keep from dissolving, such materials must be suspended in fluid. When asked what fluid, Harting mentioned several: arsenic acid, distilled water with alcohol and sugar added, much diluted corrosive mercury, and a strong sodium chloride. However, he emphasized that Corti use diluted hydrochloric acid or acetic acid. Thus, Corti learned that the trick was not the speed of preparation, but suspension in fluid.

Back in Wurzburg, Corti set feverishly to work and in a few days had made his first significant observation on the cochlea. He described the complicated anatomy of the lamina spiralis in mammals. He saw that it carries bipolar globules 0.15 microns in size, the nature of which he supposed to be ganglions and which he assumed continued into the dark walled nerve fibers.

He was unsure only of how and where the fibers of the cochlea nerve ended, and was, therefore, unable to clarify the function of the individual parts of the membranous cochlea. Nevertheless, he expressed the ideas upon which Helmholtz based his "resonance" theory of hearing at a later date.

Corti completed his work in Paris. His work on microscopic anatomy was honored and he was elected to the Societe de Biologie de Paris (July 20, 1850), Verein Deutscher Aerzte und Naturforscher in Paris (April 5, 1851), and Paris Medical Society (April 5, 1851). The high point of his scientific career having passed, the death of his father forced him to leave Paris for Turin at the beginning of 1851.

A letter published in 1854 was to be the last time the scientific world was to hear from Corti. This letter concerns histological observations on an elephant and offers proof that the cells of various tissues of this large animal are of the

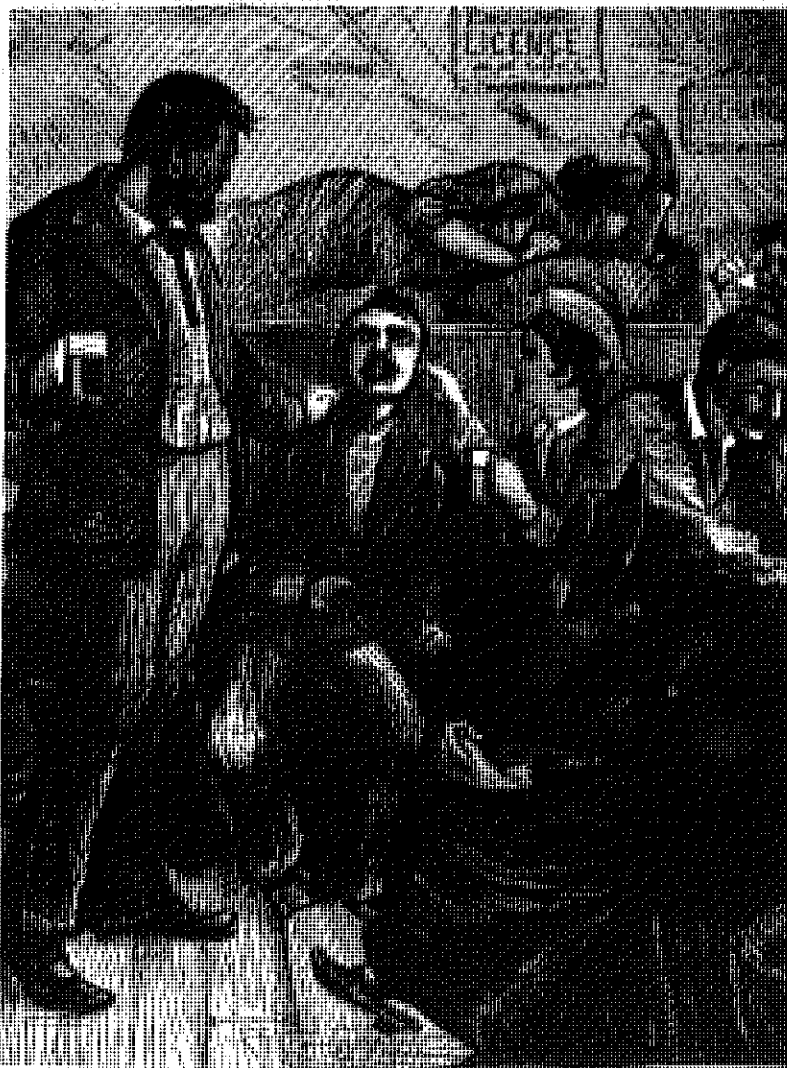
same relative size of similar cells of other mammals.

Corti was honored again in 1854 when he was elected to the prestigious Imperial Leopoldian-Carolinian Academy in January, 1854. In his letter of appreciation to the president of that society, Corti makes reference to the fact that he was suffering immensely from rheumatoid arthritis, causing him to become crippled in his hands and feet.

Although unable to pursue his professional interests, Corti developed a model farm for viticulture in an estate he acquired from his father in Mazzolino. In September, 1855, Corti married Maria Anna Carlotta Bettinzoli. Following the birth of their second child she died in 1861.

The remaining years of Corti's life were spent attending to the matters of his large and prosperous estate and educating his two children. At the age of 54 years Corti died. Due to the 22 years of silence preceding his death the scientific world was unaware of his passing.

AAS
ANNUAL MEETING
PLANNED FOR
SAN FRANCISCO
ON
NOVEMBER 17th
PRELIMINARY PROGRAM
AND PRE-REGISTRATION
FORM ON
PAGE 13



Reference: Ullman, E.V. Life of Alfonso Corti. Arch. Otolaryng., 54(1), 1951, 1-28.

Collette . .

Continued from page 1

secrets to deafness are unraveled through research, is a mighty rewarding experience to me.

C.O.: Yes, it sounds like a "Magnificent Obsession" of the highest degree. How did you go about fulfilling this commitment with yourself?

Ramsey: I asked questions and I listened. What a joy to be able to hear and to listen. I listened to many of the great otolaryngologists of our time. In addition to Dr. Lempert there were Drs. John R. Lindsay, Gordon D. Hoople, Lawrence R. Boies, George Von Bekesy, Ernest G. Wever and countless others. And I learned many things. First, that the government wasn't supporting any research to speak of in the field of otology at that time (1952-1954); and second, that there wasn't a single national voluntary organization in the country devoted to raising funds to support ear research. It was clear that there was a real void in this area in spite of the many duplications of effort and agencies for other health problems.

C.O.: A void that you set about filling.

Ramsey: Yes, with a lot of help from some wonderful people. I needed professional advice, and I got it from the excellent otologists I've mentioned. I needed business advice, and I got it, foremost from a wonderful husband who has backed me 100% in my goals. I could never have succeeded with the establishment and solid development of DRF, his patience and selflessness in allowing me to devote my entire energies to this cause.

C.O.: How did you go about it?

Ramsey: First I had to overcome the distasteful dread of meeting with people to discuss the need of financial support for otological research. This wasn't easy for a person who had been deafened since adolescence. But now the commitment I'd made outweighed any personal feelings—I had to succeed. So I mustered the courage, and faced a lot of very important people—presidents of large companies and foundations in the world.

C.O.: And with great success.

Ramsey: Well, we were ready to start by 1958. We awarded five research grants during that first '58-'59 year. One of them was to the A.A.S. founder, Aram Glorig, for his sub-committee on Noise of the O. & O., which we supported until 1967. Other grants were to Dr. Edmund Fowler, Jr., to Dr. Victor Goodhill, Dr. James Egan and Dr. Thamasa Stander.

C.O. What was the major thrust of the support?

Ramsey: From the beginning
Continued on page 4

2nd International Elks Conference

Another highly productive conference on early detection convened in Saskatoon, May 7-9, sponsored again by the Elks Clubs of Canada. In actuality it was the 3rd International Canadian Conference on this theme, as Dr. Hallowell Davis pointed out in his keynote address to the meeting. The first one was sponsored by

Mr. Fox of Toronto, a great philanthropist in the hearing field, and the proceedings appeared as a Supplementum to Acta Otolaryngologica in 1965. But the present meeting is the second sponsored by the Elks Clubs of Canada, who initiated the international concept in 1974 at Halifax, Nova Scotia. The proceedings

were published in 1975.

As Dr. Davis has indicated, the value of such conferences is the immediate dissemination of information that would ordinarily take two years to get into the literature. In Saskatoon the emphasis was on Brain Stem Evoked Response Audiometry (BERA) as the newest and most reliable

means of measuring infants' hearing. The foreign experts who discussed a wide range of approaches to testing infants included: Dr. John Bench of Reading, England; Dr. Mordecai Himmelfarb of Jerusalem, Israel; Dr. Jean-Marie Aran of Bourdeaux, France; Mrs. Lilly Tell of Jerusalem, Israel. North Americans included: Dr. George Mencher of Halifax; Dr. Burton Jaffe, of Boston; Dr. Martha Rubin of New York City; Dr. Don Worthington of Boys' Town in Omaha; Dr. Terry Pictin of Toronto; Dr. Robert Galambos of San Diego; Dr. Maurice Mendel of Santa Barbara; Dr. John M. Moore of Seattle; Dr. Sanford Gerber of Santa Barbara; Marion Downs of Denver and Dr. Hallowell Davis of St. Louis.

infants who had recurrent MEE. If the effusion is incurred for 3 months or more, the conference recommended both medical and educational intervention.

The conference was concerned that medical schools are not educating medical students about the importance of early identification of hearing loss and also the availability of means of testing infants. A strong recommendation was made for schools to incorporate such teaching.

Screening of hearing at 5-7 months of age was recommended for all baby clinics and doctor's offices. The use of noisemaker tests, VRA tests or any other means was urged.

High concern was expressed for the role of the parents in early identification. Family ties are vitally important, so full evaluations should be made early of any suspected child, in order to allay parental anxiety. Parents' concern over a possible hearing loss should occasion immediate audiological referral by a physician, and parents should be involved in all the diagnoses and the educational management plans for the child.

A highlight of the meeting was an occurrence that became the joke of the conference. Dr. Burt Jaffe's seat mate on the incoming plane was a gentleman, to whom he introduced himself, "I'm Burt Jaffe", and the man said "I'm the Canadian Minister of Transportation"—to which Dr. Jaffe replied in an aside, "and I'm the President of the United States". It turned out that the gentleman was indeed the Canadian Minister of Transportation, who later hosted a cocktail party for the Conference participants. The story was regaled with great delight at the party. A picture of the Minister with Jaffe and Coulling is shown herein on page 5.

Salute . . .

Continued from page 1

20; 3 each from Anatomy, Otolaryngology & Communication Sciences, Physiology, Surgery; 1 each from Biochemistry, Biology, Biotechnology, Medical Psychology, Pediatrics, Surgery and Neuroscience.

Categories, by Sequence	No.
GENERAL:	
Auditory Deprivation	1
Immunodiagnosis	1
Noise, Ototoxicity	5
Rehabilitation	1
Sudden Hearing Loss	1
Tinnitus	1
Virus Infection	1
MIDDLE EAR:	
Physiology	1
Middle Ear Infection & Deafness	2
	3
INNER EAR:	
Auditory Physiology	5
Cochlea	2
Electrophysiology	1
Embryology and Genetics	3
Histopathology	1
Implants	1
Neuroanatomy	
Neurophysiology	4
Sensori-Neural Deafness	1
	18

TOTAL 1978 Research Grants 32

(Please note: The "categories" above represent general labelling for the projects, many of which would fit as accurately under one or two other headings).

A brief summary of each grant project follows.

1978 DRF Research Grants General:

Auditory Deprivation

Richard J. Salvi, Ph.D. State University of New York-Upstate Medical Center. "The Effect of Auditory Deprivation on the Olivary Nuclei" (1st yr).

A study of the electrophysiological effects of the absence of sound for 3-5 months on baby animals, this project concerns a problem of major importance in relation to the factors determining normal or abnormal development of hearing in infancy.

Immunodiagnosis

Lee A. Harker, M.D. University of Iowa. "Immunodiagnosis of Acoustic Neuroma" (2nd yr).

Using the leukocyte migration inhibition assay, the project appears to be establishing a simple but highly accurate method for early diagnosis of Schwann cell tumors, their presence, recurrence and rapidity of growth.

Noise, Ototoxicity

Richard P. Bobbin, Ph.D. Louisiana State University Medical School. "Interaction of Noise with

Two Reversibly Ototoxic Drugs" (1st yr).

A study of the basic mechanism of sensory cell damage after exposure to intense noise and toxic drugs, the project is also investigating the dampening effect of two drugs on noise damage when they are taken before exposure to intense sound.

Vijay S. Dayal, M.D. University of Toronto. "Study of Potentiating Harmful Effects of Low Level Noise & Kanamycin on Guinea Pig Cochlea" (3rd yr).

This project has already determined that inner-ear cell damage occurs after lower levels of noise and of toxic drug dosage than had been realized; the investigator is also seeking to find whether young and old animals are equally vulnerable.

Gregory J. Matz, M.D. University of Chicago. "Progressive Neurotoxicity of Kanamycin" (2nd yr).

The project is developing an animal model for accurate pathological study of early and delayed changes in the cochlea, or inner ear, after exposure to a toxic drug, and for finding whether these changes are associated with reversible hearing loss.

Michael J. Mulroy, Ph.D. University of Massachusetts Medical School. "A Scanning Electron Microscopic Study of Cochleas with Noise-Induced Losses in Sensitivity" (2nd yr).

An ultrastructural study of the hair cells in the inner ears of animals who show permanent insensitivity to narrow ranges of noise after prolonged moderate exposure to those ranges, this project should lead to a precise understanding of one aspect of noise damage upon the cochlea.

James C. Saunders, Ph.D. University of Pennsylvania. "The Physiological Consequences of Noise Exposure in Young Animals" (1st yr).

This project is studying the critical period after birth when the hearing mechanism is acutely susceptible to trauma when exposed to intense noise.

Rehabilitation

Rebecca E. Eilers, Ph.D. Mailman Center—University of Miami. "Tactual Perception of Speech and Speech-like Stimuli: A Sensory Aid for the Deaf" (1st yr).

To enable the development of an effective device that can transmit sounds as vibrations sensed by the skin for people who cannot be appreciably helped by hearing aids, this project builds upon a procedure for transforming speech energy into intelligible

patterns of tactual stimulation.

Sudden Hearing Loss

William R. Wilson, M.D. Massachusetts Eye & Ear Infirmary. "Idiopathic Sudden Hearing Loss. A Prospective Study" (2nd yr).

The investigator has already evaluated 35 patients with sudden hearing loss of undetermined cause, a frightening kind of deafness with no consistent, effective therapy. The large number who are under 40 years reinforces the correlary research into possible viral causes.

Tinnitus

Clarence T. Sasaki, M.D. Yale University. "Tinnitus: The Development of a Neuropsychologic Correlate" (1st yr).

With tinnitus the most maddening, common and poorly understood of all ear disorders, this project aims toward creating an animal model effective for the study of the nature of tinnitus its possible causes, and the most useful kind of treatment.

Virus Infection and Deafness

(Continued on page 6)

Collette

Continued from page 3

DRF has given broad support for all aspects of ear research with major emphasis on nerve deafness. Most often DRF has awarded "seed money" grants to promising young investigators undertaking new research projects. Most of the investigators, usually under age 40, have had no other financial support to speak of when they receive DRF's first grant. (Usually limited to a three year promise of support). By the end of the second or third year of DRF support a high percentage of projects initiated by DRF seed money grants progress

Continued on page 11



Collette Ramsey in her favorite disguise.

Inter-Noise 78 Proceedings Published

A 1088-page volume, "Designing for Noise Control," has been published and is available to those concerned with environmental noise and its control.

"Designing for Noise Control," the Proceedings of the 1978 International Conference on Noise Control Engineering contains the papers presented at INTER-NOISE 78, sponsored by the International Institute of Noise Control Engineering and organized by INCE/U.S.A. The Conference Secretariat was the responsibility of Noise Control Foundation.

More than 800 engineers and other individuals concerned with noise control attended INTER-NOISE 78 which was the first INTER-NOISE Meeting held in California. The previous six INTER-NOISE Conferences have been held in Washington or overseas. The theme of INTER-NOISE 78 was "Designing for Noise Control."

The 1088-page book of Proceedings, edited by Conference Chairman William W. Lang, contains papers covering all branches of

noise control, in-plant noise control, transportation noise control, instrumentation and analysis techniques for noise control, and building noise control.

One of the highlights of the Conference was a series of five Distinguished Lectures on several aspects of noise control. These special lectures were: "Facts and Values in Noise Control" by Richard H. Bolt; "Noise Reduction by Design" by Richard H. Lyon; "Standards and Criteria for Noise Control" by Kenneth M. Eldred; "Uses of Sound Power Level" by Peter K. Baade and "Impact Noise from Industrial Machinery" by E. J. Richards. These special presentations highlighted the theme of the Conference; the text of each paper has been included in the Proceedings.

Copies of the INTER-NOISE 78 Proceedings are available from INTER-NOISE 78, P. O. Box 3469, Arlington Branch, Poughkeepsie, NY 12603 U.S.A. The postpaid price is \$35.00. Overseas orders must include \$7.00 extra if shipment is to be by air.

The Second International ELK'S Conference



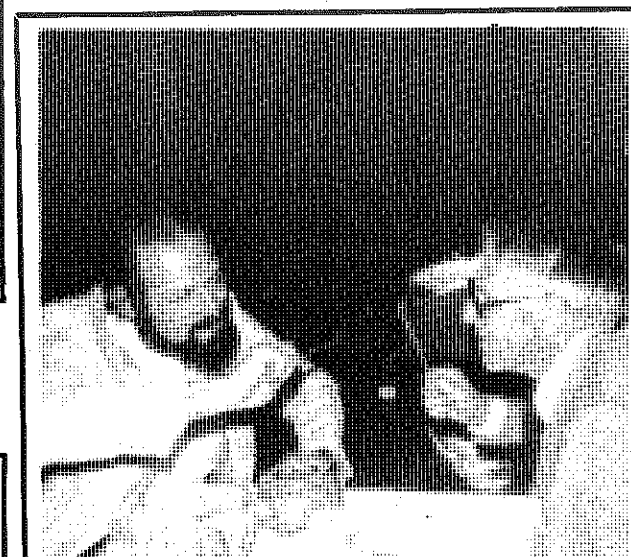
Bob Galambos, San Diego, and Maurice Mendel, Santa Barbara.



Mick Moore, Seattle, with John Bench, England.



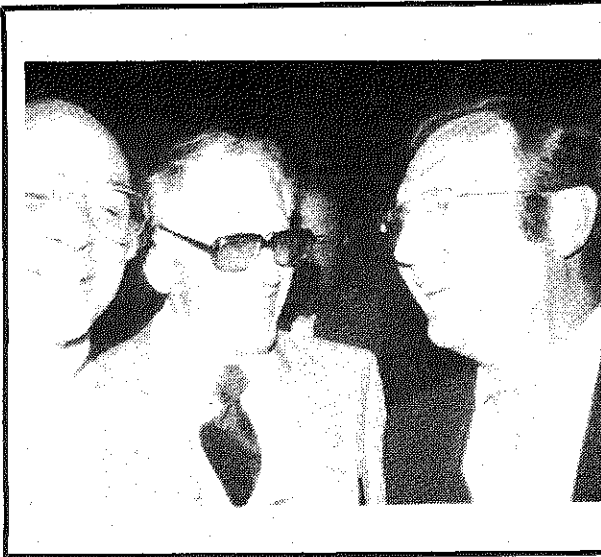
Hallowell Davis, C.I.D. and Martha Rubin, Lexington School for the Deaf, N.Y.C.



George Mencher of Halifax and Bob Cooling, Elk's Club of Canada.



THE ISRAELI CONTINGENT: George Mencher (currently on Sabbatical in Jerusalem); Mordecai Himmelfarb, otolaryngologist from Hadassah Hospital in Jerusalem; and Lilly Tell, audiologist from Hadassah Hospital in Jerusalem.



Burt Jaffee, Boston; Bob Coulling, Elk's Clubs of Canada, with The Canadian Minister of Transportation.



Bob Galambos with Mrs. John Bench, England.



Don Worthington of Boy's Town, Omaha; Lynn Brewster, arranger of the Conference; and Mick Moore, Seattle.



Burt Jaffee, Boston, with Jean-Marie Aran of Bourdeaux, France.



Terry Pictin and Canadian representative.

A Minority Report of the Impedance Task Force

(Editor's note: In our last issue we published the Recommendations for Impedance Testing of the Task Force of the Vanderbilt Symposium. A substantial minority of the Task Force (almost 20%) disagreed with the majority vote, and have submitted the following letter to the editor to register this protest.)

Letter to the Editor:

The Task force from the Symposium on Impedance Screening for Children (Nashville, 1977), exerted an enormous amount of time, effort and energy in their formation of Recommendations for impedance screening. However, consensus was not reached on all issues and we believe that

the final recommendations clearly demonstrated the old adage that "... a camel is the result of a committee trying to design a horse". We do recognize that the final product represents many vested interests from several professional points of view concerning impedance screening and ear disease. It is our intent in this letter to the editor to express viewpoints of some members of the Task Force which were not included in, or are at odds with, the final set of "Recommendations From the Task Force."

First, and foremost, we oppose the Task Force statement that "At the present time, and until additional information has been developed, the Task Force does

not recommend the use of impedance measurements for universal (mass) screening on a routine basis for the detection of middle ear disorders in children of any age group". This statement becomes a blatant contradiction when one considers that the Task Force report also states that middle ear effusions are a prevalent condition among infants and children, and that evidence exists that "early treatment may be of advantage in preventing certain unfavorable long-term developmental consequences in some children—". Clearly, the recommendations are phrased in such a way as to act as a deterrent to the early identification and management of this prevalent

disease, it is incongruous that a set of referral criteria and other guidelines for impedance screening are presented by the Task Force, but at the same time identification by impedance screening is explicitly discouraged. It is our contention that this position has been taken, not because the impedance screening procedure lacks validity, but because there is considerable uncertainty about medical management of the identified pathologic condition.

We understand and acknowledge that middle ear effusions are frequently transient and self resolving, a situation which has contributed to overreferral in screening programs. However, at the same time we are of the opinion that sufficient information presently exists to formulate specific referral criteria which would consequently make it viable to utilize impedance screening as a public health measure. While we did not urge the Task Force to advocate impedance screening as an essential screening procedure, we believe it is a reasonable procedure given the appropriate guidelines and referral criteria.

We do acknowledge the fact that additional research is needed before mass impedance screening can be advocated. Much of the data which was considered by the Task Force was obtained "clinically" rather than in screening programs and was, therefore, not truly representative of the population of children for whom screening measures are intended. In addition, the radical change in impedance instrumentation during the last several years promises to result in even more effective screening, but this has yet to be established. Nevertheless, at the same time, we support, rather than discourage, the use of impedance screening as a means of

increasing the wealth of information which would be generated only through a variety of screening programs.

We also fault the Recommendations because there is no category for initial screening failure and referral. The Recommendations state that "... any child failing the initial (impedance) screening should be retested in four to six weeks." We support the concept of monitoring or retesting as an essential component which will minimize over-referrals in impedance screening programs.

However, we do not agree that a child with a "non-mobile" TM or "flat" tympanogram, with an absent acoustic reflex on the initial screen should wait a period of four to six weeks before a repeat test confirms the persistence of pathology. Such findings on initial screen should be cause for immediate referral and medical evaluation. They also should be the cause for implementing more careful hearing testing and appropriate educational considerations.

In summary, we recognize the need for impedance screening guidelines, and the Nashville Symposium certainly provided the appropriate impetus for Task Force discussions. However, we feel that the final recommendations did not reflect the consensus of the Symposium participants. We hope our few words will kindle rethinking of the issues.

Alan S. Feldman

Syracuse, New York

Jerry I. Northern

Denver, Colorado

Joanne Rosenbloom

Philadelphia, Pa.

Laura Wilber

Evanston, Ill.

Virgil M. Hovell

Huntsville, Alabama

Continued from page 5

Salute...

(continued from page 4)

Melvin Strauss, M.D. Pennsylvania State University-Hershey Medical Center. "A Clinicopathologic Study of the Relation between CMV infection and Congenital and Acquired Deafness" (3rd yr).

With studies of temporal bones and of umbilical serum specimens, this project will produce important information on a causative relationship between Cytomegalovirus infection and deafness.

Middle Ear:

Physiology

G. O. Proud, M.D. University of

Dues Increase Announced

The AAS Executive Committee recently voted a \$4.00 increase in dues beginning January, 1979, bringing dues to \$29.00 per year. The reason for the increase was increased costs of the *Journal of the American Auditory Society*.

With the ratification of the new By Laws, future changes in dues will be voted on by The Society Membership, rather than the Executive Committee.

Kansas Medical Center. "Function of the Tympanic Plexus Chorda Tympani Nerve as Related to Parotid Gland Secretion" (1st yr).

Examining the effects of stimulation and staining with horseradish peroxidase upon nerves of the tympanic plexus, this project is aimed toward finding a way to prevent or relieve "mistaken regeneration of auriculo-temporal nerve after injury."

Middle Ear Infection and Disinfection

Robert M. Bunsted, M.D. University of Iowa. "The Study of Mechanisms of Bone Resorption in Chronic Ear Disease" (1st yr).

Using immunological and culture methods to study the processes of bone destruction in chronic otitis and cholesteatoma, this project may indicate clinical modifications that could prevent some of the complications associated with these conditions.

Daniel M. Lewis, Ph.D. Ohio State University. "Experimental Otitis Media" (2nd yr).

This project involves the development of an animal model for

Continued on page 7

NICOLET CA-1000...

for evoked response measurements in situations where the use of conventional behavioral audiometry is not practical.

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Some typical applications include:

- Brainstem auditory evoked responses using click stimuli for hearing evaluations, to determine conductive versus sensorineural hearing loss and to localize acoustic tumors, demyelinating disorders and vascular lesions.
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The CA-1000 is a complete portable system including stimulus generators, acoustically shielded headphones, recording electrodes, preamplifier, signal averaging computer with built-in oscilloscope display including accurate numerical readout of latency and amplitude, recorder for permanent records and a convenient equipment cart.

For complete details on the CA-1000 system or to arrange a demonstration please phone or write Nicolet.

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Marion Downs Honored in Ceremony

Marion P. Downs, M.A., Audiology Clinical Director at the University of Colorado Medical Center, Colorado General Hospital, was awarded the coveted University of Colorado Gold Medal for recognition of her services to the University. The award was presented to her during the Spring Commencement and was accompanied by the following citation:

MARION P. DOWNS, Associate Professor of Otolaryngology, is an exemplary clinical audiologist who has devoted her life to helping those handicapped by deafness, and teaching those who would be in contact with deaf people to have a better understanding of hearing impairment.

During her outstanding career at the University of Colorado Medical Center Mrs. Downs pioneered, developed and evaluated techniques for testing hearing in children. She is noted internationally for her work in the area of early identification of hearing loss and in infant hearing screening. Her publications and teaching have brought world-wide attention to the importance of early habilitation for deafness, and alerted the medical world to the developmental problems associated with childhood deafness.

Mrs. Downs is an outstanding teacher and prolific writer, and no student of hearing disorders can



Marion Downs

pass through coursework without being influenced by her contributions. Thousands of patients, especially grateful for her concern and wisdom have benefitted from her devoted effort to better their lives.

For recognition as an outstanding educator, clinician, author and progressive advocate for the hearing-impaired, Mrs. Downs has been honored by her professional colleagues and peers. Today, in continued recognition of a warm, sensitive human being concerned with the betterment of life for those handicapped by deafness, it is with great affection and pride that the Board of Regents of the University of Colorado honors Marion P. Downs by awarding her the University of Colorado Medal.

Mrs. Downs holds ASHA certification in Audiology, is a Fellow of the Association and has been very active in state, national and international audiology activities.

Salute . . .

Continued from page 6

media, by which to study the relationships between infection and local or systemic immune response with a precision that will enable us to determine the best method for immunization.

Inner Ear:

Auditory Physiology
Alfred C. Coats, M.D. Methodist Hospital (Houston). "Electrophysiological Approximation of the Pure-tone Audiogram" (3rd yr).

The investigators have impressively designed and are now testing an objective audiometer. The program and instrumentation will enable accurate evaluation of patients who cannot respond to the usual forms of audiologic measurement.

Jerry L. Cranford, Ph.D. Baylor College of Medicine. "Role of Auditory Cortex in Higher Association Hearing Functions" (2nd yr).

In this basic research into the role that the brain's ability to associate has in normal hearing perception, the investigators have already noted significant degrees of neural plasticity that have allowed animals without neocortices to learn non-auditory cues to govern their response to tone pulses.

David J. Lim, M.D. Ohio State University. "Tectorial Membrane-Sensory Cilia Relationship" (3rd year).

This study of the development of the tectorial membrane and its

relationship to the inner and outer hair cells in the Organ of Corti has progressed very well, governed by the investigator's intention to clarify the mechanisms involved in sound transduction.

Jochen Schacht, Ph.D. University of Michigan. "Biochemical Mechanisms in Auditory Transduction" (3rd yr).

An effort to define the biochemical element in transduction, in this clarifying how sound vibrations are turned into nerve impulses in the inner ear, the project has already shown, e.g., that pulsed tones increase the labelling of phosphoproteins more than continuous tones do.

David Strelhoff, Ph.D. U.C.L.A. "Acoustic and Electric Biasing of the Whole Nerve Response" (1st yr).

A significant inquiry in the field of cochlear electrophysiology, this project changes the electrical environment of the guinea pig cochlea, to study its effect upon the whole nerve action potential as recorded through intracochlear electrodes.

Cochlea

William E. Brownell, Ph.D. University of Florida. "Functional Differences between Inner and Outer Hair Cells" (2nd yr).

In a project concentrating upon the site in which transduction occurs, the investigator is now concerned with studying the differences in tracer substance uptake in the inner cells and in the outer cells.

Mary B. Meikle, Ph.D. University of Oregon-Health Sciences Center. "An Animal Model for Electrical Stimulation of the Cochlea" (3rd yr).

In this important effort to establish a valid animal model to evaluate—through single-unit responses—electrical stimulation of the cochlea, the investigator has established the difficult guinea pig as a fully suitable model, and has finished mapping the specific zones corresponding to the turns of the cochlea.

Electrophysiology

John D. Durrant, Ph.D. Temple University. "Studies of the Cochlear After-Potential" (2nd yr).

The investigator has already worked with 17 animals, the initial results giving a clearer understanding of the complex make-up of the action-potential; its peak, e.g., is reached at the instant sound has completely stopped, not at the moment it begins to stop.

Embryology and Genetics

Peter Heywood, Ph.D. Brown University. "Selected Ultrastructural Aspects of Inner Ear Development in the Guinea Pig" (2nd yr).

A study (also cytochemical) of certain aspects of cochlear development in the fetus, this project will contribute considerable information on the development of hair cells, their innervation, and the

Continued on page 8

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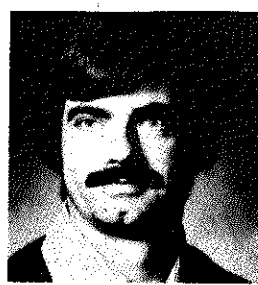
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News . . .

The first Honors Award of the Louisiana Speech and Hearing Association has been presented to **Dr. Jeannette K. Laguaite** of Tulane Medical Center, who held the position of director of the Center from 1952 until last year. The award is the highest honor bestowed by the 60-member state organization of audiologists and speech pathologists.

The National Association of the Deaf has established an Ad Hoc Committee to study and recommend procedures for the establishment of a universally acceptable symbol for deafness. Suggestions may be submitted to NAD offices at 814 Thayer Ave., Silver Spring, MD 20910, 301-587-1788.

Dr. Elda Dossena, Vice Presi-

dent of Amplaid, U.S.A. Inc., has announced the appointment of Jan De Benedetto as National Sales Director and Mario De Palo as Application Engineer.

Oticon has recently held dinner-meeting seminars as part of a nation-wide educational tour program for hearing health care professionals. **Jorgen Heide**, Director of Technical Sales and Information, presented programs on Hearing Aid Technology; Fitting and Modification of Aids; Research and Development and Product Features. The entire Oticon inside sales staff hosted the seminars and provided support.

The infant teacher training staff of the **Lexington School for the Deaf** announces the availabil-

ity of fellowships for professionals interested in working with deaf infants and their parents. The Specialized Infant Training Fellowship is offered at the Lexington School for the Deaf in New York City to prepare profes-

sionals to work with deaf infants and their families. The five-month, full-time training program focuses primarily on the hearing-impaired child's developing speech, language, and affective development, and on understanding the parent's role throughout the early childhood years. For further information write to Infant Teacher Training, Lexington School for the Deaf, 75th Street and 30th Avenue, Jackson Heights, New York 11370.

Salute . . .

Continued from page 7

nature of the membrane-bound cells of the vestibule.

William F. Marovitz, Ph.D. Mt. Sinai School of Medicine-New York. "Otic Differentiation" (2nd yr).

This project is studying the development of normal and

abnormal otocysts in the fetuses, in this concentrating on surface antigens, e.g., as possible causative factors in aberrant growth.

Thomas Van de Water, Ph.D. Albert Einstein College of Medicine-New York. "Fate Mapping of the Mammalian Otocyst in Vitro" (3rd yr).

Having completed the time-lapse mapping of the normal mouse otocyst in live culture, the project is now mapping the growth of one kind of mutant otocyst, as a first model for abnormal development; these delineations of the sites of origin of the various sensory structures of the embryonic inner ear provide remarkable evidences for the study of congenital deafness.

Histopathology

Joseph B. Nadol, Jr., M.D. Massachusetts Eye & Ear Infirmary. "Electron Microscopy of Human Inner Ear" (3rd yr).

This electron microscopic study of the temporal bones from people with normal hearing and with various kinds of nerve deafness should provide important ultra-structural information on what actually happens in the inner ear, especially when combined as this is with sound clinical and audiological data for each donor.

Implant

Richard A. Walloch, Ph.D. University of Oregon—Health Sciences Center. "Behavioral Evaluation of Scala Tympani Implants in Cats" (3rd yr).

Having implanted the multi-channel electrodes in the cochleas, the investigator has increased the sensitivity of the behavioral controls on the limits of electrical stimulation and is now concerned with the crucial demonstration of latency differences for changes in frequency in the stimulation.

Neuroanatomy-Neurophysiology
John R. Boston, Jr., Ph.D. Carnegie-Mellon University, University of Pittsburgh. "Receptor Potentials and Neural Response in Acoustico-Lateralis Sensory Cells" (3rd yr).

Aimed at clarifying the effects of noise and drugs on the transduction process as a way toward understanding the neural coding in this process, the project's technical goal is to relate the microphonic responses of hair cells to single-unit responses through a simultaneous recording.

Eileen S. Kane, Ph.D. University of Massachusetts Medical School. "Identification of Neurotransmitters in the Lower Auditory System of Mammals" (1st yr).

A broad, sophisticated study of the problem of neurotransmission and the development of nerve synapse in the cochlea; the project should help us understand how auditory information received in the peripheral cochlea is processed at its nucleus.

Michael J. Lyon, M.A. State University of New York—Upstate Medical Center. "Central Connections of the Stapedius Muscle of the Cat" (2nd yr).

Directed toward locating, enumerating and studying the motor neurons in the brainstem which supply the stapedius muscle in the middle ear, this pro-

Continued on page 9

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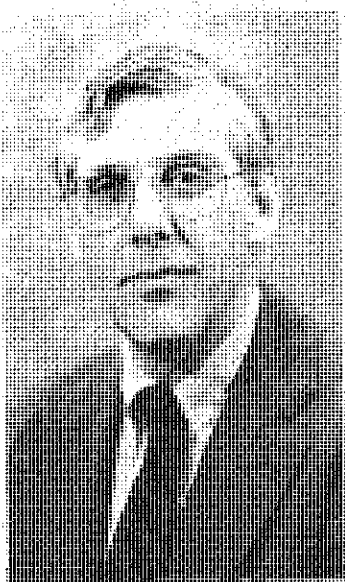
It's his energy that engages people with him—both his physical and mental energy. The ideas keep bubbling up, as he tries them out on you, and you become as rapt with them as he is. During a fairly brief tenure he's produced a top-notch newsletter (the Receiver) and put out some excellent information pamphlets. And kept up a constant flow of announcements and promotional material.

Ted Beck became Executive Director of the DRF in November 1976 after a dozen years as an English professor at the University of Nebraska. Exeter prep school and Princeton University were his schools. For a New Yorker coming home, it was a new career prompted by a family illness, but the thought of a "DRF-kind" of work had started long before.

Corti's Organ asked Ted Beck to fill in these details:

C.O.: What got you interested in hearing?

Beck: When the youngest Beck, after a non-stop sequence of infections, was found to have a substantial hearing loss, Lewis Mack—whom I had known since childhood—wrote that we should see Marion Downs immediately. We didn't; Ed Stivers handled the



Ted Beck

son very well in Lincoln. But from Lew Mack, I heard a full story on hearing specialists and, in 1976, on the DRF.

C.O.: When you joined DRF it had been well established but was attempting to expand in several directions. How did you fit in here?

Beck: I knew something of such growing pains at Nebraska, where I helped start the special residential college at the University and later became its dean. (One of my students is now beginning her ENT residency at NYU).

But the Triological, Otolaryngology, Meniere's disease and hair cells have all been news to me. Thanks to Harry Rosenwasser—DRF Director of Medical Affairs—total ignorance does not last long, not if the Receiver articles are to get safely past the eyes of professionals. And here Wesley Bradley has been a rare tutor and guide.

C.O.: How do you see the challenge to DRF?

Beck: Deafness has been a low spot on the totem pole of public estimation, the public unaware of the frustration known by physicians and audiologists when they meet yet another patient with sensorineural hearing loss.

Part of the DRF challenge is to help in this wakening. Part is in providing a way for professionals and lay people to work together in service, public education and in research support.

I have found two prime virtues of the DRF in its Centurion Club and in its tough scientific objectivity. The first has introduced me to a company of men and women in one field of medicine whose active service for an organization unattached to their hospital or clinic establishes the generosity of their commitment.

The second—the wise governing of the competition for the DRF research grants—has several roots, least visible in the anonymous Scientific Review Committee, most obvious in the quality of the physicians on the DRF Board and in the close relationship the DRF has had for years with the NINCDS at the National Institutes of Health.

C.O.: What is the outlook, as you see it?

Beck: In the last 18 months, ten new directors have joined the DRF Board, a Development Committee—chaired by George Ball, the young president of E. F. Hutton—is mapping new directions and strategies, and

then acting on them, and the DRF is struggling to build state and regional chapters.

In the last year, I've worked with Marion Downs and Gerry English on trying to start a DRF chapter in Colorado, with K.J. Lee and Frank Riccio on the same in Connecticut, and with Mrs. Robert Seamans, Bill Wilson and Harold Schuknecht in Massachusetts. I've worked closely with George Nager—meeting a host of lab directors—on the Temporal Bone Banks Program for Ear Research. Through an office foisted on me I have been very much engaged—with Jim Snow—in the "National Committee for Research," the coalition of voluntary organization and professional societies that supports the NINCDS. And thanks to Jim Spencer and Gene Burton of NAHSA, the DRF—hopefully—will be serving Lions International closely and well through the network of temporal bone banks.

But I see deafness, and otological services and research, most in need of national awareness, public support and public dollars. At the June meeting of the DRF

Board, three new directors were elected: Marion Downs, who represents several fields; Ernest Weymuller, a New York model of the otolaryngologist in private practice who is not distracted from wider service; and Gertrude Galloway, President-elect of the National Association of the Deaf.

The strength of the future for deafness—and for the professionals who serve those with hearing and speech disorders—promises to be in the conjoining of men and women, patients and families and professionals, of organizations, so that one common goal is powerfully sought together.



Dr. David Lilly, a positively brilliant and happy (from his expression) speaker.

Amplaid's International Immittance and Evoked Response Symposia

"The greatest success obtained by the two recent Symposia in Audiology organized by Amplaid" comments A. C. Holland, who opened the works in Milan, Italy as President of Amplifon C.R.S. co-sponsoring these activities, "is probably due to the new formula attempted: combining under one main topic two objective audiometry techniques: research and clinical application, today and in the future."

Hosted by the Amplifon C.R.S., the Amplaid Symposia were held in Milan from May 10th to June 2nd. Dr. David Lilly, of Iowa Uni-

versity, was the guest speaker at the 2nd International Symposium on Clinical Acoustic Immittance Measurements. Standards, research, prediction techniques, the diagnostic value of acoustic reflex measurements and reflex decay were brilliantly presented to a multinational group of experts that contributed to a most interesting and stimulating discussion.

A group of world-known speakers, Dr. A. Antonelli, Milan E.N.T. University; Dr. E. Biondi and F. Grandori, Milan Electroneurology; Dr. J. J. Eggermont, Leiden E.N.T. University;

Dr. C. Elberling, Gentofte Hospital, Hellerup; Dr. G. Salomon, Gentofte Hospital, Hellerup, and Dr. A. R. D. Thornton, Institute of Sound and Vibration Research, Southampton, presented, at the 3rd International Symposium on Auditory Evoked Responses, the results of their research and studies and of their further analysis of auditory electrical potentials recorded both in normals and in subjects of various known pathologies, thus making available the maximum amount of clear-cut differential data for the benefit of the clinical user.



The speakers at the Auditory Evoked Responses Symposium: from left to right: A. C. Holland; Dr. G. Salomon; Dr. A. Antonelli; Dr. F. Grandori; Dr. J. J. Eggermont; Dr. C. Elberling; Dr. A.R.D. Thornton.

Salute...

Continued from page 8

ject has general importance for our understanding the information developed from impedance audiometry on the role of that muscle and its alterations in otoneurological disorders.

Edwin W. Rubel, Ph.D. University of Virginia. "Acoustic Stimulation and Brain Development" (3rd yr).

This project has made considerable progress in its experiments directed toward finding out how known amounts and frequencies of auditory experience in young animals affects the development of structural and functional properties in the brain stem auditory centers.

Sensori-neural Deafness

Tetsuo Morizono, M.D. University of Minnesota. "Experimental Hypercholesterolemia and Hearing Loss" (1st yr).

The primary aim of this project is to determine the precise nature and degree of high-cholesterol dietary involvement in the development of atherosclerosis and high-frequency hearing loss; it will also provide secure audiologic and pathological data on the possible reversing effects on hearing loss of a low-cholesterol diet after an animal has been fed a high-cholesterol diet for a set period.

Book Reviews

SCIENCE, Vol. 200, No. 4344, May 26, 1978

Are we really going to have a National Health Insurance Plan? What form will it take? Are doctors practicing more defensive medicine because of escalating malpractice suits? What can the government do to control malpractice suits? Is PSRO here to stay? How far is medicine responsible for preventive health care?

These and other relevant questions are answered rationally and intelligently in a special issue of *Science* devoted to Health Care. The editors have chosen their authors and topics selectively to reflect the best opinions available on the current health care controversy. Its relevancy is indicated in an overview showing that the "health industry" accounts for 9% of the gross national product and is one of the three largest industries in the nation. But the likelihood of a comprehensive government-owned and operated system like those in European countries is very low.

What is advocated here is national health insurance which should be an "aggressive buyer of health services" rather than a mere insurer that protects people against the cost of medical care.

For example, the national health plan would seek out, without any barrier of copayment, inexpensive personal health services that have been demonstrated to be cost-effective such as immunizations, pre-natal care, contraception, and various screening tests for groups at High Risk. (Note: one would hope that hearing tests for children AT RISK for hearing loss would be included.) In a contributory plan such as this the fact should be exploited that it is a built-in educational device for getting people to use preventive services. Narrow in scope at first, the preventive services could be expanded after further testing and evaluation. Incentives might be given for non-users of alcohol and tobacco, or to communities that take steps toward preventing illnesses.

Quality assessment of health care is discussed from the viewpoint of Professional Standards Review Organizations (PSRO). The evidence concerning the accomplishments of the PSRO's is in the process of being assembled. A reassessment of those PSRO's already in operation suggests that the utilization control programs of hospitals do occasionally report savings, but that improper accounting assumptions were made which resulted in over-

estimations. About their effect on the health of people nothing can be said as yet. In fact, the Office of Management and Budget would like to cancel the PSRO program for being more costly than it is worth. Califano has won a 1 year reprieve for PSRO's to show if they can be effective.

So far as the impact of malpractice suits is concerned, several studies are cited which do not support the notion that there has been an increase in defensive medical practices, nor does there seem to be a major influence on the cost of care. What is recommended is a medical injury compensation system that would effectively promote positive rather than negative defensive practices. For example, arbitration and automatic systems of compensation are proposed. In addition, effective disclosure methods are suggested which will allow patients to participate more fully in decisions affecting their medical care. Attention should be directed to structuring a fair and equitable system for compensation and patient redress. Once the state of our compensation system for medical injury is improved, there will be no question about "defensive medicine".

These and many other medical issues are cogently covered in

Science's special issue. It may contain more than you'll ever want to know about medicine and government, but it is a magnificent one-shot coverage of the present problems.

Why the Professor Can't Teach: Mathematics and the Dilemma of University Education. Morris Kline, St. Martin's Press. \$10.00

If you have ever railed against the injustice of the "Publish or Perish" dictum, this is your book. Is a good researcher necessarily a good teacher? Does a Ph.D. automatically confer on an individual the wisdom and ability to teach? Is researching requisite to communicating a zeal for knowledge and a spirit of inquiry to students? Kline answers a resounding NO to these questions.

The academic landscape is crowded with ruins, according to Kline—student victims of the craving for prestige on the part of university administrations. So long as the game of research is a battle for survival in the academic scheme, teaching will continue to be of low quality.

Senator Proxmire has revealed that research projects are often entirely ludicrous; few produce

anything new and fewer produce anything significant. The result is "a huge proliferation of barely literate papers about pointless subjects". And even if the subject is relevant, it is rarely made accessible to students.

Kline makes a plea to set scholarship and teaching on an equal plane with research. The professional societies should be reoriented to placing a premium on good teaching rather than on published research. The scholarly journals should consider how to encourage pedagogics rather than pedantics.

Somewhere there must be a happy medium. One of our finest teachers in Audiology, Fred Martin, is also a prolific writer.

He has won accolades from the University of Texas for his enthusiastic and effective teaching; he has published several books and many research reports. But he is an exception to the rule. Medical Schools team with learned doctor-researchers who do not communicate their expertise to students.

Were it not for a few dedicated men and women, students in all undergraduate programs would be even more academically stunted than they now are.

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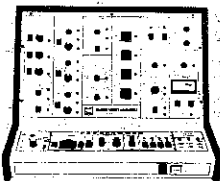
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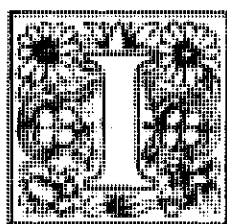
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Southern Audiologists Meet

The Seventh Annual Convention of the Southern Audiological Society will be held at the Monteleone Hotel in New Orleans from August 30 through September 1, 1978. The program of technical and scientific papers will be on hearing aids. For convention information, please contact-Kay Vernon, Ph.D., Audiology and Speech Pathology, Veterans Administration Hospital, 1601 Perdido Street, New Orleans, Louisiana 70146.

Boys Town Institute Scientific Dedication

The Communication Disorders Institute of BOYS TOWN in Omaha will be dedicated October 4, 5 and 6 at a special scientific conference entitled "Childhood Communication Disorders: Present Status and Future Priorities". Honored guests will be Dr. John E. Bordley and Dr. Thomas L. Smith.

Dr. Patrick Brookhouser, Director of the Institute, has announced a distinguished faculty that includes well-known international participants: Dr.

Ian Taylor of England, Dr. Jan Sekula of Poland, Dr. Gunnar Liden of Sweden, Dr. Paul Fletcher of England and Dr. Harold Evertson of Denmark. In addition some fifty leading clinicians, educators, researchers and health planners from this continent will be featured speakers.

Attendance at the conference is by special invitation only, due to the limited auditorium seating space.

Burchfield Elected To Better Hearing Institute Directorship

James R. Burchfield, Sertoma Foundation president and practicing Columbus attorney, has been elected to the board of the Better Hearing Institute (BHI), a nonprofit educational organization dedicated to informing the hard-of-hearing and others about hearing loss and available hearing help. The announcement was made today by BHI President Ralph Campagna.

"Jim Burchfield was named to the BHI board because of his concern for people with impaired hearing," said Campagna. "As current president of Sertoma Foundation, past president and 23-year member of Sertoma International (an organization that serves the hearing disabled through development of testing and rehabilitation programs), plus 25 years of working with other charitable organizations, Burchfield brings a wealth of experience to his new position. His appointment will add a new dimension to the Institute's board and a new scope and perspective to BHI programs," Campagna added.

Burchfield is active in numerous professional, social, and civic associations. He has practiced law in the near east side of Columbus since his admission to the Bar for the State of Ohio 29 years ago.

Burchfield received his bachelor's degree in humanities in 1947 from Ohio State University and his "doctor of jurisprudence" in 1949 from Ohio State University, College of Law. He and his wife, Dorothy, have three children.

Collette . . .

Continued from page 4

sufficiently to merit vastly increased support from federal or other sources of funding. By 1960 we saw that one of the most opportune things we could do for otolaryngology was to establish a network of temporal bone laboratories that would guarantee a constant input of temporal bones for study. So after 1961 many of the grants were aimed at supporting existing temporal bone banks and developing new ones.

C.O. That was completely successful, as we now know. The concept of donating temporal bones through DRF's national Temporal Bone Banks Programs for Ear Research, became firmly entrenched throughout the country, and a great fund of information began to become available to professionals. For the first time even audiologists became aware of what temporal bone histopathology could tell them about deafness. It is opening up a new world of knowledge in this entire field and has been hailed by authorities as one of the most progressive steps taken in the development of ear research.

Ramsey: It's been a very exciting 20 years for me, and I expect the next 20 will be even more so. All of the efforts must be accelerated if we are to find answers to the basic mysteries of the inner ear and solutions and prevention of nerve deafness and other inner ear disorders.

Editor's Note: In addition to her accomplishments in DRF, Mrs. Ramsey is a noted sportswoman in golf, swimming and skiing. She has held the Baltusrol Golf Club Championship many times and also enjoys skiing, swimming, jogging and yoga.



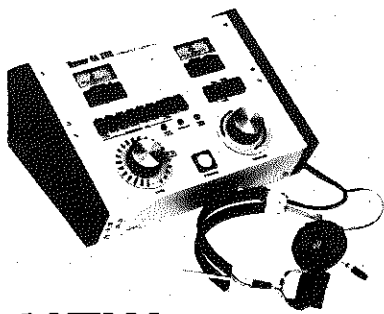
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The RA226 has capabilities for speech testing (either live or recorded), air and bone conduction testing, subject response monitoring, test signal monitoring, and continuous two-way operator/subject communications. The RA226 is the only audiometer in this price range to include built-in narrow band masking.



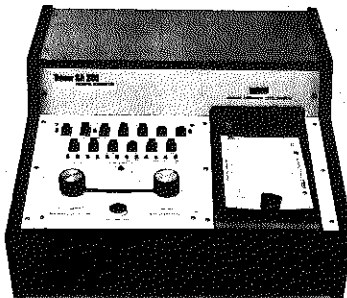
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The RA310 Audiometer Calibrator provides an instrument to allow clinics to perform their own calibrations. Performs all standard air conduction audiometer calibrations, simple to operate, rugged carry around case, can be extended in the future.

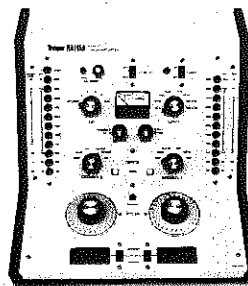


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Sataloff Elected to BHI Board of Directors

Dr. Joseph Sataloff, prominent Philadelphia ear surgeon and noted authority on occupational hearing loss and hearing conservation, has been elected to the Better Hearing Institute board of directors. The announcement was made today by BHI President Ralph Campagna.

A surgeon, college professor, researcher, consultant, and writer, Dr. Sataloff accepted the new position despite his already heavy schedule. "I have a strong commitment to the work you are doing," Sataloff told BHI. "I am delighted to accept and will do everything possible to help."

Besides his private practice, Sataloff is professor of otolaryngology at Jefferson Medical College, visiting professor at the

University of Maine's summer program, and associate editor of the AMA Archives of Otolaryngology. An expert in the area of noise and hearing preservation, he is consultant to the Surgeon General of the Navy in Hearing Conservation, the Secretary of Labor's Noise Committee, the Philadelphia Department of Health, and to many major industries and labor throughout the United States.

In addition to medical school, Sataloff attended the University of Pennsylvania where he received Master and Doctor of Science degrees. He is a member of numerous professional associations, including the American Academy of Otolaryngology and Ophthalmology, the Otosclerosis

Society, the American Council of Otolaryngology, and the American Otologic Society.

Welcoming Sataloff to the board, President Campagna noted the doctor's important contributions in the areas of industrial deafness and hearing loss prevention. "Dr. Sataloff shares BHI's concern for the millions of American workers who are exposed daily to dangerous noise levels," said Campagna. "Author of three books and more than 100 papers on the subject, Sataloff's knowledge and expertise will help BHI expand its anti-noise programs to inform people working in loud environments about the risks involved, methods to prevent loss of hearing, and available help for

those already suffering from damaged hearing," added Campagna.

The Better Hearing Institute is a Washington, D.C.-based nonprofit educational organization dedi-

cated to informing the hearing impaired, their friends and families, and the general public about hearing loss and available hearing help.

AAS ANNUAL MEETING NOVEMBER 17th SIR FRANCES DRAKE HOTEL SAN FRANCISCO, CALIF.

Program:

TIME

7:30-9:50 a.m. Executive Committee
9:00 a.m. Registration Opens
10-12:00 Scientific Papers
12:00-1:00 p.m. Lunch
1:00-2:00 p.m. Carhart Memorial Lectureship
(Dr. Scott Reger)
2:00-2:30 p.m. Wine Break
2:30-4:30 p.m. Scientific Papers
4:30-5:30 p.m. Business Meeting

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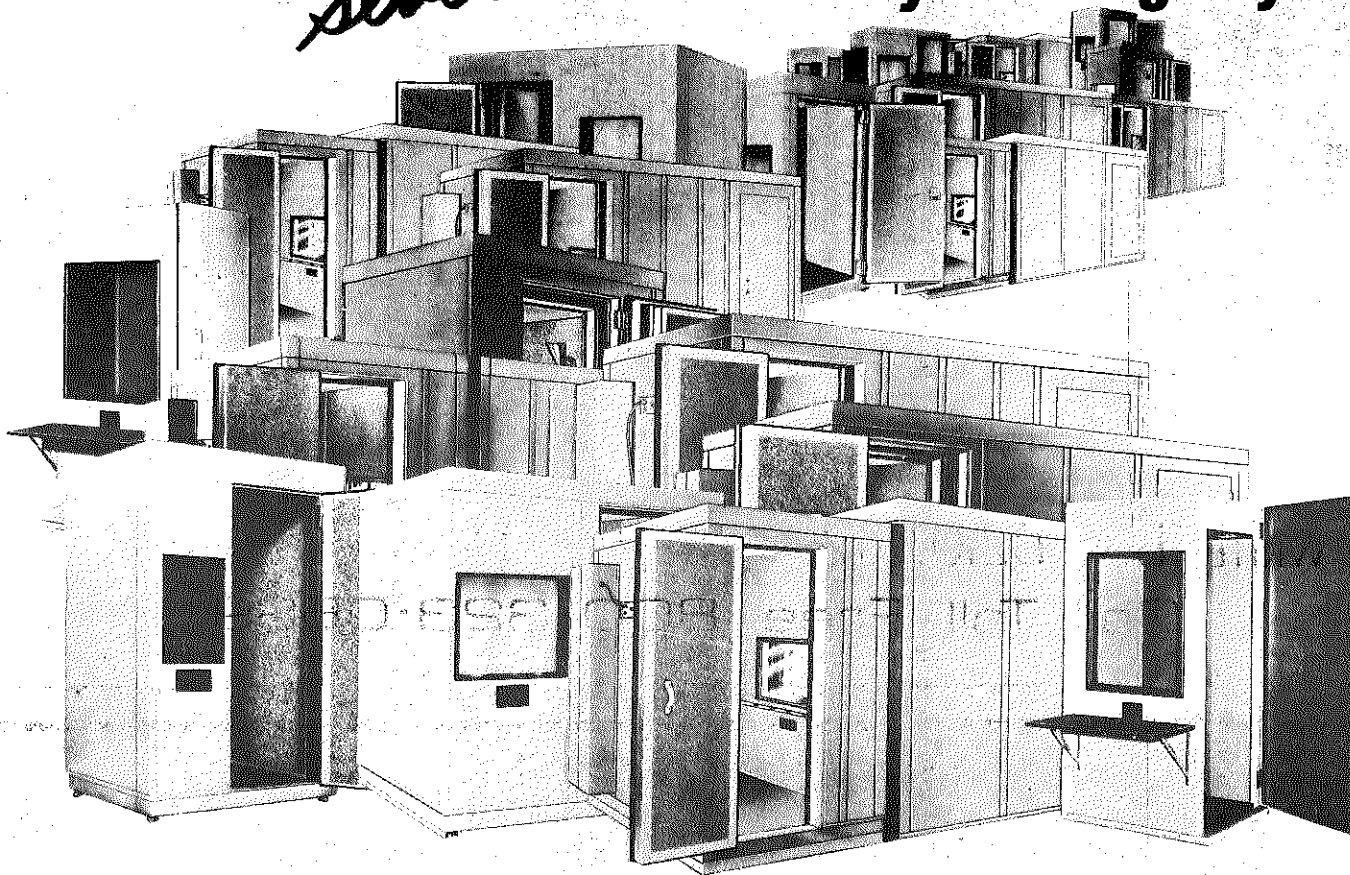
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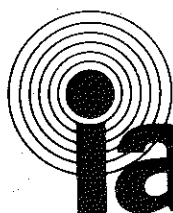
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Calendar of Events

JULY

13-14
ELECTRIC RESPONSE AUDIOMETRY COURSE, University of Nebraska Medical Center. Contact: Richard L. Moore, Center for Continuing Education, University of Nebraska Medical Center, 42nd & Dewey, Omaha, Nebraska 68105.

17-21
26TH ANNUAL INSTITUTE IN OCCUPATIONAL HEARING, Orono, Maine.

and
1st ANNUAL COURSE IN NOISE MEASUREMENT AND CONTROL, Orono, Maine. Contact: NMC Coordinator, 1721 Pine Street, Philadelphia, Pennsylvania 22-27

22-27
FIFTH BRITISH ACADEMIC CONFERENCE ON OTOLARYNGOLOGY, Birmingham University, London. Contact: V. Hammond, FRCS, 55 Harley Street, London W1, England.

AUGUST

6-11
THE DOREEN POLLACK FIFTH ANNUAL INTRODUCTORY ACOUPEDIC WORKSHOP, Denver. Contact: The Listen Foundation, 2525 So. Downing Street, Denver, CO 80210.

30-Sept. 2
SOUTHERN AUDIOLOGICAL SOCIETY, New Orleans, Louisiana.

SEPTEMBER

1-3
THIRD ANNUAL CONFERENCE AUDIOLOGICAL SOCIETY OF AUSTRALIA, Macquarie University, Sydney. Contact: The Public Relations Officer, Mr. Gary Walker, Audiology Development Section, National Acoustic Laboratory, 5 Hickson Road, Millers Point, N.S.W. Australia.

10-14
AMERICAN ACADEMY OF OTOLARYNGOLOGY, Las Vegas, Nevada.

25-29
THIRD INTERNATIONAL CONGRESS ON NOISE AS A PUBLIC HEALTH PROBLEM: BIOLOGICAL AND BEHAVIORAL EFFECTS, Freiburg, Federal Republic of Germany. Contact: International

Commission on Biological Effects of Noise: Institute for Arbiets and Social-Medizin: Universitäts Klinikum: Johannes Gutenberg Universität, Obere Zahlbacher Strasse 67: D-6500 Mainz: Federal Republic of Germany.

OCTOBER

2-6
AUDITORY EVOKED RESPONSE WORKSHOP AND SYMPOSIUM, San Diego, California.

6
INSTITUTE OF ACOUSTICS SPEECH GROUP: "SPEECH SYNTHESIS", University of Kelle, Staffordshire, England. Contact: J. N. Holmes, The Joint Speech Research Unit, Block 2, Govt. Bldgs., Eastcote Rd., Middlesex, HA4 8BS, England.

13-14
AN INTRODUCTION TO ELECTROPHYSIOLOGIC ASSESSMENT OF THE AUDITORY SYSTEM, Cleveland Clinic Educational Foundation. Contact: Richard H. Nodar, Section of Communicative Disorders, Cleveland Clinic, 9500 Euclid Ave., Cleveland, Ohio 44106.

22-25
NATIONAL INSTITUTE ON EARLY EDUCATION, "EARLY INTERVENTION". Contact: Mary Ambroe, Coordinator, National Institute on Early Education, St. Paul Public Schools, Department of Special Education, 360 Colborne Street, St. Paul, Minnesota 55102.

NOVEMBER

7-Dec. 1
XVI PAN-AMERICAN CONGRESS OF OTORHINO-BRONCHESOPHOLOGICAL, Acapulco, Mexico.

12-16
XIV INTERNATIONAL CONGRESS OF AUDIOLOGY, Acapulco Cultural and Convention Center, Acapulco. Contact: Organizing Secretariat, Instituto Mexicano de la Audicion y el Lengua je, Progreso 141-A, Escandon Mexico 18, D.F.-Mexico.

17
AMERICAN AUDITORY SOCIETY ANNUAL MEETING, San Francisco. (See announcement page 13)

18-21
AMERICAN SPEECH AND HEARING ASSOCIATION ANNUAL CONVENTION, San Francisco.

26-Dec. 1
ACOUSTICAL SOCIETY OF AMERICA FALL MEETING, Honolulu, Hawaii.

DECEMBER

7-8
SOCIETY FOR EAR, NOSE AND THROAT ADVANCES IN CHILDREN ANNUAL MEETING, Santa Barbara, California. Contact: Dr. Robin Cotton, Children's Hospital Medical Center, Elland and Bethesda Avenues, Cincinnati, Ohio 45229

1979

MARCH

3-10
XII COLORADO OTOTOLOGY-AUDIOLOGY WORKSHOP, The Mark at Vail. Contact: Colorado Otolaryngology Workshop Committee, Box B210, 4200 E. 9th Avenue, Denver, CO 80220.

MAY

17-19
INTERNATIONAL SYMPOSIUM ON THE HEARING IMPAIRED CHILD, University of Cincinnati Medical Center. Contact: Dr. Allan B. Seid, Children's Hospital Medical Center, Elland and Bethesda Avenues, Cincinnati, Ohio 45229.

JUNE

20-27
8th WORLD CONGRESS OF THE WORLD FEDERATION OF THE DEAF, Varna, Bulgaria. Contact: The Bulgarian Organizing Committee, 3, General V. Zaimov Blvd., Sofia, Bulgaria 1527.

NOVEMBER

16-19
AMERICAN SPEECH AND HEARING ASSOCIATION, Atlanta, Georgia.

26-30
ACOUSTICAL SOCIETY OF AMERICA FALL MEETING, Salt Lake City, Utah.

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**Corti's Organ Salutes
The American Tinnitus Association
and
Jack Vernon
(See articles pages 1 and 2).**

**Ken Berger
Shares His
Hearing Aid
Fantasies With Us.
(Page 3).**

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CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 3, No. 4

October, 1978

The Amer. Tinnitus Asso. Lists Prominent Board Members

The American Tinnitus Association was founded in 1973 by Dr. Charles Unice of Downey, California with these goals: (1) to collect information about tinnitus, (2) to disseminate tinnitus information, and (3) to support research in tinnitus. It is this organization that certifies individuals to do the testing and recommend the maskers for tinnitus sufferers.

As Bob Johnson explains in the interview on page 2, there will be a number of training seminars for Tinnitus certification this year. (See page 2 for a complete list). Others will be announced by the ATA later. For information and for membership, write to: The American Tinnitus Association, P.O. Box 5, Portland, Oregon.

The outstanding individuals who serve on the advisory board of the ATA are: Honorable Del Clawson United States House of Representatives, Washington, D.C.; David D. DeWeese, M.D., Chairman, Department of Otolaryngology, University of Oregon Health Sciences Center;

The Honorable Mark O. Hatfield, United States Senate, Washington, D.C.; Robert W. Hocks, National Chairman ATA, Hocks Laboratories, Portland, Oregon; David N. Plant, 2789-25th Street, San Francisco, California 94110, and; Charles Unice, M.D., 10601 Harley Avenue, Downey, California 90241.



Scott Reger

Scott Reger To Give Memorial Lecture

The annual Raymond Carhart Memorial Lectureship has been awarded to Scott Reger of Iowa. To Reger rightfully belongs the title of First Audiologist in the U.S., for he has been an active auditory researcher and clinician since the early 1930's. He knew and was associated with Raymond Carhart in many audiological activities in the three

decades of Carhart's professional life.

In the 1930's numerous articles on audiological research by Reger appeared in the Journals, and much of his unpublished research was reported at meetings. There are hardly any aspects of auditory phenomena that were not originally investigated by Reger, whether formally published or not.

Reger reported in 1943 on screening programs in the public schools. In 1945 he published the classic manual with Newhart on school screening, and was later (1947) involved with Newby in a report on group audiometers in screening programs.

Reger is a member of Phi Beta Kappa, Sigma Xi, the American Otological Society, the Triological, the American Speech and Hearing Association, and is an Honorary Fellow of the American Academy of Otolaryngology.

It is thus a pleasure for AAS to present Dr. Reger to a generation of audiologists who may not have fully appreciated his immense influence on the field. It will be a real privilege to hear one of the truly Greats of Audiology.

His lecture will begin at 1:00 p.m. November 17 at the Sir Francis Drake Hotel. (See program on page 9).

Bells Are Ringing For Jack Vernon

Many people have been actively involved in the Tinnitus project at Kresge Research Labs in Portland, and an entire national association is focussing its sights on the topic. But it was one man who had the initial vision and the dogged determination to develop this program that would help thousands of sufferers from tinnitus. Modest almost to a fault, Jack Vernon talks about "luck" and "serendipity" as responsible for the success of his program. But those who know say that this most compassionate of men was driven simply by the thought of the possibility of alleviating the distressing symptom of tinnitus that has been rightly termed "maddening".

So it is appropriate that Corti's Organ explore the development of the Vernon approach to tinnitus, and in the process reveal more about this scientist and gentle man. Our interview with him follows:

Q.: How did you first become interested in the problem of tinnitus?

A.: The whole thing started because Kresge Hearing Research Lab is a division of the Department of Otolaryngology and is clinically oriented. We do try to do clinically relevant studies and we felt that we had really bypassed the most common entity that is seen in the practice of otolaryngology, namely, that of tinnitus, long enough and that we should indeed go to work on it. We started out to see if we could develop an animal model that would tell us when the animal had tinnitus so that we would have the proper basis to work with. And that actually, believe it or not, went very well. We had a grant that had been approved and would be funded by NIH, when Mr. Nixon put a moratorium on NIH funds and in that moratorium we lost our lab, we lost our animals, we lost a lot of things. We had Rhesus monkeys trained to make discriminations when there was a tinnitus-like sound present, and when we got them to the point of their discrimination at a 90% correct level, we then switched them over and injected them with sodium salicylate, getting blood levels that were sufficient to produce tinnitus in man. Half the animals had saline and half had sodium salicylate and we didn't know who was who. It turned out that when you tested these



Jack Vernon at Vail.

animals, the animals who had the sodium salicylate indicated that they heard something every time they were presented with the choice, suggesting to us that they indeed had tinnitus. The other group of animals who had saline, half the time they said they heard something and half the time they said they did not. So the data were not quite as crisp as you would have liked. But it was certainly encouraging enough to go on. It was with those data and at that point that we applied for a research grant to study tinnitus in animal models. It was approved and it was to be funded and that's when Mr. Nixon stepped in with the moratorium, so we lost the whole thing. That did a very interesting thing. That put us on the record at NIH as the one laboratory in the country at the time that was studying tinnitus. And we began to get many letters from people around the country. Interestingly enough one of these letters came from this Dr. Charles Unice, who is the founder of the American Tinnitus Association.

Q.: Yes, I understand that Dr. Unice had intractable tinnitus, and heard about what you were doing. What happened?

A.: He came up here and we began testing him without the faintest idea of what we were

Continued on page 5

AAS Annual Meeting Starts Early On Nov. 17

An unusually large number of submittals of papers at this year's annual meeting has necessitated an earlier start than usual for the program. It will begin at 10:00 a.m. in Sir Francis Drake Hotel.

A large crowd is expected to hear Scott Reger's lecture as well as the large number of excellent reports that will be made. The complete program can be found on page 9.

JOIN UP!
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Special application form
on page 8.

**INTERNATIONAL
COMMISSION
ON THE
BIOLOGICAL
EFFECTS OF
NOISE MEETING
SUMMARIZED
BY DIX WARD
See page 10.**

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Editorial...

Now he's got us doing it — saying "tin-night-iss" instead of "tin-it-iss" (we don't trust our printers with diacritical marks). Yes, Jack Vernon has changed a generation of us who were addicted to the old pronunciation of tinnitus. He's been insisting for years that there is only one way to pronounce it, and finally we too capitulated — even before we saw that the latest Webster's lists only "tin-night-iss" as acceptable! So get on the Vernon bandwagon everybody — it's here to stay.

We have a few gripes of our own — for example, we tear our hair and scream whenever anyone says "larnyx" for "larynx". And we fall on the floor and beat our hands when we hear "nucular" for "nuclear". Further tantrums are produced by having the Weber test pronounced "Weber" instead of "Vay-ber", and the Rinne test called "Rinnay" instead of the German "Rinn-uh". But if you want to see us completely disintegrate into little pieces, just try saying "This data is...". Just the thought of it has already spoiled our day. MPD-RJR

The New Tinnitus Team Member . . . Bob Johnson

Since June there has been new activity in the tinnitus Clinic at Kresge Labs in Portland. Bob Johnson is a big man physically, mentally and professionally, and his presence would stir things up on any staff. With his coming the group is launching a large-scale training program that will extend the skills and knowledge of the Kresge group to any professionals who are interested.

In an interview with *Corti's Organ*, Bob explains the directions of the new program and how one can get involved in a tinnitus program.

Q: Tell us how you happened to get interested in the tinnitus work and how you became a part of the team.

A: I always have been interested in the area of tinnitus. However, I didn't actually get involved in it until Jack decided that he should have an audiologist aboard to help him with the tinnitus program, which had expanded considerably

from what it had been in the first couple of years. He called last December and asked me if I would be interested in making a change and joining him up in the Portland area to become involved in this kind of a program. So after flying to Portland and looking at the program I decided to devote at least the next few years in working with the tinnitus program with Jack. It has certainly turned out to be a good professional change on my part. Right now we



Vernon & Johnson try out the masker

are involved in a tinnitus clinic in which Jack and I share the responsibility. Up to this stage we have not only had a clinic for the tinnitus patient but as you know we have also had a training program which meant bringing in anywhere from 4-10 observers a day. These observers were generally either otolaryngologists, audiologists or hearing aid dispensers. The program up to this point has been one in which the person observes what is going on in the clinic — an informal type of a program where much of the time was spent answering questions of the observers and trying to supply information. Both Jack and I have felt that this distracted both from the observer program and from the clinical program, in that what we were trying to do is to give time to both elements and actually probably not spending as much time as we

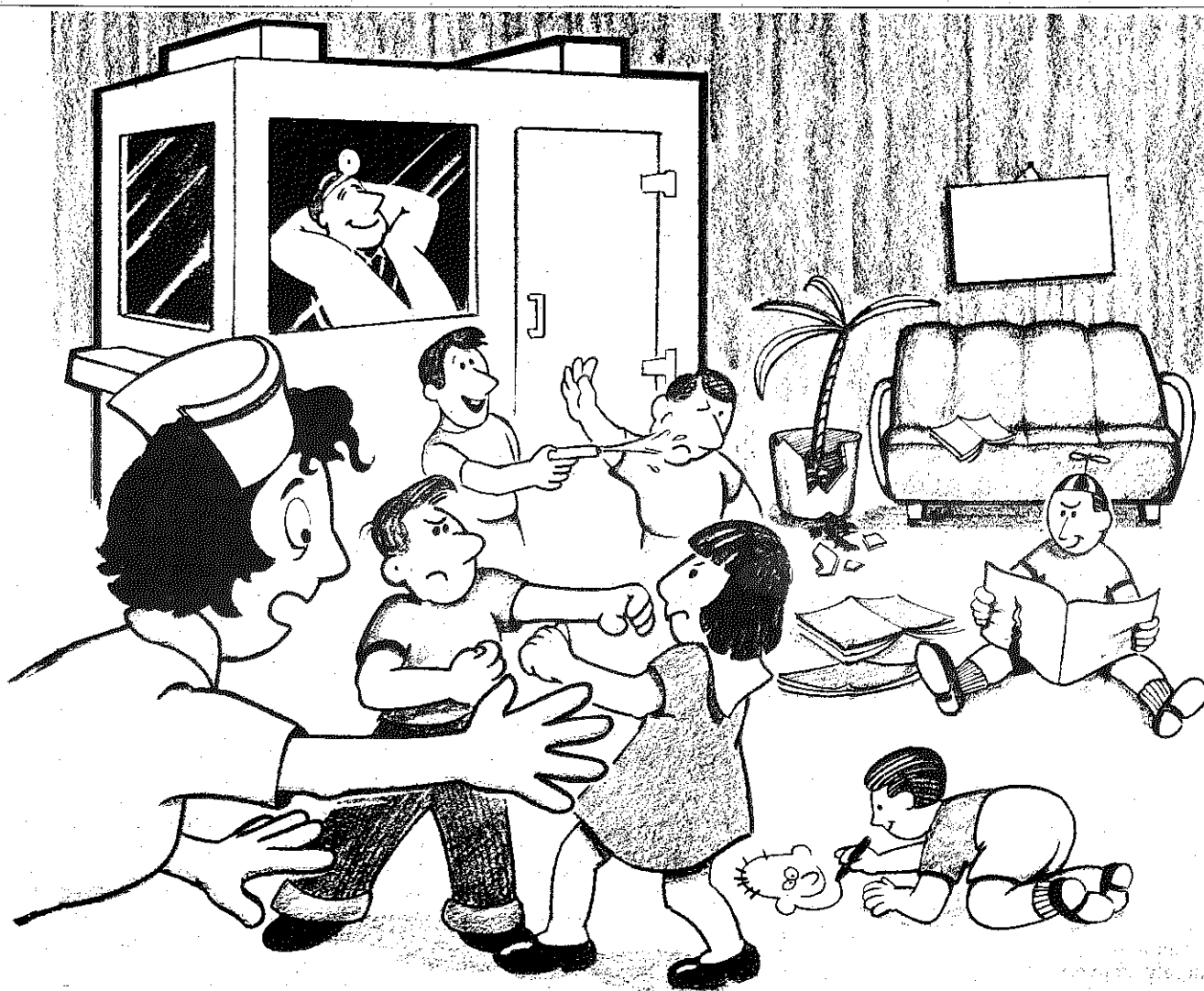
Continued on page 7



Bob Johnson

Course Schedule

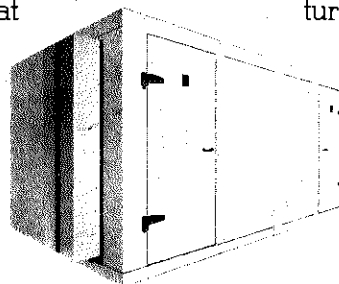
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Random Thoughts On Hearing Aid Fitting (While Shaving)

Kenneth W. Berger
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Most of the world's religions and numerous other groups have found value in meditation. Meditation provides a means of reflecting on past events and of letting one's thoughts wander through possible future actions, while briefly blotting out the din of the workaday world. My non-theological meditation period is each morning, while shaving with an ancient three-headed electric razor. Without casting aspersions on the products of Messrs. Grason and Stadler, this old razor masks environmental sounds more efficiently than their costly model 1701 audiometer.

In addition to masking by the razor, the time spent shaving is an excellent period for meditation inasmuch as it requires minimal concentration to the task at hand, that chore having been repeated so often as to become automatic. By now I've shaved 13,870 times (based on 365 days per year times 38 years) give or take a few, since a stubbled chin was acceptable while camping out, but on a few special occasions, especially in my younger days, an extra shave in the evening was deemed advantageous. At any rate, a number of random thoughts about hearing aid fitting have rambled through my mind while shaving and a few of these, for whatever their worth, are shared with the reader.

What A Hearing Aid Is Not

A typical textbook definition of a hearing aid is something to the effect that it is a wearable electronic amplifier, specifically designed for assisting those with impaired hearing. That definition may be correct, but it does not indicate how the assistance is accomplished. One might falsely assume, for example, that the hearing aid is curative or alters the wearer's auditory mechanism in some manner. A more complete definition of a hearing aid would also mention that it responds to incoming acoustic signals, modifies them, and conveys them to the ear. The modification and efficient delivery of those signals will, ideally, enable the wearer to better use them. The main point is that the hearing aid doesn't change or replace any part of the auditory mechanism of the wearer; it merely delivers the modified acoustic signal to the ear.

If one accepts the preceding statement it seems to follow that the hearing aid is not a prosthesis. A plastic or metal strut can be used to replace a diseased stapes and, therefore, is a prosthesis. An obturator may be used in the case of a cleft palate, and is a prosthetic device. However, the hearing aid meets neither the dictionary nor the medical definition of a prosthesis. To consider the hearing aid a prosthetic device only confuses the issue and can impede the progress of scientific hearing aid fitting.

The Federal Food and Drug Administration has recently ruled that the hearing aid is a medical device. Thus, legally the hearing aid is now so classified, by regulation rather than by legislation.

The reasons for the F.D.A. classifying the hearing aid as such seem obvious and I have little quarrel with their motive. However, except for narrow legal purposes the hearing aid is not a medical device. Rather, the hearing aid is an option (a) when medicine or surgery cannot correct the hearing problem, or (b) when the individual chooses not to have medical or surgical treatment that might correct the problem. Only after medical and surgical treatment have been dismissed as alternatives should a hearing aid be considered.

An analogy on this point may be worthwhile. Analogies are often of assistance in argumentation, to confirm one's biases, perhaps because analogies are seldom totally analogous and also since they are so abundant that one may be found to be approximately appropriate to any argument. Consider the balding middle aged male. (On that subject I am an acknowledged expert). He can seek the advice of a skin specialist regarding medication or even surgery to alleviate his problem. Should the dermatologist conclude that medical treatment and surgery are inappropriate the individual might consider purchasing a toupee. The toupee would seem to be no more of a "medical device" than a hearing aid despite its more nearly meeting the definition of a prosthesis than a hearing aid.

One day while trying to make certain my graying sideburns were of equal length I began meditating about medical devices. In the process of shortening the right side I recalled some writers referring to the pure tone audiometer as a "medical audiometer". The purpose of this distinction, evidently, is to sully the audiometer name as inappropriate outside medical use. The pure tone audiometer, now commonly calibrated to ANSI (1969) standard, of course, is used within the broad medical diagnosis of hearing disorders. In addition to diagnostic value, medical as well as non-medical, results obtained with it may be used for purposes of prognosis, prediction, confirmation, and comparison, by unaided and by aided measurements. One might even venture to use the "medical" audiometer to produce simple melodies. For example, with it one can approximate the first five tones of the **Star Spangled Banner**. Such would be facetious, but the possibility of seeing this non-medical use of the audiometer on the Gong Show is frighteningly real.

Consider the tuning fork. This was invented in 1711 by John Shore to Assist musicians in tuning their hautboys and zithers. (Remember the name John Shore and 1711 so as to impress your friends the next time the topic of conversation turns to trivia). It is still used by musicians for the same purpose. A century later otolaryngologists found the tuning fork useful for testing hearing. Now, are otolaryngologists using a "musical device"? If Carlo Ponti spins his spaghetti on the spoon with a tuning fork should he be required to join the musician's union or be sued for practicing medicine without a

license? The point, now well beyond 20% distortion, is that to call the pure tone audiometer a "medical" audiometer is to capriciously restrict, in advance, the usage to which it is put.

Hearing Level and Sound Pressure Level

Meditating about the audiometer leads rather directly to hearing level (HL) and sound pressure level (SPL). The measurement and charting of auditory behavior may be on the basis of either, and each has its advantages as well as disadvantages. Wernicke's area can't differentiate HL from SPL, so the choice between the two is really that of the operator of the test device and those who will use the resulting data. Let's consider another analogy. Suppose on a frigid winter morn you go outside and note that one thermometer reads -32° Fahrenheit, and another thermometer reads 0° Centigrade (or Celsius). Regardless of the thermometer you are no colder, or warmer, by using one than the other, unless you choose to be the victim of your own conditioning to numbers. It may be noted that converting dB SPL to dB HL, or vice versa, is considerably more simple than the translation from Fahrenheit to Centigrade, although there is a different conversion factor for each frequency. It would also appear to be purely personal preference whether one wants good hearing to be at the north end of the chart and poor hearing at the south, or the reverse, or even change the chart to read horizontally or diagonally.

Beep Beep, Sh Sh,
or Clunk Clunk

In measuring human hearing and the effect of amplification, the chosen test signal needs careful consideration, and its characteristics clearly understood. Numerous test signals are available to the clinician. The most commonly used test signals are undoubtedly pure tones. A bounteous research and clinical literature has been published involving pure tones. In determining the usefulness of a hearing aid to a given hearing loss, and especially in testing the results of amplification, the use of pure tone stimuli is often harshly criticized. The criticisms are usually twofold: a continuous pure tone signal is likely to set up standing waves in anything less than an anechoic chamber, and the level will vary substantially within the test room.

Surely we should not expect a junior in Speech Pathology and Audiology (much less someone with a coveted ASHA certificate in audiology) to employ a continuous pure tone in free field clinical testing. Continuous pure tone signals may well set up standing waves, and their level does seem to vary more than some other signals within a test area. The latter is a minor problem inasmuch as the signal should have been calibrated to one particular location in the test room, and we will warn the client not to walk, waltz, or wander aimlessly around the room during testing.

Pulsed tones are considerably more trustworthy than

continuous pure tones for free field testing. However, unless the test room is well sound treated standing waves may still be set up. That is, theoretically an outgoing pulse may be met precisely in phase with sound reflected from a hard surface, in which case the intensity of the combination will be 6 dB greater than the original. If the outgoing pulse is met precisely out of phase with a reflected sound (assuming no absorption) in combination should cancel each other, resulting in no sound, although in fact neither condition can be realistically achieved. Interactions other than perfectly in phase or perfectly out of phase result either in less than 6 dB increase or a reduction to less than total silence. More worrisome than standing waves is that the client must be advised to not move the head during testing, otherwise test data are invalid. A rigid client head position during free field testing, except perhaps in localization research, seems to be important regardless of the test signal.

Warbled tones are slightly more acceptable in audiology circles than pulsed tones for free field testing. Journal editors and thesis committees seem more satisfied when warbled tones are used even though they may produce momentary standing waves at a frequency where the pulsed tone would not.

White noise is a rather good signal for free field testing. Its use is sometimes criticized in that as one looks at this stimulus on an oscilloscope there are random blotches. Since white noise is, by definition, random, this picture is not unexpected. Whether the human ear can detect the occasional blotch seen high or low on the oscilloscope is problematic, and we don't fit hearing aids to oscilloscopes. The main disadvantage to its use is that, like music or speech, white noise obscures frequency information.

Narrow band noise appears to meet most of the requirements of a signal for free field test purposes. Its major disadvantage is that if there is a large precipitous drop between two test frequencies the filter skirt may not permit accurate testing. This problem is virtually overcome if narrow band noise is used for both unaided and aided testing. It has been argued that narrow band noise rapidly fluctuates several decibels, plus and minus. This is true, but presents no real difficulty, because the ear will respond to the highest variation of the noise, and one can readily calibrate the dial to that level.

A damped sine wave has been reported to be useful in hearing aid fitting, although it presents the same problem as narrow band noise in the case of a precipitous configuration. (Note how cleverly the latest "in" word in audiology was sneaked in at the end of that sentence). More competent writers often use the word configuration twice in the same sentence. At present only one manufacturer is known to make available an instrument to emit assorted damped wave train signals, but such signals can be produced in the laboratory with appropriate apparatus. Further-

more, one might then tape record the stimuli and play them back through existing audiometric equipment should the cost of a damped wave train apparatus be prohibitive to a given budget.

To date only the most rudimentary psychophysical data have been published on the damped wave train. Presumably this type of signal permits more reliable testing than pure tones in rooms with minimal sound treatment. One might speculate that the damped wave train will be found to have diagnostic value in comparison with pure tone signals. We need to keep an open mind to the possibility that damped wave trains, or modulated complex tones, or some other signal may be more appropriate for aided testing than pulsed pure tones, warbled pure tones, or narrow band noise.

Hearing Aid Evaluation

The traditional hearing aid evaluation, modified, mangled, and maligned over many years, has served its purpose historically. But, it has outlived its usefulness. At its worst the hearing aid comparison procedure probably permitted the clinician to discard the least effective of the pre-selected hearing aids. In retrospect, however, hearing aid comparison procedures undoubtedly retarded the scientific fitting of hearing aids inasmuch as the results of comparisons are for the most part unresponsive to anything less than major changes in electroacoustic characteristics, earmold modifications, tone control changes, tubing alterations, and filters of various sorts. The memory of the late Raymond Carhart, the Father of Audiology, is not enhanced by continued use of a time consuming procedure that has been shown to have inadequate reliability and validity.

At this point in time, those involved with hearing aids need to clearly describe their goals in fitting. The more vague and subjective the goal the more likely it will be achieved but without recognizing how or why. The more specific the goal the more one is open to sniping criticisms. The goal, and the method of reaching it, should be based upon the best available research evidence. Where research data are unavailable we can fall back on clinical experience and logic, and if none of these are readily available or apparent on a particular point we may use arbitrary numbers. Even arbitrary factors have the value that they provide something specific against which to test, compare, and alter.

We are overdue in setting up specific procedures and testable hypotheses for hearing aid fitting, rather than groping through another two decades of "fit and try". In broad outline the procedures would include: (1) a clearcut determination of hearing aid candidacy, (2) choosing a test signal considered most valid and reliable for the purpose intended, (3) deciding on the precise goals of the fitting, (4) specifying generically the electroacoustic factors which might best achieve

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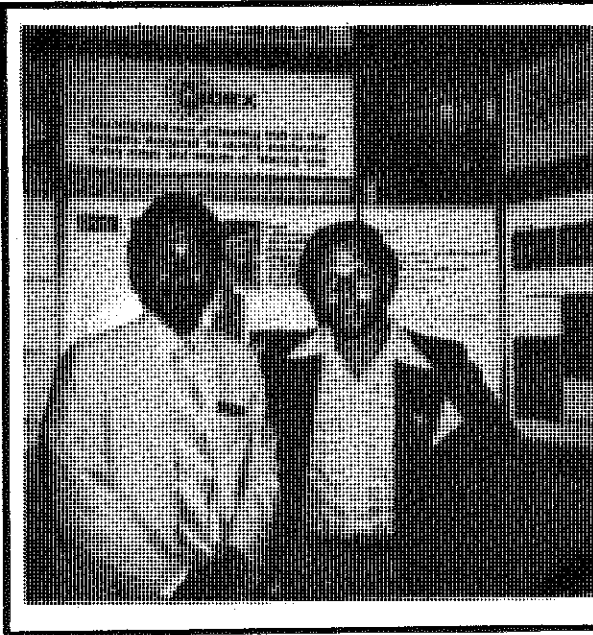
AAS Members And Others

At The American Academy of Otolaryngology

Las Vegas, Nevada



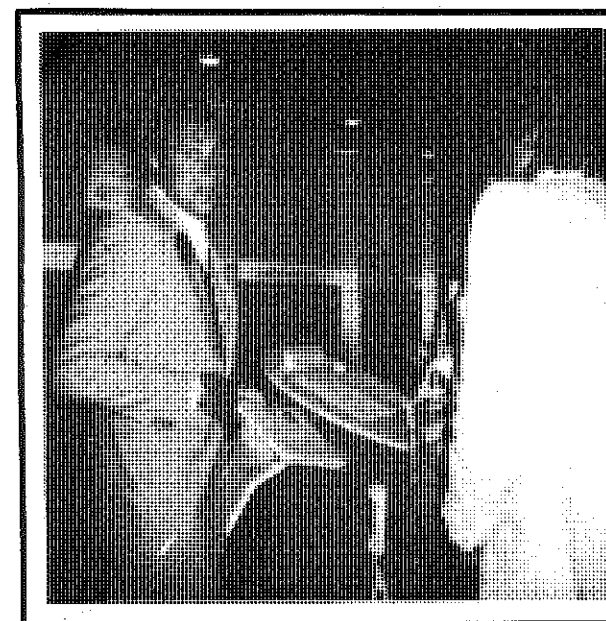
Elda Dossena & Ralph Nauntun



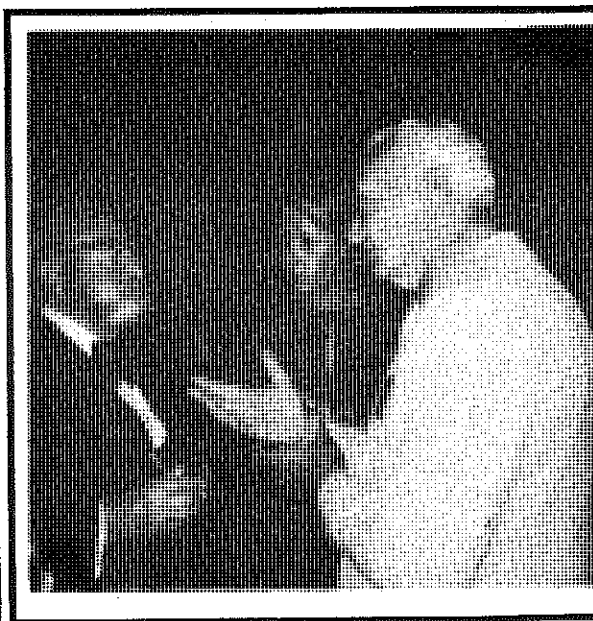
Ron Meltsner (left) and Dick Scott.



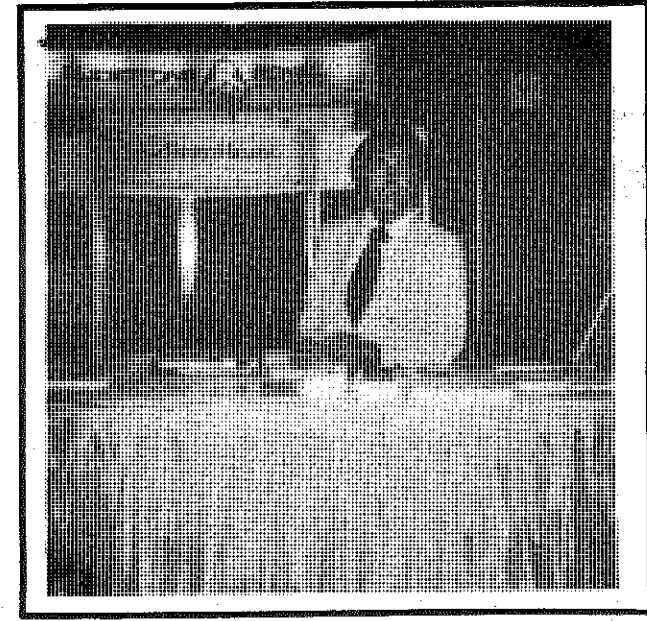
Eugene Derlacki, C. Michael Kos,
George Reed & Bobby Alford (standing).



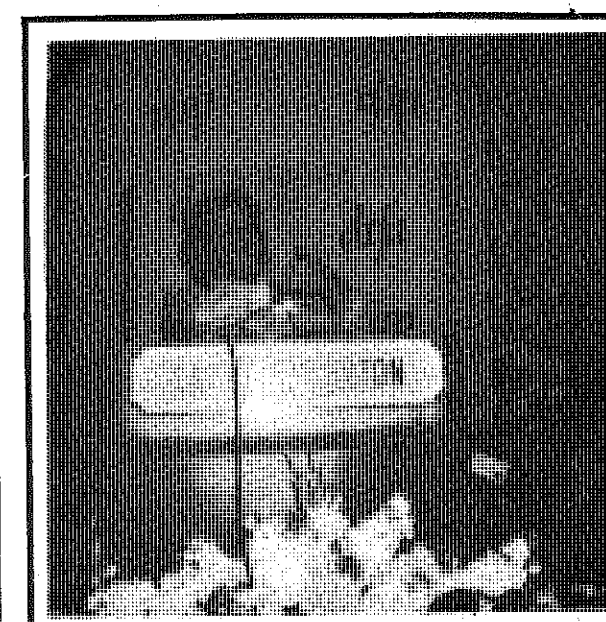
Rod Perkins showing Project HEAR



Aram Glorig and wife Anne,
with Vernon Erkenbeck.



Wayne Staab



Nanette Fabrey signing & singing
"Over the Rainbow".



Irwin Klar (left) & Ludwig Michael



Elda Dossena, Mario Di Palo, Sue Kos
and Harris Pomerantz.

Briefly, Books

PEDIATRIC AUDIOLOGY, Ed. Frederick N. Martin, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1978.

The reader will find this text's chapters highly organized in their presentation of material. Previous research is reviewed objectively and new areas of diagnosis are presented theoretically and practically. A comprehensive discussion of development in the infant and the child is well done. **Pediatric Audiology** talks about management of the child in the medical office as well as in the public school setting.

Professionals working with this population, whether in diagnosis or habilitation will find **Pediatric Audiology** a most useful text.

Lynne R. Anderson

AUDIOLOGICAL ASSESSMENT Ed. Darrell E. Rose, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1978.

Audiological Assessment is updated and indispensable to the student of audiology. "Otolologic Assessment and Treatment" is a much needed chapter especially to clinicians not familiar with ENT procedures. Illustrations throughout the book are extremely well done. Current advances in evaluation are presented but based upon the foundation of an understanding of sound anatomy and physiology of the ear, and basic pure-tone testing techniques. The new HAIC standards for hearing aids are discussed at length.

Although some topics are mentioned only briefly, a well-referenced bibliography completes each chapter. **Audiological Assessment** is an in-depth reference text.

Lynne R. Anderson

American Council of Otolaryngology's "Job Information Exchange Service" adds audiologists

The American Council of Otolaryngology's "Job Information Exchange Service" is now accepting listings from audiologists who are seeking employment. This service, which has been coordinated by the ACO for the past six years, was previously limited to otolaryngologists plus physician assistants and military technicians in otolaryngology.

Because otolaryngologists frequently hire audiologists for their private practice, hospital and university staffs, the new category for audiologists was added as a service for the ACO membership.

The "Job Information Exchange Service" provides an exchange of employment information for the specialty. The ACO publishes job listings quarterly and sends this information to its membership of nearly 4,000 otolaryngologists throughout the U.S. Listings are kept current and are available upon request between editions. Audiologists interested in participating should contact Job Information Exchange Service, The American Council of Otolaryngology, 1100-17th Street, N.W., Suite 602, Washington, D.C. 20036, or call (202) 659-4591.

Noise Control

The 1979 National Conference on Noise Control Engineering will be held at Purdue University, West Lafayette, Indiana USA on April 30 to May 2, 1979.

The conference is sponsored by the Institute of Noise Control Engineering/USA and the R. W. Herrick Laboratories, Purdue University. The conference is organized by the R. W. Herrick Laboratories. The General Chairman is Professor Malcolm J. Crocker and the Program Chairman is Professor J. W. Sullivan.

The theme of NOISE-CON 79 is Machinery Noise Control. Several different sessions will be held in which both invited and contributed papers will be presented. The sessions will include but not be limited to papers on industrial machinery, engines, pumps, compressors, home appliances, and components on vehicles (mufflers, fans, etc.). Not included within the scope of the conference will be aircraft noise, noise from complete vehicles and community noise. Suggestions on special sessions are welcomed.

Contributed papers: Each session in the Conference will consist of invited and a limited number of contributed papers. Contributed papers will be selected by review of long abstracts (maximum 1000 words and up to one figure and 5 equations if needed). The deadline for receipt of these abstracts is December 15, 1978.

Prior to NOISE-CON 79 on April 26-28, 1979 there will be a special seminar on machinery noise control.

For more information on the conference or seminar, please write:

NOISE-CON 79
116 Stewart Center
Purdue University
West Lafayette, Indiana 47907
Telephone: (317) 749-2533

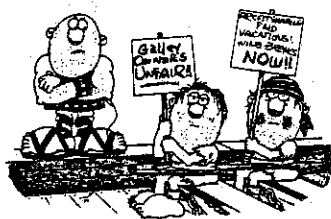
Abstracts should be mailed as soon as possible to:

Professor J. W. Sullivan
Program Chairman
Ray W. Herrick Laboratories
Purdue University
W. Lafayette, Indiana 47907
Telephone: (317) 749-6345

Professor Sullivan can also send further information on submission of abstracts if required.

Murphy's Law

#5



There is nothing sadder than a great idea whose time has not come!

Noise Control Engineering Begins 6th Year of Publication

NOISE CONTROL ENGINEERING, the technical journal of the Institute of Noise Control Engineering (INCE) has, with Volume 11, entered its sixth year of publication.

The bimonthly journal, edited by Professor Malcolm J. Crocker of Purdue University, is the only magazine published in the United States which prints refereed articles concerned exclusively with noise control.

Bells Are Ringing . . .

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doing. I can remember hammering on him, beating on him, doing all kinds of things for one whole morning and as I look back on it now I just shudder. Then we took him out to lunch and we brown-bagged it, sitting there by a fountain. Suddenly he got up and walked away from us. After a while I got up and asked if he was alright and he said shh, shh, shh, I can't hear my tinnitus because of the waterfall of this fountain. And that is when the whole idea of masking fell into place. We couldn't put Chuck by the waterfall for the rest of his life but we could put waterfalls in his ears, and so that was the beginning of the tinnitus program.

Q.: You said that at first you had the wrong idea about what masking would do.

A.: I sure did, I thought masking with tinnitus would be like any other masking, but it isn't. Indeed, all of the rules and the laws, going back to early work, just did not apply in the case of tinnitus. For example, if one has a band of noise, a physical band of noise, and you try to cover that up with a pure tone or mask it out with a pure tone, you're going to have a terrible time doing it. It takes an enormous amount of intensity. In the case of noise-type tinnitus it is very easily covered by the pure tone, provided of course, you select the proper pure tone. You can also do it in reverse. So there are many ways in which tinnitus does not obey the laws of masking at all and the most telling one to me was that I thought: if one had tinnitus and you introduce a second sound, that those two sounds would seek a common level that was about half way below the tinnitus and the patient would wind up listening to two sounds, but at much less intense levels than the tinnitus alone. Somewhere I've actually got that statement in print. Well, that is not at all true, that's not what happens at all. Indeed one has to go all the way up to the top of the tinnitus to cover it up. So you are substituting another type of sound for the tinnitus, rather than doing anything that is like a true masking. Masking is really a bad word and I'm apologetic for having put it into the literature, but I think it's too late to try to change it now. Professor Feldmann in Munich called it "inhibition" and indeed we coined the term "residual inhibition" in honor of his work.

Q.: You have really introduced a

new concept and a new phenomenon in the "residual inhibition" idea. How do you define it?

A.: Residual inhibition is a continuation of the masking effect once the masking sound has been removed, and that turns out to be one of the most exciting things that's ongoing with our program right now. It occurs when you properly mask the tinnitus. Let us just take an example. Suppose somebody has tinnitus at a relatively pure tone of 3500 Hz. If one takes a 3500 Hz tone or a mellow band of noise centered at 3500 Hz and masks the tinnitus out for one minute and then takes away the masking sound, the tinnitus will usually be gone, and indeed would be gone in 78% of our patients, for about 30 or 40 seconds after that and gradually would return. And that absence of tinnitus after masking is what we call residual inhibition.

Q.: Is it a linear effect if you mask for 2 minutes and get a corresponding period of inhibition?

A.: That's a very important comment that one must make to patients. If you make the demonstration to patients the automatic thing that pops in their mind is "what if I mask all day long?" No it is not linear. We don't know the laws of residual inhibition and we're studying it to determine those now. There is some tendency for the period of residual inhibition to increase as you increase the length and the intensity of the masking experience. However, I don't think that that is the key. For example, we have five, six or may as many as a dozen patients who are getting very long periods of residual inhibition. For example, there is a lady here in town who puts on her maskers at 8:00 in the morning and wears them until 10:00 and then she is free of tinnitus, totally free of tinnitus until 4:00 in the afternoon. Then she puts the maskers back on and wears them until she goes to bed. We have a patient in Spokane, Washington who gets up and masks while he is shaving, dressing and going to work—maybe a total of an hour—then he has twelve solid hours of no tinnitus. He has had a twenty year history of tinnitus. Some of these people are asymptomatic for very long periods. But one has to say to the patient, please don't expect that as part of your relief program. The only relief that you really should count on and expect is that which you experience during the masking itself.

Q.: You have identified 5 different

types of effective masking protocols, is that true?

A.: We started out with only 1, and remember I was at least 180 degrees off course on this thing. I thought that all we needed to do was get a band of noise into the ear and really the only requirement is that it not go down very far into the speech frequencies because you don't want to tear up speech for the patient. They've got enough trouble without that. So we have a behind-the-ear unit that would start no lower than 2000 Hz and then go on up from there. That may sound like a bad choice but it turns out that a very high percentage of tinnitus is above 2000. Indeed, I think in our sample of 513 patients, 78% of them are above 2000 Hz, and that majority has tonal tinnitus rather than noise. So it seemed to make sense to do it that way. However, we very quickly ran into a situation where the original wide-band masker going about 2000 or 1800 Hz to 5000 Hz, simply did not cover a lot of people, mainly those who were above 5000 Hz. Then we started emphasizing to the industry that we needed maskers that go higher. They did find a new transducer, that was being produced in Holland, rather than the one that is typically produced by Knowles' here in Chicago. And the new transducer would go very easily to 7000 and occasionally you would find it going beyond that. So they developed for us what we call the high frequency masker, running from about 2000 to about 700 Hz. We have continued to emphasize the need for high frequency and very recently Audiotone started producing a high frequency masker that we ought to

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Random Thoughts . . .

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those goals, (e) testing the client with the hearing aid to confirm how well the goals were reached, (f) accomplishing items a through e in as little client time as possible, with as few client return appointments as possible, and with as little investment in apparatus and instruments as possible, yet without sacrificing accuracy, and (g) being open and amenable to modifications in our fitting procedures as new evidence and new technology become available.

Now for a dash of after shave lotion, and off to the workaday world.

Bells Are Ringing . . .

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call super high or something. It starts around 2000 and some of them go up to 14,000, some of them to 10,000, some of them to 12,000 and indeed about three or four weeks ago we covered up a young patient who had tinnitus at 15,000 Hz. That's one of the highest we've ever seen and yet we could successfully cover up his tinnitus: he is now going back to school, after quitting, and is now in Law School to complete his professional career. In addition to those three maskers, there is a low frequency masker that starts at about 1000 Hz and goes downward. We don't see much low frequency tinnitus because we ask that only severe cases be referred here. I think that low frequency tinnitus tends not to be a severe form. Usually if anybody has residual hearing left over it's usually in the low frequencies and there is plenty of low frequency ambient noise around, so that low frequency tinnitus tends to get

masked out pretty much as a normal consequence. But we do see it. Out of our 513 patients, I think we've seen 11 or 12 that have tinnitus below 1000 Hz. The fourth one is a combination unit, a combination of a hearing aid and a masker. That unit was really invented for us by one of our patients, who literally picked up a masker and a hearing aid, put them together with rubber bands and a y-tube, and stuck the thing behind his ear. His ear stuck out about 90 degrees to his head, but he got his tinnitus on that side under control. Then when this combination instrument was developed as a consequence of that, he among others is wearing what amounts to be 4 units.

Q.: What are the output levels of these aids?

A.: The top level of all the maskers has been 85 dB, the bottom level is about 40 dB. There are

some people whose hearing is so depressed that you can't get to them with 85 dB. We have one experimental model that is a power unit that puts out 112 dB. We have not had much success with that with patients who are really hard of hearing, by plugging the ear canal and putting a lot of energy in there. Harry Zimmerman at Las Cruces, New Mexico really invented this procedure, occluding the ear and then putting the tube through the occluding mold to get a lot of energy into the ear. He has been successful with some patients and so copying his lead we tried to do the same thing here. One particular patient we have been working with over three years. We still have not been able to relieve her. She's one of those tragic post-stapedectomy cases that had a viral infection in the ear.

Q.: What's the average intensity level of the tinnitus that you've measured?

A.: The sensation level is about 5-10 dB, not as loud as I thought it would be. I had thought that severe tinnitus would be very loud, but that's not true. Even severe tinnitus is usually no more than 5-10 dB. The loudest I've seen was a patient with around 50 dB, but that is most unusual. It is very interesting when you have properly identified the pitch and then you pick that frequency and come up with that sound, at the point where the patient hears it, it nearly masks it out. That's really what you'd like to have.

Q.: What's in the future?

A.: I think that you can see that the next generation of maskers is going to be a prescription affair. For example, visualize an audiogram where the patient has no hearing loss out to 2000 Hz, then at 3000 Hz they're down to 60 dB. And then their tinnitus is stuck out there at 4000 Hz. Then you broadcast a band of noise from 2000 to say 5000. In order to get enough intensity to cover up the tinnitus where the hearing is bad, there's so much intensity where their hearing is good that they really can't tolerate the masker. You see we are defeating the masking purpose by flooding them in their clear area. Therefore, what one wants, as I see the next generation of maskers, will be one that has a very steep skirt on it, steep skirts on both side, and a very narrow band, maybe only 5 or 10% band, that is centered right on top of the tinnitus and then I'll bet you'll be able to run the gain at sensation level of 5 or 10 dB and you won't put anything down in the clear area. That would just be the way to go. We've got a study going right now that asks what kind of sensation levels you need at

various frequencies. If you take the frequency that's right on the tinnitus it only requires 5 dB or maybe even less sensation level. As you use frequencies below that the necessary levels get higher and higher and higher. And indeed, you might be using as much as 60 or 70 dB. It's another one of those cases that's just the reverse of what the usual masking situation is like. By the way Wegel had tinnitus. He wrote a fascinating article on tinnitus where he matched his and then he was able to produce beats with it. Indeed, we saw three patients in whom we could produce beats with an external sound against their tinnitus. Davis and his group were studying acoustic overload during the war and they commented that their tinnitus and the fact that they could not produce beats the way Wegel had and so discredited his findings. It is just a rare phenomenon, but it can be done.

Q.: Why do these particular people who come to you have such great problems with their tinnitus when it's usually quite a low sensation level?

A.: Well, I think severe tinnitus is the third worse thing that can happen to you. I think severe retractable pain is the worst thing. It's interesting that two anesthesiologists from New Zealand named Good and Melding were working in a retractable pain clinic. One of the things they decided to do was use massive doses of IV lidocaine, a topical anesthetic and they were indeed controlling intractable pain for a lot of people. One particular day they had a man in with low back pain for which nothing could be done and they gave him the injection and asked him how is your back pain and he said "just the same—it didn't help it at all—but you did take away my tinnitus." So that got them thinking about that possibility and they indeed started treating tinnitus patients. And they found with medication the tinnitus would temporarily go away. They also started giving Tegretol to these people and they found that those that had responded positively to lidocaine also positively responded to the Tegretol. There was only one thing wrong with the tegretol—one runs the danger of aplastic anemia. So Tegretol is no solution. But other drugs may be

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CLINICAL APPLICATION OF AUDITORY EVOKED POTENTIALS

November 8, 9, and 10, 1978

The Division of Audiology and Speech Pathology, Department of Otolaryngology and Maxillofacial Surgery of the University of Cincinnati Medical Center will sponsor a conference entitled "Clinical Application of Auditory Evoked potentials" on November 8, 9, and 10, 1978. Featured speakers will include two authorities on this subject, A.R.D. Thornton from Southampton, England, and Claus Elberling from Copenhagen, Denmark. Topics under discussion will include both audiological and neurologic application of brain stem responses. This will be primarily a didactic course, although practical demonstration of several commercially available evoked response systems, as well as training in electrode techniques, will be available.

Tuition for the course, to be held at Stouffer's Inn in Cincinnati, will be \$100, \$125 for physicians, and \$60 for students. Inquiries should be directed to:

Robert W. Keith, Ph. D.
Director

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1979 EAR SURGERY COURSE

JANUARY 28, 1979

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Book Reviews

Yanick, Jr., Paul and Freifeld, Stephen F., Editors. **The Application of Signal Processing Concepts to Hearing Aids.** New York: Grune & Stratton, (1978), 240 pp. Reviewed by Hal Weber, Director, Speech & Hearing Services, Colorado Department of Health Denver, Colorado

This book consists of a collection of essays representing some of the proceedings of the First Symposium on the Application of Signal Processing Concepts to Hearing Aids, sponsored by the HEAR Foundation in September 1977.

The scope of the subjects addressed in the 14 chapters include: distortion found in the cochlear damaged ear; auditory perception in the normal ear and effects of noise on speech communication; critical review of current hearing aids; electroacoustical dimensions of hearing aids and current measurement practice; review of the Master Hearing Aid, including current available models, advantages and practical limitations of each, and guidelines for the design of the "Ideal" Master Hearing Aid and/or Universal Hearing Aid; review of signal processing techniques for the hearing impaired person. (Signal processing is defined by one contributor as the process of transforming the signal parameters so that to the hearing impaired the signal received at the cochlea is the same as an unprocessed signal would be to the normal listener). Application of existing technology for promising new signal processing approaches are presented such as multi-channel compression circuitry for the patient with greater cochlear recruitment in the high frequency range of the hearing aid then for the lows; the design and use of micro computer hearing aids; and, although it would seem to have limited clinical value at this time, the development of a mathematical model which accurately predicts the sound spectrum developed at the tympanic membrane in both real and artificial ears.

The final three chapters address the special problems in audiological assessment and medical diagnosis and treatment of the patient with cochlear hydrops. The discussion is apparently presented to caution clinicians against misinterpreting symptoms such as fluctuating hearing sensitivity and reported "fullness in ears" to be otitis media. However interesting, this discussion seems somewhat out of place with the remaining chapters.

Since the chapters were originally independent presentations at the symposium, it is understandable that some common concepts and topics are discussed by several contributors. Three of the chapters are revisions of oral presentations which were given extemporaneously from notes. In these chapters, the authors were afforded the opportunity to make direct references to statements made by previous speakers. This reader found the discussions of common topics by several contributors to be refreshing, informative and broadening of understanding of the issues rather

than viewing these discussions as simple redundancy.

The expressed intent of the book is "to provide useful information to members of the hearing health care team concerned with the improvement of rehabilitation procedures in the area of sensorineural deafness". It proposes "to set forth important observations while emphasizing practical new ideas that are available to provide compensatory signal processing for persons with sensorineural hearing loss".

The intent has been fulfilled.

Contributors to this book are:

William S. Balmer, Dahlberg Electronics.

Harris Decker, Department of Electrical Engineering, Monmouth College.

David P. Ego, Department of Electrical Engineering, University of Wyoming.

John R. Franks, Department of Communication and Theatre, Arizona State University.

Stephen Freifeld, Professor of Otolaryngology, College of Medicine and Dentistry of New Jersey.

Joseph P. Miller, Professor of Audiology, Kent State University.

S. Narasimha Reddy, Department of Electrical Engineering, University of Wyoming.

W. Dixon Ward, Professor of Otolaryngology, University of Minnesota.

Paul Yanick, Jr., HEAR Foundation.

Alpiner, J.G. **Handbook of Rehabilitative Audiology.** Baltimore: Williams & Wilkins, (1978), 267 pp.

Reviewed by:

Janet M. Zarnoch

This book represents the most comprehensive handbook of adult rehabilitative audiology. Alpiner has done an excellent job of combining his wealth of knowledge on the subject with his unique ability to provide useful, practical clinical information for the practicing audiologist. In addition, five other contributors have provided their insight and expertise in the area of adult rehabilitative audiology. Chapter 11, the final chapter very appropriately deals with the direction of future research in this area of rehabilitation.

Alpiner provides the reader with a concise, yet very complete view of literature, as well as state-of-the-art. Perhaps one of the most valuable aspects of this text is the reproduction and explanation of various diagnostic tests currently available to assess communication function in the adult hearing impaired population. Of particular note is the attention paid to a special population of hearing-impaired adults, namely the geriatric. Alpiner generates considerable discussion on this special group and also presents a scale of communication designed specifically for use with geriatrics.

This handbook is a much needed, and welcome addition to the literature and will serve as an excellent source of reference. This text is recommended reading for all persons concerned with the identification, assessment, and rehabilitation of hearing loss in adults.

Impedance Screening for Middle Ear Disease in Children. Edited by E. R. Harford, F. Bess, C. D. Bluestone, J. O. Klein. Grune &

Stratton, pp. 303, 1978.

Reviewed by:

Jerry L. Northern, Ph.D.

This text is actually the proceedings from an international symposium held in Nashville, Tennessee in June of 1977 co-sponsored by Vanderbilt University Medical School and Maternal and Child Health Services. The book contains 24 papers and four comprehensive state-of-the-art papers. The material is divided into six sections including background material of middle ear disease in children, and current research on the use of impedance measurements for screening infants, preschool, school age and special populations of children. The initial chapter in this text contains the important

Recommended Guidelines for Impedance Screening for Children compiled by a Task Force of 28 experts from the fields of audiology, otolaryngology, pediatrics and epidemiology (see *Corti's Organ*, April, 1978). These guidelines are needed by numerous clinicians, school programs and other agency efforts involved in mass hearing screening programs which include impedance measurements.

This text is outstanding and a worthwhile purchase for all professionals involved with impedance screening. The quality of the papers is excellent and much new material is included in print for the first time. The collection of papers dealing with impedance in infants is especially valuable. Although many texts based on symposium proceedings fail to meet expectations, this collection of papers on impedance screening in children represents a substantial contribution to the hearing field.

Katz, J. (Ed.) **Handbook of Clinical Audiology**, Second Edition. Baltimore: Williams and Wilkins (1978), 623 pp.

Reviewed by:

Janet M. Zarnoch

The second edition of this book takes the place of only one other text, and that is the original *Handbook of Clinical Audiology*. Once again, Katz has generated an outstanding collection of chapters dealing with traditional areas of testing and rehabilitation, as well as new developments in the field of clinical audiology.

The book is divided into eleven major sections covering the following areas: Nature of the Problem, Conservation of Hearing, Basic Evaluation, Differentiation of Cochlear and Retrocochlear Dysfunction, Evaluation of Central Dysfunction, Evaluation of Pseudohypacusis, Physiological Tests of Auditory and Vestibular Function, Evaluation of Young Children and the Elderly, Management of the Hearing Impaired, Hearing Aids, and Communication Training. There is a total of 49 chapters, 27 of which appeared in the original text, that reappear in the second edition with revisions and updates. The remaining 22 chapters are composed of original new material. Forty-three contributors, experts in diverse areas of audiology, make each chapter a valuable learning experience for graduate students, teachers, and audiologists, otologists, speech pathologists, and other allied health professionals.

Aside from excellent coverage on new developments in the field, there are definite improvements in some of the areas previously covered in the first edition. Of particular value are the chapters dealing with Otology, Neurology, and General Medical Considera-

tions as well as the two chapters on Acoustic Impedance Principles, and Testing. These particular chapters cover a wide range of clinically useful information and are written on an understandable level. In addition, the chapters dealing with pseudohypacusis, management of the hearing impaired, and hearing aids are very well written and informative. The chapters which discuss traditional site of lesion testing are complete and well defined. The section of the text entitled "Physiological Tests of Auditory and Vestibular Function" would be more informative and current had a separate chapter been added on brainstem evoked response audiometry, rather than incorporating BSER into the Electroencephalic Response chapter.

Furthermore, recognizing that more and more audiologists are beginning to play an integral part in the vestibular evaluation of the dizzy patient, it would have been very appropriate to include a state-of-the-art chapter covering such procedures as the Romberg Test, both clinical and computerized, as well as rotational testing.

This book is a definite must for every audiology student, teacher and practicing clinical audiologist. By far, it presents the most comprehensive review of relevant topics in audiology at the present time. Those professionals who current own Katz's first edition would find it well worth their while to invest in the second edition.

Gerber, S.E. (and the staff of the Speech and Hearing Center, University of California, Santa Barbara). **Audiometry in Infancy.** New York: Grune & Stratton, (1977), 362 pp.

Reviewed by:

Janet M. Zarnoch

(Cont. on Page 11)

New Team Members

Continued from page 2

should have with either group. Therefore, with the added interest in the training program throughout the country, a decision was made to change the way in which the certification program was run. Rather than have everyone come to Portland, we will go out on the road and certify groups of individuals much like what was done for impedance or what is now being done for brain stem audiometry. In the very near future, hopefully starting in January, this will be accomplished. We recruited Jerry Northern to help us set up a program in which he will also be actively involved. In addition to Jerry, people here at Kresge, and audiologists and otolaryngologists throughout the United States will participate in the training program.

Q.: Whom do you expect to take advantage of these workshops?

A.: These workshops will be primarily for otolaryngologists, audiologists and hearing aid dispensers. The object of the workshop is to teach the masking procedures to members of these three disciplines who may be interested in starting a tinnitus program of their own. The courses will involve evaluation and management of the tinnitus

patient. These workshops will be held throughout the United States in the larger metropolitan areas. There has been a lot of interest in this program and we already have a list of people from many different areas. We found that the AAO was very interested in our program and we also will be represented at ASHA if audiologists want to contact us there.

Q.: Where will you be?

A.: We will be at the special interest tables instead of having a professional exhibit there. Sunday I will be at a table for the American Tinnitus Association and they can get information there. They also can get information by writing to the American Tinnitus Association, P.O. Box 5, Portland, Oregon 97207. There is also a number to call 503-248-9985.

Q.: When and where will these workshops be held?

A.: The plans are to hold the workshops on Thursday evenings from about 7:00-10:00 and the next day for about 7 hours, from approximately 9:00 a.m.-5:00 p.m. At the end of that time people will be certified and have access to the dissemination of instruments through the A.T.A. Also, otolaryngologists will be eligible to receive

credit under the AMA classification and the hearing aid dispensers will get credit through the Hearing Instruments Institute. Tentatively we have a schedule worked out where we will begin here in Portland in January, go to Washington, D.C. in February, be at the Vail Conference in March, and then April in Boston, May in Chicago and Philadelphia in June. The reason we made the decision to go to the east coast is that a lot of the activity through the observer program has been with people from the west coast. So a lot of people from California, Oregon, Washington, Idaho, have already come to Portland, and the main emphasis of the initial part of the program will have to be on the east coast.

Q.: What do you see as the future for the Tinnitus Clinic?

A.: As far as what's going to happen in the future we have already begun several research projects and we have talked to many of the people who are involved in research projects. There is so much to learn about tinnitus but with the interest which has been developed over the past few years in this area, we are hopeful that many people in all three disciplines will become actively involved in the program.



Happy Attendees at the 13th Otology-Audiology Workshop at Vail Institute, standing left to right: Linda Blane, Tom Norris, Marsha Simons, Dr. and Mrs. David Hanson, Paul Yanick; and seated, Kathy

Research Report

James Kreul at California State University at Chico is working on a grant from the Office of Education (HEW) entitled "Evaluation of a Method of Hearing Screening of Infants." The work grew out of the previous clinical and laboratory experience gained through a project initiated by HEW with him while he was at SRI. The test stimuli were selected and calibrated at that time and a series of initial studies were conducted and reported. The TV tape recordings of 50 infants were recorded by Dr. Robert Sandlin and his co-workers at the Speech, Hearing and Neurosensory Center in San Diego under Kreul's direction at that time.

The proposed project is designed to evaluate observer's ability to identify stimulus-response chains for infants exposed to auditory stimuli.

The technique of video recording provides material which can be used for objective analyses of an observer's ability to identify a stimulus-response chain. Establishing this chain is

fundamental to disciplines having roots in the behavioral sciences.

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13th Colorado Otology- Audiology Workshop

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Jean R. Causse, M.D., Peter Dallos, Ph.D., Willard Fee, Jr., M.D., Michael Glasscock, M.D.,

Ira Hirsh, Ph.D., William House, M.D., Donald Johnson, Ph.D., Robert Keith, Ph.D., David Lim, M.D., David Lipscomb, Ph.D.,

George Lynn, Ph.D., Geary McCandless, Ph.D., Mary Meikle, Ph.D., Maurice Miller, Ph.D., Herbert Silverstein, M.D., F. Blair Simmons, M.D., Jack Vernon, Ph.D., Paul Ward, M.D.

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"Big Ear" NASTAR Ski Race, the exciting mid-week Ski Bash Banquet, the Exhibitor's Wine and Cheese Party and the I-C Buns Ice Skating Party. It will also include an ATA sponsored 10-hour tinnitus practicum course (this course requires an additional \$50.00 fee) taught by Robert M. Johnson, Ph.D. of the University of Oregon Medical Center. The planning committee is Jerry L. Northern, Ph.D. and Marion P. Downs, M.A. For program and registration information write: 13th Colorado Otology-Audiology Workshop, Box B210, 4200 E. 9th Avenue, Denver 80262, or telephone toll free 800-323-0639.

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Annual Meeting Schedule

Sir Francis Drake
Empire Room
San Francisco

November 17, 1978

7:30-9:50 Executive Committee Meeting

9:00 Registration opens

10:00-12:00 Scientific Papers

Darrell Teter, Ph.D.
"Tests That Never Should Have Been Ordered."

Gail Harsch, M.A.; David Klodd, Ph.D.; Kim Williams, M.A.;
Steven Hurwitz, M.D.
"The Effects of Continuous Vs. Pulsed Signals on Acoustic
Reflex Decay."

Roger Ruth Ph.D.; Debara Tucci, M.S.; Ernest Nilo, Ph.D.
"Effects of Probe-Ear Canal Pressure and Seal on Acoustic
Reflex Magnitude."

Ulf Rosenhall, M.D.
"Hearing Loss Following Meningitis."

Robert Madory M.A.; Thomas Townsend, Ph.D.
"Reliability of The SSI In Hearing Aid Evaluation."

William Ely; Jim Curran
"Performance of AGC Hearing Aids."

Richard Navarro, Ph.D.; Peter Ivory, M.S.
"A Comparison of Custom In-The-Ear Hearing Aids."

12:00-1:00 Lunch

1:00-2:00

Scott Reger Ph.D.
Carhart Memorial Lecture "Origin of
Clinical Pure Tone Audiometry in
The United States."

2:00-3:00 Scientific Papers
John Williston, Ph.D.
"A New Look at Evoked Potentials"

Clifford Olsen, Ph.D.
"Threshold Prediction Based on Motor Reaction Time."

Gerald Miltenberger, M.A.; Bobbie Corbin M.S.; Gerald
Dawson, M.S.; John Cobb, M.S.
"Measurement of Central Auditory Processing Skills in
Children."

J. Donald Harris, Ph.D.
"Computer Assisted Audiometry."

3:00-3:30 Wine Break

3:30-4:30 Scientific Papers

Jack Vernon, Ph.D.
"Problems Associated with Masking Tinnitus."

T.E. Borton Ph.D.; W.H. Moore Ph.D.; S.R. Clark MSC
"Treating Tinnitus with Electromyographic Feedback."

F. Blair Simmons, M.D.
"Automated Neonatal Hearing Screening."

4:30-5:30 Business Meeting

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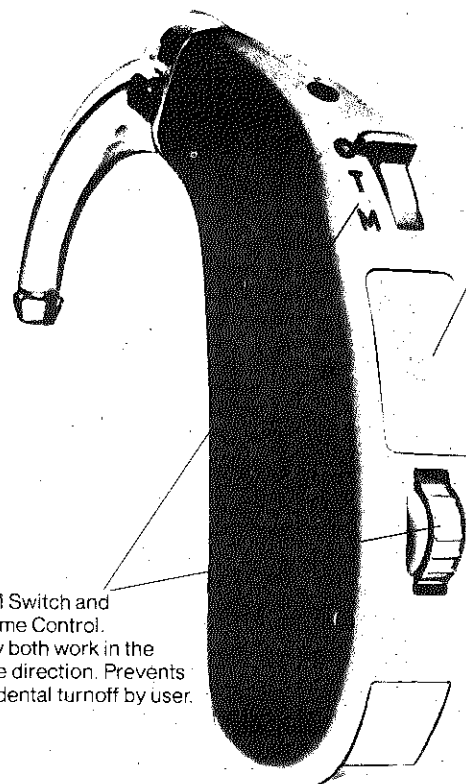
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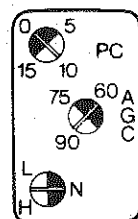
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Impulse Noise Standards Needed, Concludes 3rd ICBEN Congress

Report from Freiburg
W. Dixon Ward, Foreign News Letter

Development of an acceptable standard to limit exposure to impulse and impact noise appears to be the most pressing problem we now face, agreed members of the Noise and Hearing Team of ICBEN (International Commission on the Biological Effects of Noise) during the Third International Congress on Noise as a Public Health Problem held at Freiburg im Breisgau, West Germany, on Sept. 25 through 29. Data relating hearing loss to steady noise exposure are now adequate to allow us to specify what exposure limit will restrict hearing to losses at audiometric frequency X to less than Y dB in Z percent of the exposed population, so that most arguments in this area have become quibbling over what values of X, Y and Z "should" be used (for example, read the editorial in the August 1978 issue of S/V). However, the field of impulse noise enjoys no such advanced development. Present exposure limits that merely put a ceiling on the instantaneous pressure of pulses from firearms and devices such as explosive bolt drivers, or the impact noise developed by forging machines, thus ignoring their duration and spectral characteristics, are clearly incorrect. The present USA limit of 140 dB, for example, puts cap guns some 20 dB over the top.

ICBEN is composed of eight Teams that collectively cover the effects of noise (alone or in combination with other baneful influences) on hearing loss, communication, physiological and psychological function, task performance, sleep, and community attitude. Each Team is composed of up to 12 experts in the area concerned, no more than two of whom can be citizens of the same country.

The formal goals of ICBEN are to encourage international cooperation in the study of the biological effects of noise, to promote communication among research scientists, governmental agencies, industrial workers and managers, and others regarding these effects, and to stimulate the exchange and dissemination of information about them. The informal (original) goal is to secure funding for quinquennial Congresses. At these Congresses, each Team reviews the progress, if any, in the past 5 years, gives short synopses of current activity, and discusses the direction that, in their opinion, research should take in the immediate future.

Impulse noise is not, of course, the only problem in the area of noise and hearing. However, it was apparent that little progress has been made in some directions since 1973, when the previous Congress was held in Dubrovnik, Yugoslavia. For example, no breakthroughs seem to have occurred in attempts to predict susceptibility to noise-induced hearing loss or to differentiate hearing losses caused by long-term exposure to steady noise from that caused by acoustic trauma, disease, or aging. Nor has a magic elixir been found that will reduce auditory damage, although encouraging results were reported by R. Bobbin of Kresge South (New Orleans) using AOAA (amino oxyacetic acid) and by Dave Lipscomb with inhaled carbogen (95% oxygen, 5% carbon dioxide).

The lack of correlation, in experimental animals, between the condition of hair cells and the behavioral threshold continues to puzzle all North American investigators. This has led to a search for measures of auditory ability that are more sensitive to slight physiological damage than the pure-tone threshold, a search that is, unfortunately, thus far unsuccessful.

In his review of the Hearing Team presentations, Ross Coles (ISVR, Southampton, UK) stressed the need for studies (1) to test the validity of using only A-weighting to rate noise hazard, (2) to determine the interaction between hearing loss, ear protectors, and response to warning signals, and finally, in agreement with a recommendation of mine, (3) to determine the true incidence of hearing loss in random samples of the population of a country accompanied by a thorough history-taking, so that, by eliminating from this sample all persons with significant industrial noise exposure, one can obtain an accurate estimate of the amount of hearing damage caused by non-occupational noises and by diseases, drugs and industrial chemicals. Coles also discussed the practical problem of getting workers to wear ear protection. A dramatic increase in their use was produced by a program that involved asking workers to wear protectors on one day and not on another, measuring the auditory fatigue on both days, and then showing each member the effect on his own thresholds.

A persistent theme that appeared in several Team presentations was the possible link between noise exposure and hypertension, a relation suggested by the early research of the Chairman of ICBEN and the organizer of the Congress, Gerd Jansen (Mainz, Germany). Paul Knipschild (Amsterdam) reports a greater incidence of hypertension in high-noise (65-70 dBA) than in low noise (55 dBA) areas, measured directly in one study, and inferred from sales of drugs for hypertension in another, and Sheldon Cohen (Oregon) found higher blood pressure in school children near Los Angeles International Airport. On the other hand, Alex Cohen (NIOSH, Cincinnati) found no relation between Hearing Levels and

hypertension per se in workers in a paper-making plant. It is clear that work in this area should be expanded.

The Sleep, Performance and Noise in Wildlife Teams are still struggling mightily to show any long-term or indeed persistent effects at all. For example, gradual adaptation of responses to noise during sleep was found by George Thiessen in Ottawa, Canada, but not by Muzet and Ehrhart in Strasbourg, France. Furthermore, Vallet and Gagneaux (Bron Cedex, France) showed that results obtained in the laboratory are not always confirmed when responses of test subjects are recorded in their own houses. Although the majority of ICBEN members seem still convinced that noise must have some effect on sleep and task performance, the degree of this is obviously still unclear.

By contrast, the Community Reaction Team has no trouble showing that annoyance is engendered by noise. Unfortunately, the degree of annoyance, although to some extent dependent on a host of know factors, is still so unpredictable in the specific individual that only group tendencies can be relied on. Indeed, measurement of annoyance itself is such a difficult problem that most investigators in the Congress were content to merely divide respondents into two groups—the "highly annoyed" and the remainder. In my opinion, the most interesting development in this area was the demonstration by J. B. Ollerhead (Loughborough, UK) that the 10-dB nighttime "penalty" used in the USA for calculating annoyingness is probably far off the mark. Instead of a 10-dB penalty for noises occurring between

10 p.m. and 7 a.m., as calculation of our Ldn dictates, his study suggests that we should attach only about a 5-dB penalty to noises between 6 p.m. and midnight or 1 a.m.—the TV-viewing hours (among other activities)—with the rest of the night left unpenalized.

As there were no parallel sessions, business took so much of our time—usually at least 10 hours a day (IRS take notice)—that the only social event was a banquet-dance on the last night of the Congress. However, this typical Schwarzwald festivity made up in quality for the lack of quantity, and proved that Munich is not the only place to find Gemutlichkeit during the last week in September.

At the business meeting of ICBEN, the Team Chairmen and Co-Chairmen adopted a formal constitution and elected new officers for the next 5 years. Jerry Tobias, member of a well-known piano duo, was elected Chairman; Henning von Gierke will be Co-Chairman, and Jan van den Eijk (Netherlands) the Secretary-Treasurer. The proceedings of the Congress, to be edited by Tobias, Jansen and myself, will appear as an ASHA monograph by, we hope, next spring.

The next Congress is planned for 1983, perhaps in Turin, Italy, or somewhere in France. It is hoped that firm plans can be made within a couple of years, so that perhaps next time we may be able to secure premission from Russian authorities to let some of their citizens out the country for a week; although we had invited several Russian scientists, and they had accepted, apparently a year (actually, well over a year) is not enough time to get through the Soviet red tape.

Bells Are Ringing . . .

Continued from page 6

developed specifically for tinnitus. Biofeedback has also been reported to be successful in treating tinnitus.

Q.: Why would patients accept masking? Why would patients object to their internal sound and yet accept an external sound?

A.: To many patients and to many physicians it does sound like a weird state of affairs. I have listed three reasons why I thought masking was indeed quite acceptable to the patient. And they were, first, that it was an external sound an uninteresting sound and we can routinely shut off external sounds when they are not interesting to us. And if we can cover up a patient's tinnitus with an external sound he will automatically ignore his tinnitus, something that is very hard to do normally, such as in severe tinnitus. Secondly, most of the tinnitus is in high pitched tones, shrill, piercing, screeching high pitched sounds—acoustically that is quite unacceptable. We cover that up with a band of noise and it is much more acceptable, much more pleasant and easier to take than that piercing tone. Then the third reason, which is psychological, is that for the first time it gives the patient an element of control over his tinnitus. By adjusting the balance of the masking sound they have control over their tinnitus which they have never had before.

A recommended bibliography on tinnitus is as follows:

1. Feldman, H. Homolateral and contralateral masking of tinnitus by noise bands and by pure tones. *Audiology* 10:138-144, 1971.

2. Fowler, E. P. Head noises in normal and in disordered ears: significance measurement, differentiation and treatment. *Arch. Otolaryngol.* 39:498-503, 1944.

3. Grossan, Murray. Treatment of subjective tinnitus with biofeedback. *Ear, Nose & Throat Journal* 55:22-30, October 1976.

4. Josephson, E. M. A method of measurement of tinnitus aurium. *Arch. Otolaryngol.* 14:282-283, 1931.

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Vernon and Johnson at the Kresge Labs.

THE SECOND SYMPOSIUM ON THE APPLICATION OF SIGNAL PROCESSING
CONCEPTS TO HEARING AIDS

March 23-24, 1979

SPONSORED BY: Pennsylvania State University, Speech Pathology and Audiology Dept.

CHAIRMAN: Paul Yanick Jr., M.A.

THEME: Rehabilitation of Sensorineural Hearing Loss

SPEAKERS:

This symposium is intended for all members of the hearing health care team concerned with improvement of current hearing aid fitting and post-fitting procedures. Practical application of the latest research on hearing aids and rehabilitation will be emphasized. Topics include: post-fitting counseling and assessment of communicative function, micro-processor based signal processing, speech spectrum relationships to the impaired ear, critical band

measurements for use in hearing aid fittings, binaural hearing, metabolic and allergic dysfunction in sensorineural hearing loss, practical application of the latest research at C.I.D., new circuit design concepts for future hearing aids, and electrostimulation of the cochlea as a non-invasive approach to rehabilitate sensorineural hearing loss.

Geary A. McCandless, Ph.D.
Gerald Studebaker, Ph.D.
Paul Micheal, Ph.D.
Gordon Bienvenue, Ph.D.
Harris Drucker, Ph.D.

Joseph P. Millin, Ph.D.
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Steven W. Vargo, Ph.D.
Bruce A. Siegenthaler, Ph.D.

Margaret W. Skinner, Ph.D.
James Martin, Ph.D.
David P. Pascoe, Ph.D.

FOR FURTHER INFORMATION CONTACT:

Pennsylvania State University
Kent R. Addis, Conference Coordinator
410 J. Orvis Keller Bldg.
University Park, Pa. 16802

New Institute Hearing Help Booklets Offer Hope to Nerve Deafness/Tinnitus Sufferers

WASHINGTON, D.C., (October 9, 1978) "Nerve Deafness and You" by Gale Gardner, M.D., and "Tinnitus, or Head Noises" by Norman Lee Barr Jr., M.D., F.A.C.S., new booklets now available from the Better Hearing Institute, help dispel myths and provide much needed information

on two major hearing disorders affecting more than 40 million Americans.

Sponsored by a special supplemental grant from Knowles Electronics, Inc., the attractive, and easy-to-read booklets should be very helpful to members of the hearing health

team in their public information efforts. Both brochures can be used by otologists, otolaryngologists, general practitioners, hearing aid dispensers, audiologists, schools, service clubs, and others for distribution in waiting rooms, mailings, at speaking presentations, in displays, and so forth.

"Nerve Deafness and You" describes the disorder, the hearing process, warning signs, corrects common myths and misinformation, and explains what to do and where to go for help.

"Tinnitus, or Head Noises" covers the magnitude of the problem, causes, and treatment, including medication, hearing aids, and tinnitus masking devices.

"BHI" feels these new booklets—the first in a series of brochures to be developed by the Institute—greatly enhance our efforts to inform the hearing impaired and others about hearing disabilities and what to do about them," said BHI Director Joseph Rizzo. "Topics currently underway," he added, "include the hearing aid, conductive disorders, noise-induced hearing loss, and prevention."

"Nerve Deafness and You" and "Tinnitus, or Head Noises" are available for \$10 per 100 from the Better Hearing Institute, 1430 K Street, N.W., Suite 600, Washington, D.C. 20005. (See order form). Single copies are free on request.

The Better Hearing Institute is a nonprofit educational organization dedicated to informing the hearing impaired, their families and friends, and the general public about hearing loss and hearing help.

Continued from page 7

Gerber and his colleagues at the University of California at Santa Barbara have written a text on infant audiometry in which they attempt to provide a comprehensive review of the dilemmas we all face in defining, identifying, and alleviating the effects of hearing loss in children. This team should be acknowledged for assuming such an overwhelming undertaking. As stated in Gerber's own words "...at first I had thought to write the entire book myself. ... then I decided to solicit contributors and looked about for the most qualified people. ... I am very proud that these people turn out to be my own colleagues at the UCSB Speech and Hearing Center."

There are 16 chapters in this book beginning with 4 chapters covering epidemiology and pathology of hearing loss, high risk conditions, and auditory development. The next 7 chapters deal with behavioral and physiological tests of auditory function. The remaining 5 chapters discuss the consequences of hearing impairment in such areas as speech, language, social, and emotional development.

The topic of physiological testing techniques is very well covered in this text, particularly the chapter on Electroencephalic Tests of Hearing written by Maurice Mendel, Ph.D. The chapter on behavioral testing techniques seems to be lacking in information and specifics. The book emphasizes physiologic measures in the area of testing children, when in fact it is behavioral techniques and not physiologic measures that are most often used clinically. It would have been valuable to include more information on how various behavioral techniques are utilized in practical application.

The chapters dealing with the consequence of hearing loss add a great deal to this text in terms of gaining a greater understanding and compassion for what the implications of hearing loss really are.

The well-done photograph on the first page of the book shows a

happy, smiling infant undergoing brain stem evoked response audiometry (but the leads aren't connected...). However, many of the other photographs throughout the text are poorly reproduced, and provide little additional information e.g., the photograph on page 91 showing a duck sitting on a speaker.

This text will serve as a source of obtaining an overview of hearing in children. However, the audiologist will need to supplement this text with other more complete writings on the subject.

Staab, W. J. Hearing Aid Handbook. Blue Ridge, Pa.: TAB Books, (1978), 327 pp.

This "easy to read" handbook provides a description of hearing aids in general, hearing aid components and their functions, methods of measuring and expressing hearing aid performance, ear mold coupling systems and their effects, servicing and maintenance of hearing aids, special amplification devices, as well as a chapter on "the decibel".

The book provides a complete review of the current status of amplification as it applies to hearing aids. The diagrams, tables and pictures are numerous, easy to read and supportive of the text.

The 334 page book is ideal for the library of anyone dealing with hearing aids. The text goes into more detail concerning hearing aids than what is usually covered by most formal training programs, information pertinent to the proper handling of hearing aids and their accessories. The author points out that in no way is the text intended to serve as a guide to the application of a hearing aid to specific pathological conditions or hearing losses. Rather, the purpose of the book is "to provide information about the contemporary hearing aid for the individual who has more than a passing interest in the electrical amplifier as it is used to serve the hearing impaired population".

"IV INTERNATIONAL SYMPOSIUM ON ACOUSTIC IMPEDANCE MEASUREMENTS"

Lisbon, Portugal, September 26-27-28 / 1979
(Calouste Gulbenkian Foundation)

The topics of the Symposium will include:

- 1) Impedance screening in children
- 2) Tympanometry
- 3) Acoustic and Non-acoustic reflexes
- 4) Eustachian Tube evaluations
- 5) Other applications of acoustic impedance measurements

The Symposium will be divided into:

-Lectures	40 minutes
-Exposures	20 minutes
-Free papers	10 minutes
-Round tables	

The following invited guests will be present:

J Barajas (Spain), DN Brooks (UK), VonCamp (Belgium), Djupesland (Norway), Alan Fedlman (USA), G Frey (France), M Gersdorff (Belgium), J Holmquist (Sweden), Niemeyer (West Germany), G. Linden (Sweden), A G Moller (Sweden), J L Northern (USA), T Marulo, A Bosatra (Italy), T Brask (Denmark), and I Eliachar (Israel), F Olaizola, Alaminos (Spain), Orozimbo Costa, Otacilio F, D Menon (Brasil).

Languages: the working languages will be: Portuguese, English, Spanish and French.

For More Information Write:
Organizing Secretariat
Clinica Fono-Audiologica
Rua Conde Redondo-119-30
LISBOA - Portugal

Calendar of Events

OCTOBER

AUDITORY EVOKED RESPONSE WORKSHOP AND SYMPOSIUM, San Diego, California.

INSTITUTE OF ACOUSTICS SPEECH GROUP: "SPEECH SYNTHESIS", University of Kelle, Staffordsire, England. Contact: J.N. Holmes, The Joint Speech Research Unit, Block 2, Govt. Bldgs., Eastcote Rd., Middlesex, HA4 8BS, England.

Symposium on Aural Rehabilitation for the Elderly, North Texas State University. Contact: School of Community Service, P.O. Box 5344, N. T. Station, Denton, Texas 76203

AN INTRODUCTION TO ELECTROPHYSIOLOGIC ASSESSMENT OF THE AUDITORY SYSTEM, Cleveland Clinic Educational Fondation. Contact: Richard H. Nodar, Section of Communicative Disorders, Cleveland Clinic, 9500 Euclid Ave., Cleveland, Ohio 44106.

NATIONAL INSTITUTE ON EARLY EDUCATION, "EARLY INTERVENTION", Contact: Mary Ambroe, Coordinator, National Institute on Early Education, St. Paul Public Schools, Department of Special Education, 360 Colborne Street, St. Paul, Minnesota 55102.

NOVEMBER

AUDITORY EVOKED POTENTIALS WORKSHOP, Houston. Write to: Alfred C. Coats, M.D., Cochlear Function Lab., The Neurosensory Center of Houston, 6516 Bertner Avenue, Houston, Texas 77030.

XVI PAN-AMERICAN CONGRESS OF OTORHINOBRONCHIOSOPHOLOGICAL, Acapulco, Mexico.

CONFERENCE ON "CLINICAL APPLICATION OF AUDITORY EVOKED POTENTIALS", University of Cincinnati, Ohio.

XIV INTERNATIONAL CONGRESS OF AUDIOLOGY, Acapulco Cultural and Convention Center, Acapulco. Contact: Organizing Secretariat, Instituto Mexicano de la

Audicion y el Lengua je. Progreso 141-A, Escando Mexico 18, D.F.-Mexico.

AMERICAN AUDITORY SOCIETY ANNUAL MEETING, San Francisco. (Program on pg. 9)

AMERICAN SPEECH AND HEARING ASSOCIATION ANNUAL CONVENTION, San Francisco.

ACOUSTICAL SOCIETY OF AMERICA FALL MEETING, Honolulu, Hawaii.

DECEMBER

SOCIETY FOR EAR, NOSE AND THROAT ADVANCES IN CHILDREN ANNUAL MEETING, Santa Barbara, California. Contact: Dr. Robin Cotton, Children's Hospital Medical Center, Jelland and Bethesda Avenues, Cincinnati, Ohio 45229.

36TH ANNUAL MEETING OF THE AMERICAN CLEFT PALATE ASSOCIATION, San Diego, California.

MARCH

XII COLORADO OTOTOLOGY-AUDIOLOGY WORKSHOP, The Mark at Vail. Contact: Colorado Otology-Audiology Workshop Committee, Box B210, 4200 E. 9th Avenue, Denver, CO 80262.

4TH ASIA-OCEANIA CONGRESS OF OTO-RHINO-LARYNGOLOGY, Sydney, Australia.

APRIL

2ND INTERNATIONAL SYMPOSIUM ON OTITI MEDIA WITH EFFUSION, Columbus, Ohio.

INTERNATIONAL SYMPOSIUM ON THE HEARING IMPAIRED CHILD, University of Cincinnati Medical Center.

Contact: Dr. Allan B. Seid, Children's Hospital Medical Center, Elland and Bethesda Avenues, Cincinnati, Ohio 45229.

JUNE

8TH WORLD CONGRESS OF THE WORLD FEDERATION OF THE DEAF, Varna, Bulgaria. Contact: The Bulgarian Organizing Committee, 3, General V. Zaimov Blvd., Sofia, Bulgaria 1527.

JULY

INTERNATIONAL WORKSHOP ON THE "AT RISK" INFANT, Tel Aviv. Write to: International Workshop, P.O.B. 16271, Tel Aviv, Israel.

AUGUST

NINTH INTERNATIONAL CONGRESS OF PHONETIC SCIENCES, Copenhagen, Denmark.

NOVEMBER

AMERICAN SPEECH AND HEARING ASSOCIATION, Atlanta, Georgia.

ACOUSTICAL SOCIETY OF AMERICA FALL MEETING, Salt Lake City, Utah.

1980

JUNE

14TH WORLD CONGRESS OF REHABILITATION INTERNATIONAL, Winnipeg, Canada.

AUGUST

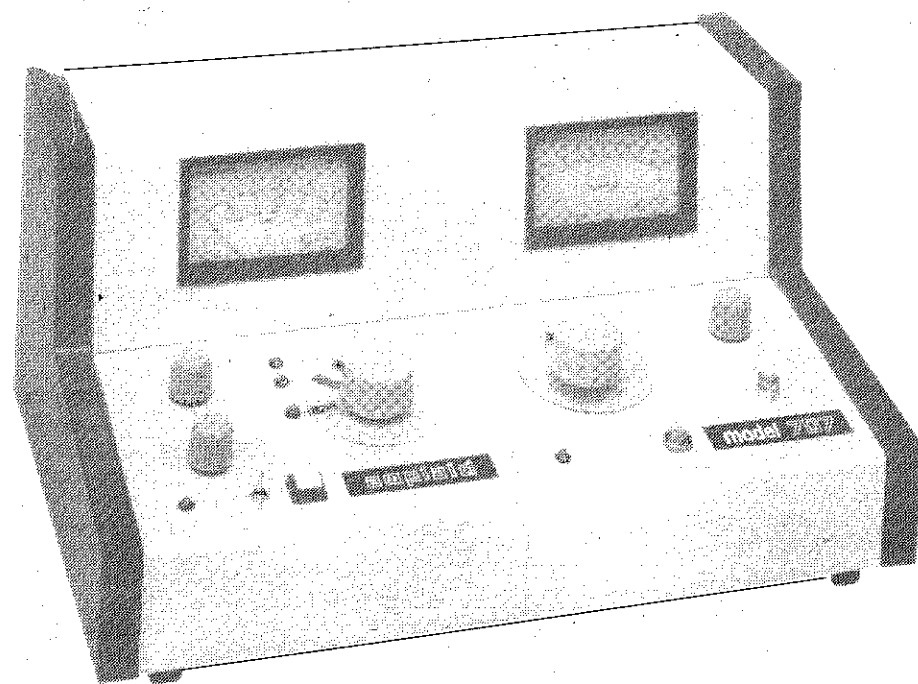
INTERNATIONAL CONGRESS ON EDUCATION OF THE DEAF, Hamburg, Germany. Write to: German Convention Service, Kongressorganisation, Walter Stohrer OHG, Hohe Bleichen 13, D-2000, Hamburg 36.

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Past President
Glorig Receives
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Research Award
page 15

Abstracts of AAS papers
presented at San Francisco
and of SENTAC papers in
Santa Barbara.
Pages 4-13

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CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 4, No. 1

January, 1979

A Feast of Auditory Science Features Annual Meeting

Program Chairpersons John Sinclair and Terry Grekin presented a rare offering of scientific papers at the annual AAS meeting in San Francisco. Members agreed that it was the most stimulating program of the Society's 5-year existence. There was something for everyone in the recondite of offerings. And Sinclair, as he introduced the speakers, added a lively wit that gave a special flavor to the meeting. John and Terry are to be highly commended for their excellent conducting of the entire program. Abstracts of many of the papers are to be found in this

issue and others will appear in later issues of Corti's Organ. A number will be published in full length in the *Journal of the American Auditory Society*.

President Blair Simmons presided at the brief business meeting of the Society. The minutes of the meeting are on page 6.

At the conclusion of the business meeting Evelyn Inn of Hawaii presented President Simmons with a Hawaiian lei and the traditional greeting.

President Simmons Leaves Office

As of this month President Blair Simmons turns the reins of office over to Sam Lybarger. He joins a distinguished, if small, group of ex-prexies: Aram Glorig, Dix Ward and Geary McCandless. At this time Corti's Organ would like to thank Blair for his responsive and responsible handling of the office. Whenever he was requested to submit or report an article, or to respond to some apparent need in the organization, he did so promptly and effectively, with sensitivity, judgment and humor. It is rare in a man with such demands on his time to give complete attention to this type of organization, but perhaps he is just illustrating the 2nd corollary of Murphy's Law: "If you want anything done, ask the busiest man to do it".

So we are going to ask Blair again and again, to contribute his talents to this Society. That's the way to get things done.

Reger Charms New Generation At AAS Meeting



Scott Reger

Scott Reger, who was a Complete Audiologist long before many of his listeners were born, intrigued an audience of younger scientists with fascinating tales of the early days of audiology. In accepting the Carhart Memorial Award at the AAS annual meeting in San Francisco he gave a truly memorable address to the more than 200 members in attendance. He disclaimed having been the First Audiologist in the U.S., despite the fact that his writings appeared in the early 30's. Cordia Bunch, he insists was a true audiologist even before Reger began to practice.

President Blair Simmons introduced Scott Reger with amusing sidelights of Reger's life. A picture of Reger's office showed an enormous number of manuscripts piled upon each other, none of which was ever published. In those manuscripts probably reposed more knowledge than any single audiologist now can boast. Simmons also mentioned Reger's great love for classical music, resulting in his wiring his large home so that high fidelity stereo reception could be obtained in any room in

(Continued on page 2)

Sam Lybarger, New President Of AAS



Sam Lybarger

In January the new president of AAS, Sam Lybarger, takes office for the year of 1979. Lybarger has devoted a lifetime to the hearing aid industry, and is highly respected in acoustic scientific circles for his contributions to the raising of standards in the auditory prosthetic field. A modest, low-profile type of person, Lybarger is known as one of the hardest working members of any committee or council he has served on. AAS has benefited from his advice and guidance on the Executive Committee and from his thoughtful suggestions in compiling the new By-Laws of the organization. The membership should know more about this fine human being who is our new president. A review of his accomplishments shows that he was a real pioneer in the field of hearing aid engineering, having originated innovative designs that are now considered standard features for hearing aids.

Sam Lybarger was graduated from Carnegie-Mellon University with a B.S. in Physics. A native of Pennsylvania, he had in grade school become interested in electronics through the crystal radio, precursor of the vacuum tube radio. By high school he was a ham radio operator, presaging his life-time preoccupation with electronics.

During two summers of his college years he worked in the Radio Receiver Labs of Westinghouse. The last summer he was employed part time by E.A. Myers and Sons, the

company which later became the Radioear Corporation. His association with this company was to continue for 50 years, so he celebrates in February 1979 a golden anniversary with Radioear. He was permanently employed there following his graduation, chiefly in hearing aid engineering and design.

Lybarger holds 22 patents which were awarded on a master hearing aid design, dated 1938. This certainly pre-dates any other Master Hearing Aids in the industry. In 1946 he was awarded a patent for a magnetic microphone, and produced commercially the first hearing aid with a magnetic mike. In that same aid was the first telephone pick-up in a wearable hearing aid, pre-dating by eight years the use of telephone pick-ups by other makes of aids.

For many years Lybarger served Radioear as its president and retired in 1973 from that post. Since then he has been active in consulting work related to the field. His professional organizations, in which he is still busily participating, include:

Tau Beta Pi, honorary engineering fraternity
Acoustical Society of America—since 1932
International Audiology Society
Institute of Electrical & Electronic Engineering (Senior Member)
Audio-Engineering Society: Fellow
American Auditory Society:

(Continued on page 2)



Blair Simmons

Minutes
of AAS Executive
Committee Meeting
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CORTI'S ORGAN is a quarterly publication of the American Auditory Society, printed in Dallas, Texas.

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Editorial...

DE REI ERRATA

An informal house organ like Corti's is bound to come up with more printing errors than are found in more formal journals. Published off the top of the heads of its two editors, and bounced back and forth between Denver and Dallas, a great many typos and other errata are committed in the process. But there are some that can be ascribed only to human error. Some people call it carelessness.

One such error is the misprinting of the dates of two important meetings in the *Calendar of Events*. The 2nd International Symposium on Otitis Media with Effusion, Columbus, Ohio and the International Symposium on the Hearing Impaired Child, are on May 9-11 and May 17-19, respectively. Not in April, as shown in the *Calendar*. This error can be ascribed only to the growing senility of the senior editor, who is at some indeterminate point between the age of consent and the age of decay. At this stage of life, details

Reger Charms . . .

(Continued from page 1)

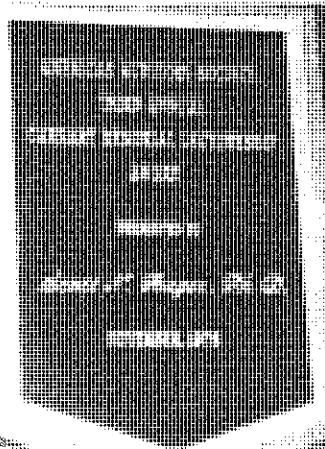
the house. Reger received resounding ovations both before and after his lecture.

Reger described the beginnings of audiology in the laboratories of the University of Iowa. There Reger worked with Seashore, one of the great early scientists concerned with sensory phenomena. In that laboratory the recruitment phenomenon was first observed and recorded, even though Fowler was the first to report it in the medical literature in 1938. And Reger also gave his version of the origins of the term "Audiology". Raymond Carhart figured largely in those origins, and Reger spoke at length of Carhart's great contributions to the field. But it is impossible to reproduce Reger's classical accounts of those early days. Readers will have to await the publication of the entire address in a forthcoming issue of the *Journal of the American Auditory Society*.

Following the address President Simmons presented Reger with the Carhart Award:

the plaque, shown here, and a \$500.00 check. The Society members agreed that it was a great honor to have Reger as their featured speaker and awardee.

Following the day's program an informal dinner party was held at one of the Chinese restaurants so that members could become better acquainted with this distinguished scientist and delightful raconteur.



Carhart Plaque

Letter from England

By Imre Friedmann

Dear Editors,

I have begun writing this letter in Israel but I have now returned from that beautiful and sorely tried country. Memories abound of wonderful Jerusalem always in the focal point of events affecting the entire world. Whilst the leaders argue, the men in the street of various races and nationalities seem to be getting on well together. Notably they sit or stand side by side in the usually overcrowded buses racing through the narrow streets of Jerusalem or on the motorways. These buses seem to have an unlimited capacity and an apparently unending stream of passengers can be absorbed. I have been travelling on one of these horrors every morning and we raced to the famous Hadassah Medical School where I have worked in the very busy and friendly Department of Pathology of my good friend Sam Laufer. He was the President of the recent 12th Congress of the International Academy of Pathology held in Jerusalem in September 1978. A notable and very successful event

are not attended to with the same meticulous devotion as they were in the hot flush of youth.

But the junior editor, full-blooded and able-bodied, pulled off the real boner-of-the-year. Following an excellent report by Jim Kreul of a serious and important research project in process, this editor placed a filler stating "A research project that is not worth doing at all is not worth doing well". Well, Jim, we apologize for this unfortunate juxtaposition. We just didn't see it, in our haste to get the issue to its final printing.

But we assure you that each issue of this bloomin' paper is a labor of love. We enjoy every inch of it. Even the Errata.

—MPD/RJR

which has attracted world-wide attention.

I have found much interesting material on the pathology of the ear and the sections confirmed my own observations on the principal pathological features of otitis media and its complications. The Department of Otolaryngology has been my other home and its staff under Professor Feinmesser has joined the pathologists at my lectures on the 'Pathology of the Ear and Nose'. I have much enjoyed. Perhaps so has the audience because they have most kindly sent me a beautiful book by Chagall on his famous Jerusalem windows. These are attracting thousands of tourists to the Synagogue of the Hadassah Medical Centre with its twelve stained-glass windows designed by the great Chagall. Symbolizing the twelve ancient tribes of Israel in glorious colours, they are among the most inspiring and beautiful examples of 20th century art.

It was a privilege meeting with your old friend, the renowned audiologist, Lilly Tell whose work on deaf children is so well known.

The visitor is attracted by the sad memorial of the Nazi Holocaust, the Yad Vashem, and the survivor cannot rid himself entirely of a sense of guilt. This melancholic place is separated from another, the Military Cemetery, by the peaceful and beautiful Herzl Park where lovely Israeli children have been playing in the brilliant sunshine oblivious of the dark political shadows.

The prevailing mood has remained one of hope and fear and this writer could not help remembering the Munich crisis in 1938 when another small country 'nobody knew or wanted to know about' had occupied the stage of history. Perhaps Israel will be more fortunate!

Sam Lybarger . . .

(Continued from page 1)

Past Executive Committee Member and President, 1979

Lybarger has been one of the most active contributors to the Audiometric Standard field and to the Hearing Aid Industry, in the capacity of presiding officer and committee member in various groups. He was President of the Hearing Aid Industry Conference (HAIC) from 1967 to 1969 and of the Hearing Aid Foundation from 1975 to 1977.

His greatest and most effective scientific contributions have been in the area of standards. Since 1945 he has been active in establishing both audiometric and hearing aid standards. He helped to write the first hearing aid measurement standards in 1945, as a member of the Standards Committee of the American Hearing Aid Association (the first trade association). This standard was the first of its kind in the world.

In 1951 Lybarger became a member of the American Standards Association's writing group that was responsible for establishing the first audiometric standard, the Z-24.5. Since then he has chaired all the writing groups that have produced this country's hearing aid standards.

Retirement from the presidency of Radioear seems to mean even more activity for Lybarger in scientific groups. He is presently chairman of two working groups of the American National Standards Institute (ANSI): Working Group S3-48 and

Working Group S3-43. The latter is concerned with the calibration of bone vibrators. He was appointed to these working groups as a member of ANSI's Committee on Bioacoustics, S-3.

Lybarger is also presently an active member of Working Group 6 of the International Electrotechnical Institute's Technical Committee 29. This group is concerned with hearing aid standards.

Among Lybarger's over 25 publications are chapters in Katz's *Handbook in Audiology*, in Donnelly's *Interpretation of Hearing Aid Technology*, and in Frisina's *Bicentennial Monograph on Hearing Impairments*. Most of his articles, in the technical journals here and abroad, are concerned with Hearing Aid Measurement, Ear Mold Design, Hearing Aid Standards, and Bone Conduction measurements. In addition, he has given countless talks on these subjects before various organizations.

Lybarger lives in McMurray, Pennsylvania, which is 16 miles SW of Pittsburgh. He is married to the former Alberta Myers with whom he has a son, Edward, who has a retail hearing aid sales offices in Pittsburgh. Edward works on sales exclusively for audiological clinics and medical schools.

Hobbies for Lybarger include his greatest love, hearing aids, and as a close second, photography.

Some news from England. The Hearing Research Institute of the Medical Research Council is alive and active as so well described by its Director, Dr. M.P. Haggard in the *Journal of Laryngology* who ends his report on a philosophical note accepting that 'the delays between inception of planning in

1976 to effectiveness in 1979-80 have conferred benefits as well as frustrations'.

Finally back to you. Wintersport and Otolary seem to go hand in hand. Your pioneering symposia in Vail seem to have been copied by others in the USA and in Canada. How I envy you all.

Corti's now has Advertising Manager

Terry Stark, an attractive audiologist from the Cajun state of Louisiana, has accepted the post of Advertising Manager of Corti's Organ. Terry is very enthused about her new responsibilities and has started a

campaign to increase advertising in the publication. So, you potential advertisers, don't be surprised if you hear from her soon. Her address is: Terry Stark, 2121 Line Avenue, Shreveport, La. 71104.



Terry Stark

New Journals Proliferate

Three major journals are appearing almost simultaneously in the auditory spectrum: An American Journal of Otolaryngology, an American Journal of Otolaryngology and an International Journal of Pediatric Otorhinolaryngology. Each in its way has some unique aspects that fill voids in the otolaryngology field. As each will include a great many articles relevant to the auditory field, it is important for AAS members to be acquainted with the purposes and editorial policies of these new publications.

The International Journal of Pediatric Otorhinolaryngology. Editor-in-Chief, Professor Robert J. Ruben, The Albert Einstein College of Medicine.

Aims & Purposes

There is a need to bring together the many different contributions in the field of pediatric otorhinolaryngology. At the present time, the scientific and clinical reports concerning infants and children are to be found in a large number of different journals in different disciplines. As a consequence of this, much of the information concerning otorhinolaryngological disorders of infants and children is either delayed in its application or, in many instances, is not known to those who can best utilize the new findings in the delivery of health care to infants and children. Furthermore, there is a special need for a publication of advances in the area of pediatric otorhinolaryngology. Many of the habilitative medical and surgical interventions will affect the child throughout his or her entire life. What is done for the infant or child, especially in the area of communicative disorders, will have far-reaching and substantive influence throughout the course of the person's life in terms of linguistic and cognitive development. The long-term effects of interventions is also true of other areas, e.g. in laryngology. There will be, by means of the International Journal of Pediatric Otorhinolaryngology, a way to make readily available the significant advances in the field so that their utilization may come about without delay by all those involved in pediatric otorhinolaryngology.

The purpose of the International Journal of Pediatric Otorhinolaryngology is to concentrate and disseminate information concerning prevention, cure and care of otorhinolaryngological disorders in infants and children.

These disorders include those which are in whole or part due to developmental, degenerative, infectious, neoplastic, traumatic, social, psychiatric, and economic causes. The Journal will publish the clinical and basic contributions in all of the areas of pediatric otorhinolaryngology. This includes medical and surgical otology, bronchoesophology, medical and surgical laryngology, medical and surgical laryngology, medical and surgical diseases of the head and neck, and diseases of communication, including voice, speech,

and language disorders. All original contributions will be reviewed by recognized national authorities competent in the area. The editorial board will then act upon the reviewer's recommendations. From time to time there will be contributions which will be invited by the editorial board. These contributions will bring together information which is of importance to the pediatric otorhinolaryngological community, so that they may better carry out their work in the creation and application of new knowledge to the delivery of health care of otorhinolaryngology in infants and children.

Editorial Policies: The International Journal of Pediatric Otorhinolaryngology actively encourages contributions from the many disciplines concerned in the area. The editorial policy of the Journal will be such as to provide useful information for all the areas of pediatric otorhinolaryngology which include general pediatrics, neonatology, community medicine, otorhinolaryngology, public health, audiology, speech, linguistics, developmental pediatrics and pediatric neurology. Individuals in all of these areas are invited to submit articles and/or suggestions to the Editorial Board of the Journal. All contributions and correspondence should be sent to the Editor in Chief, Professor Robert J. Ruben, Professor and Chairman, Department of Otorhinolaryngology, The Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, New York 10461.

The American Journal of Otolaryngology

Ed: Michael Glasscock, M.D.
Nashville, Tennessee

Aims & Purposes:

This journal proposes to be clinically oriented in all its aspects. It will be aimed at the clinical otologist, audiologist, neurotologist, and neurosurgeon. Because of its clinical nature, scientific papers will be accepted only as they apply to clinical practice.

The Journal will be published quarterly in January, April, June and October. Its Editor, Dr. Glasscock, has appointed an Editorial Board of 29 otologists, audiologists and neurosurgeons. Barbara Bryant will be the Managing Editor.

Editorial Policies:

This journal is unique in that it will have regular features in which either submitted papers or invited papers will be printed. These features include:

- A Forum Section: for readers to write in and give opinions about articles, or to discuss subjects that are controversial in the field.
- A Residents Forum: with submitted or invited articles by residents.
- A Section on Instrumentation.
- A Historical Section with an article on an early person or technique in the field.
- A Case Report in every issue.
- A Doctors' Discussion Section: this will feature a tape from the regular doctors' discus-

sions of the Otolaryngologic Medical Group. Clinical Cases are covered, with the attending physician's analyses.

Submittals should be sent to: American Journal of Otolaryngology, c/o Dr. Michael Glasscock, 1811 State Street, Nashville, Tennessee 37203.

American Journal of Otolaryngology. Editor-in-Chief, James B. Snow, Jr., M.D., University of Pennsylvania School of Medicine, Philadelphia. Publisher: W. B. Saunders.

Aims and Purposes: This Journal is aimed at otolaryngologists, audiologists, speech pathologists and other related disciplines. The Editorial Board is composed of Otolaryngologists, Audiologists, Speech Pathologists, Anatomists, Physiologists, Pathologists and Biochemists. Both basic and clinical research articles will be solicited, and its interest lies largely in research reports.

Editorial Policies: Original articles are solicited, and there are also other sections of note:

- Review articles on Basic Science or clinical topics on an invited basis.
- Abstracts of non-otolaryngologic literature.
- Book reviews of all relevant topics.
- Correspondence
- Editorials

Submittals of papers should go to: James B. Snow, M.D., 3400 Spruce Street, Philadelphia, Penn. 19104.

New England Medical Center Sponsors Workshop

The Communication Disorders Seminar Series sponsored by the Speech, Hearing and Language Center of New England Medical Center Hospital will be sponsoring two full-day workshops for audiologists.

On April 27, 1979, Laszlo Stein (Director, Siegel Institute, Michael Reese Hospital), will be presenting a workshop entitled "Brain Stem Evoked and Other Electrophysiological Tests" (workshop 9:00 a.m.-5:00 p.m.).

On June 22, 1979, Sanford

Gerber (Professor of Audiology, Coordinator of Speech and Hearing Science, University of California) will be presenting a workshop entitled "Infant Testing (Audiology)" (workshop 9:00 a.m.-5:00 p.m.).

For further information and registration material please contact Hubert Gerstman or Sharon Weiss-Kapp, New England Medical Center Hospital, Speech, Hearing and Language Center, 185 Harrison Avenue, Boston, MA 02111; (617) 956-5300.



Proceedings of past conferences are available

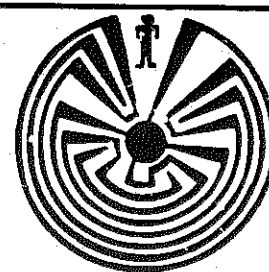
The Institute of Noise Control Engineering has sponsored a series of International Conferences on Noise Control (the INTER-NOISE series) and a series of National Conferences on specialized topics in noise control (the NOISE-CON series). To date, seven International Conferences (one each year, 1972-1978) and three National Conferences ('73, '75, '77) have been held. INTER-NOISE 79 will be held in Poland in September of 1979 and NOISE-CON 79, with the theme "Machinery Noise Control," will be held at Purdue University in

West Lafayette, Indiana on April 30-May 2 1979.

A limited number of copies of all of the Proceedings of past Conferences are still available, including the Proceedings of the International Conferences held overseas in Copenhagen in 1973, Sendai (Japan) in 1975 and Zurich in 1977.

Information on the contents of each volume, prices, airmail surcharges and other information may be obtained from the Institute of Noise Control Engineering, P. O. Box 3206, Arlington Branch, Poughkeepsie, NY 12603 U.S.A.

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WRITE TO: R. Ray Battin, Ph.D.
3931 Essex Lane, Suite F
Houston, Texas 77027

Clark's Law

Clarke's Law, (1) When a distinguished but elderly scientist states that something is possible he is almost certainly right. When he states that something is impossible, he is very probably wrong. (2) The only way to discover the limits of the possible is to go beyond them to the impossible. (3) Any sufficiently advanced technology is indistinguishable from magic. (Arthur C. Clarke, in "Profiles of the Future")

Abstracts Of AAS Papers

Clinical Applications of Brainstem Auditory Electric Response Testing at a Children's Hospital

Kenneth M. Grundfast
Thomas J. Fria
Victoria Bartlina
Diana Sabo,

Univ. of Pittsburgh School of Med.
Pittsburgh, Pa.

Experience with the use of the brainstem auditory electric response (BSER) test utilized for 239 children over a two year period has been reviewed. The children tested varied in age from one month to 18 years, but most were 6 months to 6 years of age.

The majority of children were referred for BSER testing by pediatricians, otolaryngologists, and audiologists. Comparatively smaller numbers were referred from neurologists, school personnel, and speech pathologists. About half of the children were referred for BSER testing because behavioral audiometric tests could not be done, or because equivocal behavioral results were obtained. These children, together with infants referred because history or physical findings indicated a significant risk for hearing loss, comprised 61% of the population tested. The remaining 39% of the children underwent BSER testing to aid in localizing a site of lesion; to document, quantify and serially assess sudden sensorineural loss; to determine the effect on hearing of an observed otitis media with effusion; or to detect a possible impairment in hearing associated with meningitis or autism.

In reviewing the total experience, it is difficult to make a bold and definitive statement about the usefulness of BSER testing at a hospital for children. Rarely did the BSER test, itself, establish a diagnosis that could not have been ascertained by some other method. Rather, the BSER provided supplemental, adjunctive and confirmatory types of information. The BSER test seemed to be most useful in the situations where it was most difficult to acquire any objective assessment of a child's hearing, CNS function, or both. Also, it appears that the BSER test has merit in the diagnosis of ill defined neurologic disorders.

That is, the combination of BSER testing with such other objective neurologic tests as manometric esophageal motility studies, visual evoked response tests, and electrical tests of balance and posture control may add to the relative significance of BSER findings. The collective analysis of findings on several different types of tests can give a picture of localized brainstem pathology, isolated auditory system involvement, or generalized central nervous system malfunction caused by delayed maturation or degeneration. In summary, when a multiplicity of concurrently occurring problems makes diagnosis and management difficult, then BSER testing may be able to provide needed information at least about the integrity of one sensory system and a portion of the central nervous system.

Threshold Prediction Based on Motor Reaction Time

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Mt. Pleasant, Mich.

Reaction time procedures have evolved from animal psychophysics where it is particularly difficult to obtain a specific behavioral response to a supra threshold stimulus that is independent of a reinforcement schedule or other variables. As is often the case, the experimental design influences the animal's report of the stimulus more so than the sensory input itself (Moody, 1970). Reaction time, however, tends to covary with stimulus changes without any specific training. Variations in response latency change in a lawful manner with respect to changes in stimulus intensity. The latency with which a simple motor response occurs in reaction to acoustic stimuli has been shown to be a valid index of the loudness of such signals. Application of this technique to generating equal loudness contours is well documented (Stebbins and Miller, 1964; Stebbins, 1966; Pfingst, Hienz, Kimm and Miller, 1975). The present investigation sought to predict auditory threshold sensitivity directly from the function relating signal intensity to reaction time.

Normal hearing subjects were seated in a sound treated booth wearing the standard audiometric earphone arrangement. They faced a display light panel and a telegraph key and were instructed to depress the key upon the onset of the "ready" light. Depression of the key initiated a random time interval followed by the onset of a tonal stimulus to the right earphone. A subject's task was to release the key as quickly as possible upon tone onset. RT then became a measure of the latency between tone onset and key release. Monaurally presented stimuli of the 250, 1000 and 4000 Hz were randomly presented in 5 dB steps between 100 and 0 dB HTL.

The reaction time functions obtained from 30 normal hearing adults displayed no frequency effect. The function is best described as a negatively accelerating hyperbolic curve where reaction time increased with decreasing signal intensity. The data can best be represented by an equation of the form: $Y = aXb + C$ where Y corresponds to signal intensity, X to reaction time, and C is a constant corresponding to asymptote. The traditional plot of latency and intensity is such that latency is scaled on the ordinate and intensity along the abscissa. If these axes are reversed it is found that the reaction time function reaches an asymptote as a hearing level corresponding to auditory threshold. The invariance of these functions across normal listeners prompted the question: Will the intensity-latency function likewise reach an asymptote at a hearing level corresponding to threshold in the hearing impaired ear? To test this, intensity-latency functions were obtained from 10 hearing-impaired adults (non conductives) at three test frequencies.

Based solely on intensity-latency functions, threshold sensitivity of the hearing impaired ears was then predicted. Threshold predictions varied by no more than + 10 dB from the value obtained audiometrically. The significance of these predictions lies not in the accuracy of the predictions per se but that the reaction time function displays an invariance across the normal hearing and most sensorineural ears that enables the prediction to be made. Obviously, the same threshold information could be obtained from a reaction time trial by noting simply the signal intensity where a listener ceases to respond.

Since the intensity-latency function is characterized by an asymptote corresponding to threshold it seemed logical that in an individual feigning a hearing loss the reaction time function would not reach an asymptote. Accordingly, it was found that the intensity-latency functions obtained from three malingerers did not asymptote, most likely because the listeners ceased to respond to signals beneath a certain intensity level; not however corresponding to auditory threshold. Similar functions were obtained from normal listeners instructed to "fake a hearing loss."

In the final analysis, the clinical application of this particular reaction time procedure appears limited. The elaborate instrumentation needed, the practice required of naive listeners and the availability of established tests for non-organic contribute to the procedure's restricted clinical utility.

As a research tool, latency-intensity functions continue to provide information about auditory processing. In the CMU laboratory we are attempting to apply reaction-time data to the prediction of the hearing loss using the same rationale that is used to predict hearing loss from the acoustic reflex; namely the differential loudness summation evidenced from noise and tonal stimuli. If reaction times are sensitive to noise-tone loudness differences we may be able to predict hearing loss from a comparison of reaction time differences between broad band noise and tones from normal hearing and sensorineural listeners.

Application of reaction time to the study of issues in speech perception, loudness growth, fatigue recovery processes, and recently to the study of monaural loudness adaptation suggest that the study of reaction time as it relates to acoustic events may have increased significance in the future.

Hearing Loss Following Meningitis

Ulf Rosenhall
Goteborg, Sweden

Purulent meningitis is one of the most common causes of acquired sensorineural hearing loss or deafness in childhood. A retrospective study was initiated at the department of Audiology, Sahlgren's hospital, Gothenburg, Sweden. In order to study this

type of meningitic hearing loss.

Our files were searched for all cases of meningitic hearing loss tested at our department since the 1950s. We found altogether 68 individuals, mostly children, with hearing loss which could be related to purulent meningitis (Fig. 1). About half of the patients, 35 in number, had suffered from Haemophilus influenzae meningitis. Twelve had had Meningococcal meningitis. In 1 case the etiological agent was Staphylococcus aureus and in 3 cases the bacterium was unknown.

Concerning the Haemophilus influenzae cases, severe hearing loss was rather common, but remnants of hearing were usually present. Total deafness affecting both ears was only seen in five cases.

Also, after Meningococcal meningitis, a majority of the cases had some residual hearing, and in some instances the hearing loss was only slight.

Pneumococcal meningitis, on the other hand, showed a gloomy picture: Out of 12 patients with hearing loss following this dreaded disease 9 were totally deaf.

A large number of cases altogether 21 patients, had unilateral hearing loss or deafness with normal hearing at the opposite ear.

Also, many patients with slight or moderate hearing loss in one ear, exhibited severe hearing loss or deafness at the other ear. Characteristically, many of the patients with auditory sequelae after meningitis have asymmetrical hearing loss with one better and one worse ear. The pure tone thresholds often have an irregular saw-toothed appearance. Sometimes there are quite considerable differences of the hearing at neighboring frequencies, and some cases show a steep hump of normal or nearly normal hearing at 2000 or 4000 Hz.

In eight cases the meningitic hearing loss improved in one ear or in both ears between one to nine months after the disease. In some instances this improvement was considerable, in others only moderate.

The opposite condition, deterioration of hearing, was also observed in some instances. In five cases such deterioration was noticed about six months after the disease. In most of these cases hearing loss was already observed soon after the disease, and this hearing loss eventually grew worse. One patient however, had normal or nearly normal hearing directly after Haemophilus influenzae meningitis. The hearing rather suddenly dropped about half a year after the disease, and the hearing has remained constant since then.

In five additional cases the hearing fluctuated in one ear or in both ears up to 2½ years after the disease. Three of these cases had had Meningococcal meningitis and two Haemophilus influenzae meningitis.

To conclude, all children who have had meningitis must be checked with audiograms after recovery. The hearing tests

should be repeated half a year and one year after the disease in order to reveal cases with delayed hearing loss.

If a hearing loss is observed soon after the disease, the patient must be controlled repeatedly with audiometric tests, and a hearing aid should not be fitted until the hearing has stabilized.

Tests That Never Should Have Been Ordered

Darrel L. Teter
Denver, Co.

The purpose of this paper is to alert the professions involved in providing tests of the auditory system as to problems the author sees in his daily activities as a working audiologist. The paper attempted to point out that in recent years the audiometric tests battery should have changed and should have allowed for more efficient evaluation of the patient with less time and less cost expenditures. This major change has been attributed to the influence of impedance audiometry and the amount of information it can yield relative to conductive components, cochlear hearing loss, and retrocochlear hearing loss. The author attempted to point out that we have failed to design our test batteries to include the tests that return the most information and to exclude those standard tests of several years ago which do not yield any additional information, and cost the audiologist and otologist time and energy and the patient money.

Specifically, the use of routine standing test batteries that include SISI Audiometry, SAL Audiometry, PB Rollover, and or such tests as Bone Conducted Speech and Bekesy Audiometry. Emphasis was placed upon a logical review of our standard test batteries, the time necessitated by those batteries and the logic of including tests that yield little information relative to the patient's auditory status.

The author wished to express a desire that we should carefully review our tests, the cost incurred by the patient, and the educational programs designed to equip an individual to provide quality, audiometric services at reasonable fees. The presentation was made orally and no written paper is available.

Pitfalls in Pediatric Audiologic Evaluation

Irving Shapiro
Los Angeles County Harbor
UCLA Medical Center

It has been suggested that the fitting of hearing aids to infants with sensorineural hearing loss prior to eight months of age may result in the remission of the hearing loss and lead to normal hearing. If the application of hearing aids is delayed beyond eight months of age, no such remission is observed.

The purpose of this paper was to report on the progression of minimal response levels of normal hearing infants; describe three infants who were initially diagnosed as having sensorineural

(Continued on page 5)

Abstracts . . .

(Continued from page 4)

hearing loss who later demonstrated normal hearing; and to discuss these findings as possible causes for the misunderstanding of the effect hearing aids have on sensorineural hearing loss.

The results of the study confirmed that normal-hearing infants respond to auditory stimuli at greater than adult norms and regular reductions in response level are seen as a function of developmental age.

It was also shown that infants with misdiagnosed conductive hearing loss, and normal-hearing "non-responders" who are developmentally delayed, may give erroneous impressions of the effectiveness of amplification in sensorineural hearing loss.

It is felt that the conclusion that sensorineural hearing loss can be resolved with the use of hearing aids is based upon the misinterpretation of normal hearing response levels in early infancy and the lack of adequate testing to rule out middle ear involvement.

Measurement of Central Auditory Processing Skills

Gerald Miltenberger

Barbara Corbin

John Cobb

Gerald Dawson

Harvey Bunce III

University of Texas

Medical Branch

Galveston, Tx

One hundred subjects between the ages of six and nine years were included in this study. The subjects were from three cultural backgrounds: 1) Anglo-American, 2) Mexican-American and, 3) Black-American. In all, five central auditory processing (CAP) tests were administered to each subject. Three of the tests, as described by Willeford (1976) consisted of 1) a dichotic listening task involving sentences of related content, 2) identification of monosyllabic words which have been sent through an electronic filter which is set to pass only those frequencies below 500 Hz, with a rejection characteristic of 18 dB per octave for those frequencies above 500 Hz, and 3) binaural identification of spondaic words with the low band-pass segment (500-700 Hz) of the word presented to one ear while the other ear is simultaneously presented with the high band-pass segment (1900-2100 Hz) of the same word. The fourth test in the battery was a time compressed speech task as described by Beasley et al. (1976) wherein the Word Intelligibility by Picture Identification (WIPI) test is utilized. As in the study by Beasley, the words presented to our subjects were time-compressed to 60% of original time. The final CAP test included in the battery for this study consisted of a shortened form of the original Staggered Spondaic Word (SSW) test, developed by Katz, Brunt (1972). Young (1977) reported on the utilization of the SSW test with learning disabled children wherein the stimulus items were reduced forty to twenty.

The major purpose of the study was to determine the degree to which any one of the five CAP

tests might be predictive of any one of the remaining tests. The highest correlation between any two tests was less than .5, indicating that no test is able to explain more than 25% of the variability in any other test. Therefore, it is recommended that in the assessment of central auditory processing skills of children that, at least, the five CAP tests described in this study be utilized.

The Reliability of the SSI in Hearing Aid Evaluations

R. D. Madory

T. H. Townsend

Hearing Clinic

Central Michigan University

The reliability of the Synthetic Sentence Identification test for purposes of evaluating hearing aids of the same category on sensorineurally impaired listeners was examined. Each of ten subjects was tested on two occasions with four different post-audicular aids at five message-to-competition ratios (MCRs). Data averaged across MCRs were analyzed by calculating the correlation coefficient, which was $r = 0.75$. Also, the standard deviation (S.D.) of the test-retest differences was found to be 7.8%. At the MCR (-10) alone it was 16.2%. When considering differences in scores among aids of two S.D.s as significant, in no instance was significance achieved for the data averaged across MCRs, and for only one subject was an aid eliminated across test and retest sessions at MCR = -10. The "acoustic windows" in the competition were regarded as partially responsible for the lack of reliability of the procedure; a multitalker babble may improve the repeatability of the test. Subjectively, based on subjects' impressions, the procedure was complimented.

The Effects of Continuous V. Pulsed Signals on Acoustic Reflex Decay

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Chicago, Ill.

Previous studies have noted that acoustic reflex decay to a continuous pure tone is frequency dependent. In normal hearing subjects, little if any decay is present at 500 or 1000 Hz as compared to considerably greater amounts for 2000 and 4000 Hz tones. However, less information is available about reflex decay to pulsed pure tones. The investigation of Blood (1976) reported significantly greater contralateral reflex decay to continuous 2000 and 4000 Hz tones as compared to a pulsed signal with a 1 sec. duration and a 50% duty cycle. The purpose of this investigation was to determine if the contralateral and ipsilateral threshold and decay properties of the acoustic reflex were similar for continuous and pulsed tones.

Ten young normal hearing individuals with normal otoscopic examinations and normal tympanograms served as subjects. Acoustic reflex measurements were also made on a patient with a confirmed acoustic neuroma.

Acoustic impedance measurements were performed on a Grason Stadler 1723 Middle Ear Analyzer and an Amplaid 702 Acoustic Impedance Meter. The Amplaid 702 provides a continuous tone for both contralateral and ipsilateral modes. On the Grason-Stadler 1723, a continuous signal is available only in the contralateral mode. A pulsed signal (46 msec on, 64 msec off) may be selected for either the contralateral or ipsilateral mode. Acoustic reflex thresholds and decay measurements (at 500, 1000, 2000, and 4000 Hz) were obtained for all five reflex modes on the two instruments.

In the normal hearing subjects, acoustic reflex thresholds were small, with individual values usually within one 5 dB step. Acoustic reflex decay measurements were not always similar for the 5 reflex modes, however. There was no significant difference in contralateral reflex decay at any frequency for continuous tones delivered on the Amplaid 702 or the G.S.-1723. Comparing the contralateral continuous and contralateral pulsed signal on the G.S.-1723 there was no significant difference at 500 or 1000 Hz, but at 2000 and 4000 Hz contralateral continuous decay was significantly greater. At all frequencies, contralateral continuous decay on the Amplaid 702 was significantly greater than contralateral pulsed decay obtained on the G.S.-1723. Finally, ipsilateral continuous reflex decay on the Amplaid 702 was also significantly greater than ipsilateral pulsed decay on the G.S.-1723 for all four frequencies. In general, our normal hearing subjects often showed greater than 50% reflex decay to a continuous tone but little or no decay to a pulsed tone at 2000 and 4000 Hz.

We also observed the lack of acoustic reflex decay to a pulsed signal in a patient with a left sided acoustic neuroma. In this patient, with contralateral continuous stimulation of the left ear on the Amplaid 702 and G.S.-1723, there was greater than 50% reflex decay at 500 Hz, and 100% decay at 1000 and 2000 Hz. However, at these same frequencies there was no reflex decay to a pulsed signal in testing contralateral and ipsilateral reflex decay on the G.S.-1723. Ipsilateral continuous decay on the Amplaid 702 produced an increase in compliance (which we interpret as an artifact) and hence decay measurements could not be analyzed. In view of these data, when interpreting acoustic reflex decay measurements, the audiologist and physician must be cognizant that pulsed and continuous reflex activating signals do not yield the same results.

Effects of Probe-Ear Canal Pressure and Seal on Acoustic Reflex Magnitude

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Measurement of AR growth has recently been offered as a means

of assessment of seventh cranial nerve function in patients with Bell's palsy. These procedures have proven more sensitive to efferent reflex pathology than the mere observation of presence or absence of the AR or measurement of its absolute threshold level. The apparent superior sensitivity of AR growth in assessment of neuromuscular disorder raises the possibility that the same measure may be more easily influenced by subtle changes in the status of the middle ear or the integrity of the probe seal. Thus while accuracy of AR threshold is apparently unaffected by these manipulations, this may not be the case with measurement of reflex growth and other dimensions of the AR.

The present study was designed to determine the influence of relatively small pressure changes in the external ear canal on measures of both threshold and growth of the AR. In addition, the effects of a non-sealed probe tip on these same reflex parameters were studied.

Acoustic reflex thresholds (500, 1000, 2000, 4000 Hz and WBN) and growth function (4, 8, 12, 16, 20 dB re: AR threshold for 500 Hz only) were measured in one ear for each of 20 normal hearing individuals. Initial data were obtained at the point of maximum compliance, and then at the following pressures (in random order) relative to this point: -120, -60, +60, +120 mm H₂O. These same parameters were studied in 10 of the subjects following disruption of the probe seal.

Acoustic reflex thresholds for the tonal stimuli were found to cluster around 84 dB HL when measured at the point of maximum compliance, whereas average reflex threshold for the noise stimulus was 19 dB lower. For the most part, as ear canal pressure was increased or decreased relative to maximum compliance, reflexes were seen to vary similarly, demonstrating a small but systematic increase in AR threshold. Loading of the tympanic membrane by means of pressure variations had no significant effect on the relative difference between pure tone and noise AR thresholds. Regardless of the nature of the reflex eliciting stimulus, absence of an air tight seal had little consequence on threshold of the reflex.

Analysis of reflex amplitudes as a function of stimulus intensity revealed a significant truncation of the growth pattern measured during the application of a relatively mild positive or negative canal pressure. As expected, the greatest depression of AR magnitude occurred in the presence of plus or minus 120 mm H₂O canal pressure. In light of the relatively minor reflex threshold shift produced by these same

pressures the growth functions appear to be disproportionately reduced. For example, a positive pressure of 120 mm H₂O produced a five dB mean threshold increase and a corresponding 80% reduction in relative reflex magnitude at plus 20 dB.

The reflex growth patterns generated at static pressure values of plus and minus 60 mm H₂O were severely truncated. The no seal condition exhibits a reflex magnitude pattern which initially is parallel to that obtained at the point of maximum compliance but which diverges and tends to approach saturation at higher stimulus levels.

These findings indicate that caution should be exercised during the measurement of reflex growth to insure both proper maintenance of desired canal pressure and sufficient canal-probe coupling.

An Investigation of Blooming in AGC and Peak-Clipping Hearing Aids

William G. Ely

James R. Curran

Anthony J. Becker

Maico hearing Instruments

Mpls., Minn.

The phenomenon of "blooming" in the response of a hearing aid has recently begun to attract attention in the literature. No one has yet offered a precise definition of blooming in hearing aids, but it appears that a consensus understanding has surfaced. It suggests that blooming appears in the low frequencies, i.e., as the input signal increases in intensity, a greater amount of amplification occurs in the low frequencies in relation to amplification at higher frequencies. Non-blooming aids maintain a constant frequency response shape at all levels of input, from 50 dB to 90 dB SPL. See illustration below.

This study investigated the phenomenon of blooming, using measurement techniques designed to identify its cause, and its presence or absence in various hearing aids. It has been suggested that blooming appears in peak clipping aids and output compression aids, but not in input compression hearing aids. Therefore, one peak clipping aid, two output compression aids, two input compression aids, and one combination input/output compression aid, with approximately similar gain and output values were evaluated for signs of blooming.

Measurements were performed using a Bruel and Kjaer 1/2 inch condenser microphone, 2607 measuring amplifier, and 2010 heterodyne analyzer. A Bruel and Kjaer 1901 tracking frequency

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THE UNNATURAL LAWS OF ACADEME

JENNINGS COROLLARY

The chance of the bread falling with the buttered side down is directly proportional to the cost of the carpet.

FARBER'S FOURTH LAW

Necessity is the mother of strange bedfellows.

MAIER'S LAW

If the facts do not conform to the theory, they must be disposed of.

ETORRE'S OBSERVATION

The other line moves faster.

HOARE'S LAW OF LARGE PROBLEMS

Inside every large problem is a small problem struggling to get out.

Minutes of the American Auditory Society

San Francisco, California
Date: November 16, 1978
Place: Conrad Hilton Hotel
Time: 7:00 p.m. to 11:20 p.m.
Members Present: Dave Dolowitz, Marion Downs, Bruce Graham, Earl Harford, J. Donald Harris, Gil Herer, Norma Hopkinson, Susanne Kos, Sam Lybarger, Ross Roeser, Hiroshi Shimizu, F. Blair Simmons, W. Dix Ward, Laura Ann Wilber.
Invited Guest: James Jerger
Members Absent: James Benitez, Leo Doerfler, Fred Linthicum, Merle Lawrence, Geary McCandless.

1) President Simmons opened the meeting at 7:05 p.m.

2) The minutes of the 1977 Executive Committee meeting in Miami, Florida were presented and discussed. There were no revisions.

3) The income and disbursement statement for the period January 1 through October 31, 1978 were presented and discussed.

4) A list of 68 persons who had submitted complete applications for membership during 1978 was presented. The list included applicants' names, highest degree held, city and state of residence, and the names of the two members sponsoring the applicant. There being no objections, all 68 applicants were approved for membership. The names of those accepted as members will be published in the January issue of Corti's Organ.

A list of 15 individuals with incomplete applications was reviewed. Additional sponsors were needed for 14 of the 15 applicants. Members of the Executive Committee identified six of the individuals pending membership and offered to support their applications. These six new members will be added to the 68 names to be published in the January issue of Corti's Organ.

The names of any applicants with completed applications before January 1, 1979 will be sent to the Executive Committee by mail for approval.

5) Blair Simmons was selected for program chairman for the 1979 annual meeting to be held in Dallas in September in conjunction with the American Academy of Otolaryngology.

After discussion, the 1980 meeting location was chosen to be Los Angeles, in November in conjunction with the Fall meeting of the Acoustical Society of America.

6) The name of an individual was submitted for the 1979 Carhart Memorial Award. The Secretary/Treasurer will contact him and, if he accepts, the Society membership will be informed through Corti's Organ.

7) Jim Jerger arrived and presented information regarding a movement that is being made to form an Institute on Communicative Disorders. A committee of about 25 persons has had two separate meetings this year to work out details. Dr. Jerger was appointed to be a liaison between various groups, such as AAS. It was stated that the purpose of his appearance at the meeting was to request support, in principle, for this concept.

After considerable discussion a motion to write a letter of support

was tabled, provided that Executive Committee members receive a fact sheet that is being prepared by members of this movement and a copy of the motion by December 19, 1978; each member responds individually, providing his/her thoughts on the issue, to the Secretary/Treasurer by January 7, 1979; and responses of each member be sent to all members of the Executive Committee before February 1, 1979. The final vote will be taken by March 15, 1979.

8) Laura Wilber was selected as President Elect 1979.

9) Susanne Kos was selected as Assistant Secretary.

10) Dix Ward was selected to be on the nominating committee to replace the seven members of the Executive Committee up for election. The seven members are: James Benitez, Leo Doerfler, David Dolowitz, Gil Herer, Norma Hopkinson, Hiroshi Shimizu, Laura Wilber.

11) Ross Roeser was reappointed as Secretary/Treasurer for 1980.

12) At the 1977 meeting of the Executive Committee, a subcommittee was formed to explore the possibility of having AAS sponsor a national meeting. Several alternatives were presented at the current session and it was decided to limit the alternatives available for the Executive Committee to discuss in September 1979. Bruce Graham and Norma Hopkinson are co-chairmen of the committee.

13) Marion Downs and Ross Roeser reported on Corti's Organ. It was decided to continue publishing one promotional issue per year, with the exception that it be the April issue which has the directory of the membership for the year.

It was pointed out that there is a need for an advertising manager for Corti's Organ. Since there was no immediate solution to identifying such a person, it was decided to place an announcement in the January issue to solicit a qualified member to fill this need.

The remaining time was spent discussing the Journal of the American Auditory Society. No specific motions or policies were formally adopted.

The meeting adjourned at 11:20 p.m.

Date: November 17, 1978

Place: Sir Frances Drake Hotel

Time: 8:30 a.m. to 9:45 a.m.

There was no change in the members present or absent from the November 16th meeting.

1) President Simmons called the meeting to order at 8:30 a.m.

2) Discussion of the Journal of the American Auditory Society continued from the November 16th meeting.

Dr. Harris expressed public appreciation to the following Section Editors:

Dr. Phillip Bellefleur
Dr. William Cooper
Professor Marion Downs
Dr. Allan Goodman
Dr. A. Bruce Graham
Dr. Norma Hopkinson

AMERICAN AUDITORY SOCIETY INCOME AND DISBURSEMENT STATEMENT For Period January 1, 1978 - October 31, 1978			
	Income	Disbursements	
Cash on Hand Checking Account 1-1-78			\$ 1,086.44
Cash on Hand Savings Account 1-1-78			12,392.95
Membership Dues	\$18,435.07		
JAAS Allowance	2,000.00		
Interest on Savings Account	295.85		
Sale of Advertising-Corti's Organ	985.00		
Convention Registration	136.00		
			21,851.92
TOTAL INCOME			\$35,331.31
Equipment		\$ 132.12	
Supplies		256.07	
Postage-Office		511.48	
Postage-Corti's Organ		1,499.38	
Duplicating Costs		61.91	
Telephone		128.98	
Travel		66.08	
Publication Costs-JAAS		11,141.00	
Publication Costs-Corti's Organ		2,855.67	
Bookkeeping and Audit Expense		268.75	
Contract Services-Office		337.00	
Contract Service-Corti's Organ		420.60	
Convention Expense		366.11	
JAAS Income Allowance Expense		2,800.00	
Expendable Supplies & Equipment for Corti's Organ		486.39	
Allowance for Secretary/Treasurer		250.00	20,781.54
CASH ON HAND 10-31-78			*\$ 14,549.77
* Checking Account	\$ 703.97		
Savings Account	13,756.80		
(see note 1)	14,549.77		
1 - \$8,597.00 is for 1979 dues			

Dr. Robert W. Keith
Dr. George Lynn
Dr. Thomas Porter
Dr. William Rintelmann
Dr. Jay Sanders
Dr. Hiroshi Shimizu
Dr. John Sinclair
Dr. Richard Sweetman
Dr. W. Dixon Ward

The following motion was made:
"Dr. J. Donald Harris continue as the editor of the Journal of the American Auditory Society and that the membership offer support and take individual responsibility for the journal and that an otolaryngology oriented associate editor be appointed" Passed.

A second motion was made:
"Blair Simmons be made a member of the Editorial Policy Board" Passed.

Several options were presented to stimulate the submission of manuscripts to the Journal. Among these suggestions were that:

A) The Journal publish a review of audiology.

B) To publish an occasional tutorial paper or a review of a particular topic.

The following motion was made:

To "Invite members of the Executive committee or other interested persons to nominate articles in foreign language journals to appear in the Journal of the American Auditory Society and that the criterion for selection should be that the article appeal to at least two groups within AAS." Passed.

3) The status of the life membership category was discussed and possible ways of altering the By-Laws were suggested. However, no formal motions were made.

The following motion was however made:

"In view of his service on the Executive Committee, David Dolowitz be accepted to Life Membership." Passed.

The meeting adjourned at 9:45 a.m.

Respectfully Submitted,
Ross J. Roeser, Ph.D.
Secretary/Treasurer

APPLICANTS FOR MEMBERSHIP - 1978			
NAME	CITY	DEG	SPONSORS
Abel, Debra Berger	Rootstown, OH	M.A.	Kenneth Berger & Bruce Graham
Arick, Judith T.	Andover, MA	M.A.	Helene R. Freed & C. Garth Hengen
Bode, Daniel L.	Silver Spring, MD	Ph.D.	Gretchen Syfert & Gilbert R. Herer
Bouchard, Kenneth, R.	Royal Oak, MI	M.A.	Jaime Benitez & Georgan Balay
Bradley, Scott T.	Beckley, WV	M.A.	Rosemary L. Smith & Gary Vandevander
Brewer, Carmen C.	Washington, D.C.	M.A.	Barry B. Waas & Howard C. Schweitzer
Cacace, Anthony T.	Slingerlands, NY	M.S.	C. T. Grimes & Charles I. Berlin
Campbell, Paul A.	San Antonio, TX	M.D.	Susanne Kos & Michael Kos
Carey, Ross M.	Argyle, TX	B.S.	Ross J. Roeser & Susanne Kos
Cox, Nancy Anne	Huntington, WV	M.S.	Robert C. Cody & Charles Woodford
Cummiskey, Virginia J.	Lakewood, CO	M.S.	Wm. H. Call & Donald J. Northey
Darbyshire, J. O.	Ontario, Canada	Ph.D.	J. E. Leckie & R. B. Johnston
Davidson, James V.	El Dorado, AR	M.A.	Richard Smiarowski & Gay Mund
Davis, James M.	Marquette, MI	Ph.D.	Ross J. Roeser & Susanne Kos
Davis, Michael J.	Birmingham, MI	M.S.	Doris V. Allen & Donald W. Nielson
Dean, Carolyn A.	Charleston, WV	M.S.	William C. Morgan, Jr. & Romeo Y. Lim
Dennis, Kyle	Evanston, IL	M.S.	Laura A. Wilber & Michael J. M. Raffin
Derlacki, Eugene L.	Chicago, IL	M.D.	W. H. Harrison & C. Michael Kos
Di Palo, Mario	Arlington Heights, IL	B.A.	Susanne Kos & Elda Dossena
Emerson, Sandra	Seattle, WA	M.A.	Thomas S. Rees & Marion Downs
Finn, Charles J.	Mequon, WI	M.D.	Bari Kipnes & Paschal A. Sciarra
Ford, Katherine R.	Atlanta, GA	M.Ed.	John L. Penrod & Stanley J. Clegg
Franklin, Barbara	Palo Alto, CA	Ph.D.	Ross J. Roeser & Linda Gail Begen
Freeman, Douglas C.	Los Angeles, CA	M.S.	Ed W. Johnson & Aram Glorig
Fuselier, Debra	Metairie, LA	B.A.	Michael Seidemann & Melinda Myhres
Gold, Toni	Forest Hills, NY	M.A.	Irving Hochberg & Gerald Studebaker

(Continued on page 7)

Membership . . .

(Continued from page 6)

Goodman, Allan C.	Ardsley, NY	Ph.D.	Ross J. Roeser & Gerald Studebaker
Gratton, Michael Anne	Marion, IN	M.A.	William T. Brandy & Henry A. Raymond
Gravel, Judith S.	Alexandria, VA	M.A.	Ross J. Roeser & Gretchen A. Syfert
Grundfast, Kenneth M.	Pittsburgh, PA	M.D.	Marion P. Downs & Jerry L. Northern
Hartenstein, Robert W.	Munster, IN	M.S.	Peter Bruce & Harry Wood
Hatfield, Sherman E.	Charleston, WV	M.D.	William C. Mogan & Romeo Y. Lim
Howard, Mary T.	Reston, VA	M.A.	Jerry L. Punch & Howard C. Schweitzer
Huber, Pamela	Houston, TX	M.A.	Susanne Kos & Ross J. Roeser
Jacobson, John T.	Halifax, N.S., Canada	Ph.D.	Geary McCandless & Thomas M. Mahoney
Jylkka, Margaret M.	Washington, D.C.	M.S.	Barry B. Waas & Howard C. Schweitzer
Kemper, Bennett I.	Lauderdale-by-the-sea	M.D.	Bernard Ginsberg & Marion Cole
Kervian, John E.	Groton, CT	Ph.D.	J. D. Harris & Frank E. Musiek
Klosterman, Julie	Minneapolis, MN	M.S.	Gayle Rogers & Deborah Landon
McCarty, Jr., Thomas	Anchorage, AK	M.A.	David R. Canterbury & B. D. Kimball
Meissner, William A.	Peoria, IL	Ph.D.	Ross J. Roeser & Susanne Kos
Miyamoto, Richard T.	Indianapolis, IN	M.D.	L. B. Tubergen & Norma Hopkinson
Mosher, Ellen R.	San Francisco, CA	M.S.	Kathleen Kalbfleisch & Charles Lebo
Myhres, Melinda A.	Jefferson, LA	B.S.	Michael Seidemann & Henry P. Trahan
Nelson, Charles T.	Pittsburgh, PA	M.S.	Roger Angelelli & Grace Sung
Niemeyer, Wolhart	Marburg, Germany	M.D.	Jerry Northern & Marion P. Downs
O'Farrell, Mary Lynn	Charleston, WV	M.S.	Rosemary L. Smith & Gary Vandevander
Ormson, Kerry	Amarillo, TX	M.S.	Marion P. Downs & Jerry Northern
Panzer, N. McClung	Charleston, WV	M.S.	Robert C. Cody & William C. Morga, Jr.
Primus, Michael A.	Minneapolis, MN	M.S.	W. Dixon Ward & Richard K. Brown
Quellar, Judith E.	Baltimore, MD	Ph.D.	Moise H. Goldstein & Barbara Kruger
Rice, Harriet	Takoma Park, MD	B.A.	Daniel M. Schwartz & Nan K. Lukmire
Rogers, Gayle J.	Minneapolis, MN	M.S.	Susanne Kos & Ross J. Roeser
Rosenhall, Ulf	Goteborg, Sweden	M.D.	Ross J. Roeser & Susanne Kos
Rothschild, Ruth P.	Minneapolis, MN	M.S.	Deborah Landon & Richard K. Brown
Russell, Randy Pat	Odessa, TX	M.A.	Susanne Kos & Ross J. Roeser
Sarwat, A. A. M.	Cairo, Egypt	M.D.	Aram Glorig & Fred Linthicum
Schiffler, Linda P.	Cedar Rapids, IA	M.S.	B. D. Kimball & Jesse B. McGuire
Svitko, Carol S.	Ruffs Dale, PA	M.S.	Grace Sung & Roger Angelelli
Singer, Elis E.	Bronx, NY	M.A.	Anne B. Kligerman & Robert J. Ruben
Stinnett, J. Michael	Terrace, BC, Canada	M.Ed.	Claude C. Fuller & Susanne Kos
Tucci, Debara Lyn	Charlottesville, VA	M.S.	Roger A. Ruth & Robert W. Cantrell
Thompson, James N.	Irvine, CA	M.D.	Robert I. Kohut & Janice R. Siegel
Townsend, Thomas H.	Mt. Pleasant, MI	Ph.D.	Clifford C. Olsen & Daniel Schwartz
Waas, Barry B.	Columbia, MD	Ph.D.	Howard C. Schweitzer & Jerry L. Punch
Wilde, Ronald	Rochester, MI	Ph.D.	A. Bruce Graham & Gilmour M. Peters
Winston, Michael E.	Little Rock, AR	Ph.D.	Virginia Anderson & J. Donald Harris
Wolfe, Jr., Basil N.	Mentor, OH	M.A.	L. J. Mester & Joseph P. Millin
Yacullo, William S.	Chicago, IL	M.A.	Ellen W. Wolford & Charles R. Behnke
Yantis, Philip A.	Seattle, WA	Ph.D.	Jack M. Snyder & Thomas S. Rees
Young, Richard J.	Baltimore, MD	M.S.	James McDonald & Hiroshi Shimizu
Zelnick, Mark	Brooklyn, N.Y.	M.S.	Ernest Zelnick & Marvin Hechtman
Bailey, Jr., H.A. Ted	Little Rock, AR	M.D.	Virginia Anderson & Blair Simmons

Katz Presents Workshops

The University of Wyoming, Department of Speech Pathology and Audiology will be hosting a three day workshop on the SSW and CES (Staggered Spondaic Word and Competing Environmental Sound) tests on May 3, 4 and 5, 1979. The workshop

will be presented by Dr. Jack Katz.

For information and registration contact: Ben J. Koperski M.A., Department of Speech Pathology/Audiology, University of Wyoming, PO Box 3311 30 Ross Hall, Laramie, WY 82071. (307) 766-6426.

CHABA Covers Infant Testing

In an unusual angling of topics for the Committee on Hearing and Bioacoustics and Biomechanics (CHABA), almost an entire morning of its November meeting was devoted to infant hearing testing. The meeting was held at the beautiful new Boy's Town Institute in Omaha. Brain Stem Evoked Response Audiometry for infants was covered by Hallowell Davis, Donald Teas and Robert Galambos. Davis described his identification of thresholds in four frequencies in a one hour testing session. Teas discussed the abnormal latencies in infants and their gradual emergence to normal values. Galambos also described the emergence of normal latency periods in infants, stating that by one year the latency reaches adult values.

George Mencher described the application of a High Risk Register for identifying deafness. AAS's president Blair Simmons reported on the Crib-O-Gram in detecting deafness in the newborn nursery.

Other outstanding papers were given by two past AAS presidents, Aram Glorig and Dix Ward. Glorig gave a classic review of the literature on the effects of noise on man. He stated that the studies on physiological effects of noise exposure are contradictory and difficult to evaluate. On the whole the studies are inconclusive. Dix Ward discussed impulse and impact noise, which are two different categories of exposure. The effect of impulse noise can be measured by total energy, he said.

Other significant papers on noise were given by such people as Karl Kryter, who reported on the Freiburg conference, where the conclusion was that the study of health effects of noise exposure is a primary research need. David Lim described experiments with infra-sound (1 to 28 Hz). He showed that infra sound can cause damage to the cochlea, particularly at 170 dB.

Stephen Gray contradicted reports that noise levels cause Birth Defects, Low Birth Weight and Lowered fertility. He stated that there is no reason to suppose that noise has a direct effect on the fetus. Animal research is the only method of investigating this subject.

Abstracts . . .

(Continued from page 5)

multiplier was used to synthesize tape playback signals with the 2307 servo controlled level recorder.

All measurements were made in a seven by five foot walk-in anechoic chamber. KEMAR was centered in the chamber 1 meter from the speaker. The substitution method was used in obtaining responses from the hearing aids, where KEMAR is replaced by a reference microphone located at the center of the head on a line between KEMAR's ears. A tape recording is made of a swept frequency pure tone signal necessary to produce a flat spectrum at the reference microphone with KEMAR removed, thereby holding the input signal constant across frequency at the plane of KEMAR's ears. With KEMAR re-positioned, the tape is played through the amplifier and speaker, and the curves obtained show the response of the aid, including the effect of hearing aid microphone position, the ear mold, ear canal resonance, plus pinna, head, and body baffle. A standard acrylic, well sealed mold was used in conjunction with the new, large KEMAR ear. After measurements were completed using a swept pure tone signal as input, a broad band, flat spectrum white noise was used to analyze the blooming behavior of the instruments when a continuous level, broad band signal was employed as input.

Results with the pure tone signal input showed that blooming can appear to be present in peak clipping, output compression, input compression, and combination input/output compression hearing aids. The presence of blooming in compression aids is an artifact of the swept pure tone measurement procedure. Since

the commonly used test procedures utilize a slowly swept or fixed frequency pure tone input, each higher frequency is measured at succeeding intervals in time. Under these conditions, compression aids will act as time varying amplifiers having different gains at different distances in time due to the unique interaction of input level and the AGC amplifying characteristics. The threshold of compression in most AGC circuits is frequency dependent, often being higher at low frequencies and lower at the higher frequencies. Therefore, if the amplitude of the 500 Hz input signal is held constant, and the level is below the threshold of compression, no automatic reduction in gain will occur. At 2000 Hz, where the gain is higher, the same input level may fall above the threshold of compression and an automatic reduction of gain will occur for that frequency. The net result, in a family of frequency responses developed using pure tones, is that the aid will appear to have more gain in the low frequencies as compared to the high frequencies as input levels are successively increased. In addition, the amount of blooming can be exaggerated by the presence of harmonic distortion products, particularly in instruments utilizing peak clipping output limiting.

When a wide spectrum random noise was used as the input signal, it was found that only the peak clipping instruments showed evidence of blooming, and neither the output compression aids, the input compression aids, nor the combination input/output compression aid gave evidence of blooming under this measurement condition. It can be

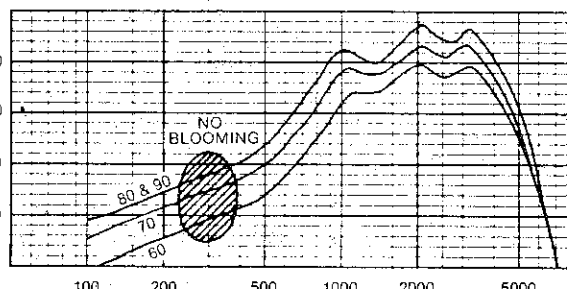
shown that whenever the level of a broad band noise becomes high enough to exceed the threshold of compression, the instantaneous frequency response of a compression aid will remain constant over the range of applicable input levels. It was concluded on the basis of these measurements, that the most accurate description of an aid's performance with reference to blooming, is provided by results obtained using broad band input signals, rather than swept or fixed frequency pure tone measurement techniques.

A Comparison of Custom In-The-Ear Hearing Aids

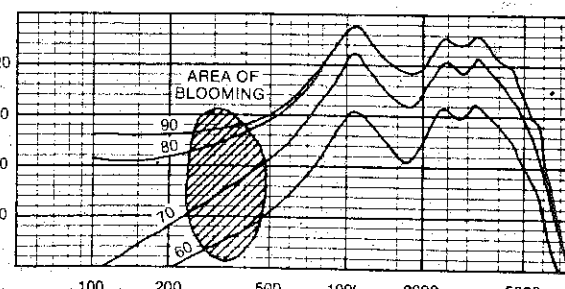
M. Richard Navarro
and Peter B. Ivory
McFarland Clinic
Ames, Iowa

Custom in-the-ear (ITE) hearing aids constitute approximately 35% of the annual hearing aid market. Many audiologists are reluctant to recommend such units for a variety of reasons. For example, it is not feasible to have four or five custom units built for each patient in order to carry out a comparative hearing aid evaluation. Furthermore, many audiologists are still under the impression that custom ITE units are appropriate only for those individuals with mild hearing loss. The situation is compounded by the number of custom instruments available and by claims made by differing manufacturers. The stated advantages of the ITE include: a) Advantages of the pinna; b) Cosmetic Appeal and; c) Custom-fitted amplification. The absence of a standardized fitting approach as well as the number of manufacturers posed

Cont. on page 10



EXAMPLE OF NON-BLOOMING AID



EXAMPLE OF BLOOMING AID

AAS Members and others at AAS



Bill Ely—Pondering



Mike Seidemann at SENTAC



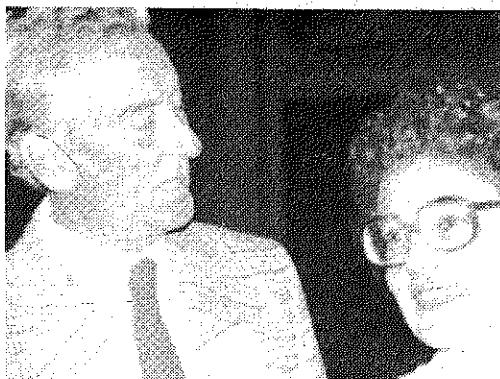
**Bill Melnick
at CHABA**



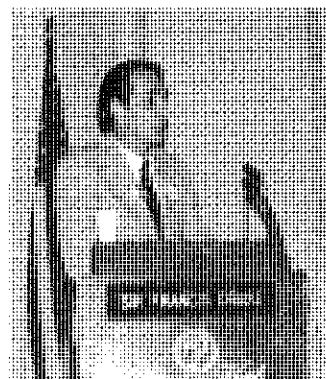
**Hiroshi
and Bruce G.**



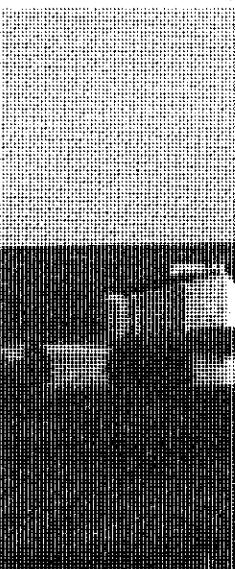
**Wayne Rudmose,
former Chairman of CHABA**



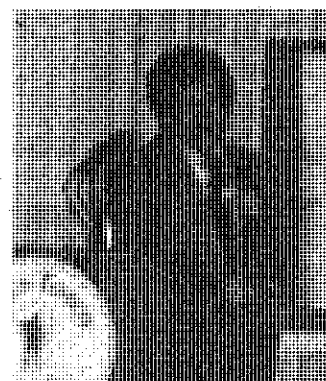
Elda Dosseva with Mr. Holland



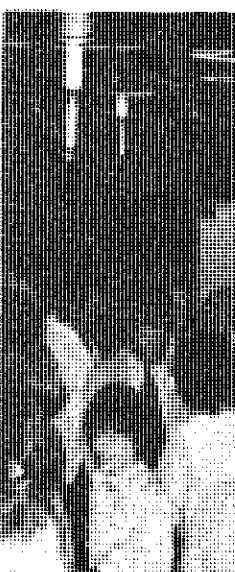
Darrell Teter at AAS



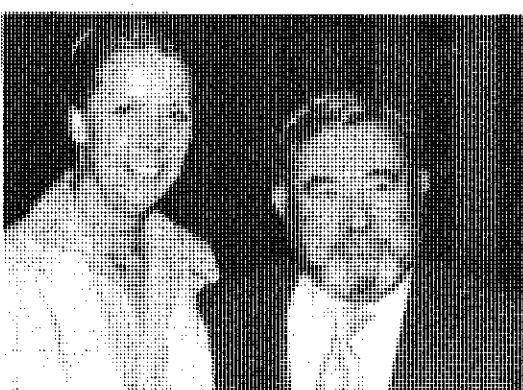
B. Jazbi & new SENTAC President, Bob Kramer



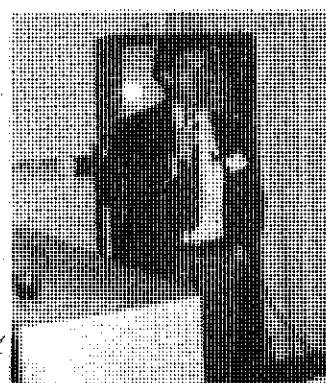
**Peter Dallos
at CHABA**



Bob McLaughlin at AAS meeting



Our ex-president Aram Glorig & wife Ann



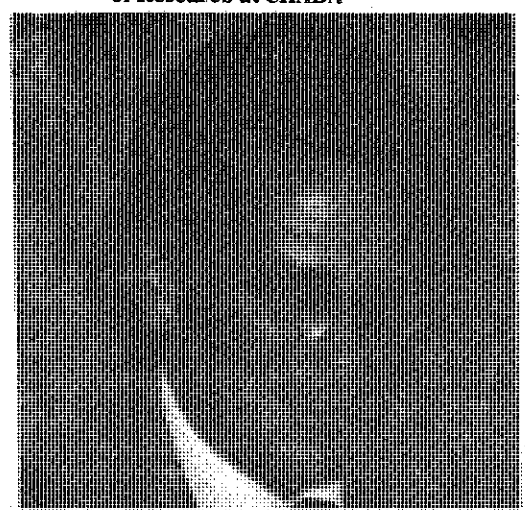
**Charles Watson,
Boy's Town Director
of Research at CHABA**



A famous profile, Hallowell Dairs at CHABA



New AAS President Sam Lybarger at AAS



Fred Linthicum at SENTAC



eting, CHABA, SENTAC , and ASHA



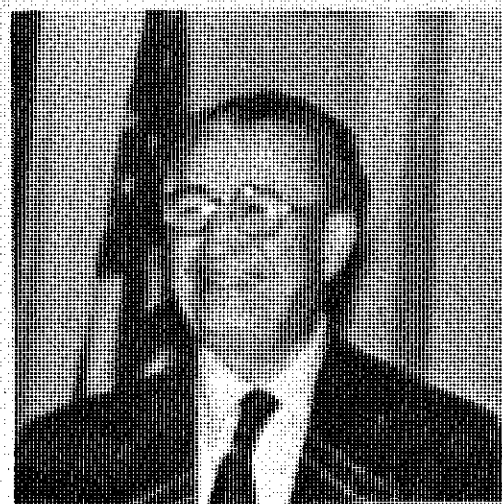
Ma Hopkins,
S Executive Meeting



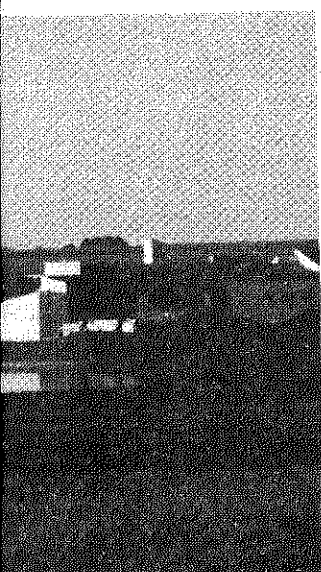
Earl Harford



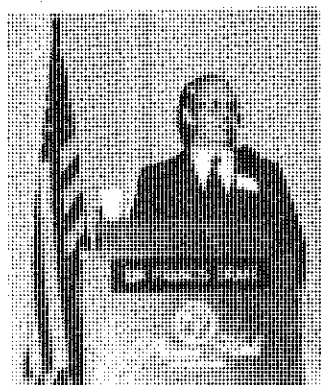
Robert Butler at CHABA



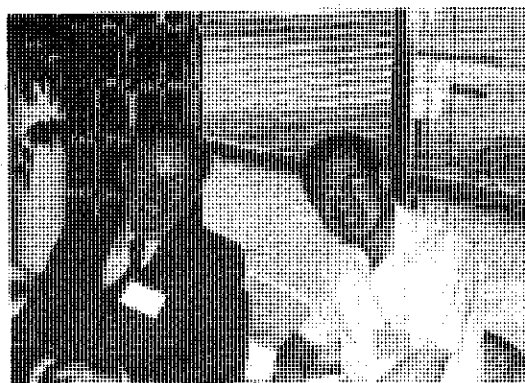
The Carhart Award Winner
Scott Reger



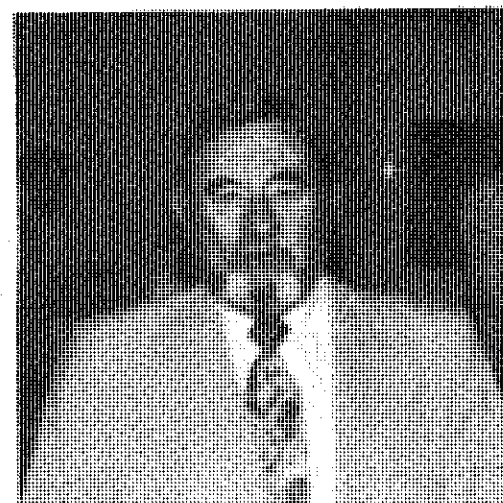
A Meeting



Program Chairman John Sinclair



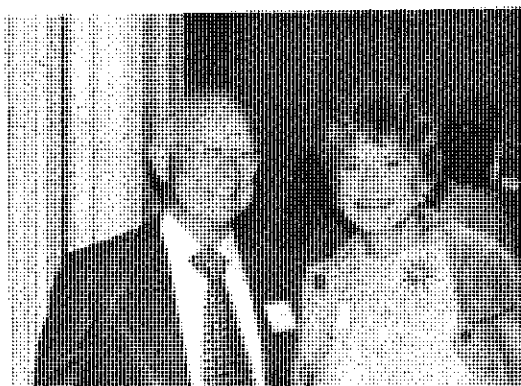
Bob Butler and Nelson Kiang at CHABA



Aram Glorig at CHABA



Peter Dallos
Speaker at CHABA



Dr. Kos at AAS with Ye Editor



at AAS



Earleen Elkins at CHABA



Speaker Robert Galambos at CHABA



Harvard Research Institute's
Karl Kryter, at CHABA



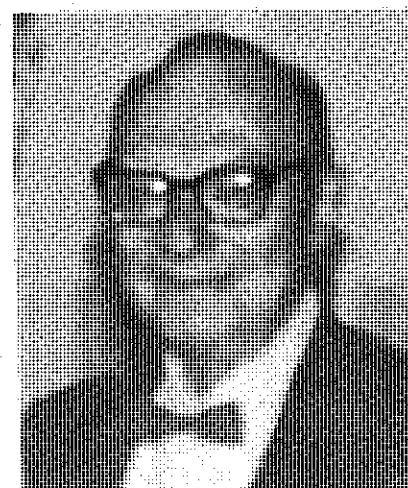
Group at
Dinner



Virgil Howie at SENTAC



Board Member Bruce Graham at AAS



Board Member Dave Dolowitz at AAS

Abstracts . . .

(Continued from page 7)

intriguing questions regarding the nature of commercially available custom-fitted amplification.

The purpose of this study was:

- 1) To compare custom ITE hearing aids provided by different manufacturers;
- 2) To utilize custom ITE in the fitting of moderate/severe hearing loss.
- 3) To compare binaural versus monaural ITE fittings;
- 4) To identify possible subjective benefits of the ITE hearing aid over more conventional behind-the-ear hearing aids.

Standard audiometric data on one 30 year old male patient who possessed a bilateral moderate to severe sensorineural hearing loss was provided to five hearing aid manufacturers. Each manufacturer provided a pair of custom all ITE hearing aids (one for each ear). All but one of the manufac-

identification of one hearing aid manufacturer which provided the best performance for this patient. In fact, the best hearing aid provided up to 60 dB of in-the-ear gain for a 3000 Hertz warble tone. This gain was 30-40 dB greater than any other hearing aid and may reflect the combined effect of ear canal resonance and the hearing aid system. Both the warble tone threshold and the acoustic reflex thresholds agreed in identifying one manufacturer's hearing aid as the best for this patient. The total summed ranks for all measures as shown in Table 1 reflects this division of the hearing aids tried.

Subjective comments on each unit revealed substantial differences between hearing aids in

	Audiotone	Dahlberg	Hearing Aid Ranking Maico	Starkey	Zenith
Discrim. Quiet	48.5	68.5*	55.0	40.0	58.0
Discrim. Noise	67.5*	37.0	59.5	67.5*	42.5
Warble Tone	51.5	55.0	50.0	35.0	78.5*
Acoustic Reflexes	33.5	38.0	37.0	20.5	51.0*
Total	201.0	198.5	201.5	163.0	230.0*

* = hearing aid of choice using this measure.

turers was told that the hearing aids would be evaluated in the Center for Communicative Disorders using a battery of tests. Each manufacturer was asked to build binaural instruments and to provide the same data they normally would to their own hearing aid dealers.

Each hearing aid was submitted to the following clinical test battery in an attempt to evaluate the differences between hearing aids: sound field acoustic stapedial reflex measures with warble tone stimulus (monaural only); sound field warble tone thresholds; speech discrimination articulation curves, plotted from ten to sixty decibels sensation level in quiet and noise (S/N=0). Before any testing began, however, the patient wore each hearing aid for a period from one week to four months. This forced the patient to have considerable experience with each unit. At the end of the test sequence, he was asked to provide subjective comments on each unit.

The amount of data generated required that a ranking procedure be used to compare the performance of each hearing aid for each test. A rank of 1 was assigned to each hearing aid which provided the poorest performance for that measure while a rank of five was assigned to each hearing aid which provided the best performance. The ranks for each condition were then summed for each hearing aid to derive a composite ranking for that condition as well as for all conditions.

In general, the speech discrimination measures in quiet were not particularly revealing as they were too similar across hearing aids while the discrimination scores in noise were too variable to allow the selection of one hearing aid as the best hearing aid for this patient. The warble tone threshold and acoustic reflex threshold data, however, allowed

term of sound quality, accessibility to volume controls, and telephone switches, elimination of wind noise, and usefulness of the telephone coil.

Table 1. Composite summary of rankings for five hearing aids based on four clinical measures.

This study evaluated the efficiency of five pairs of custom in-the-ear hearing aids with a patient who possessed a moderate to severe sensorineural hearing loss. The results of four clinical measures of hearing aid usefulness revealed that in-the-ear instruments can be used with good success with a moderate to severe hearing loss. Most importantly, however, the results demonstrated clear differences between hearing aids which were custom fit to a given hearing loss. The most significant conclusions of these data is that one cannot assume that the best amplification possible has been fit just because the unit has been custom built. Each hearing aid demonstrated benefit to this patient under one condition or another. Because of this variability: it is a questionable assumption to state that any given hearing aid is an appropriate fitting unless it has been submitted to a variety of tests. In all likelihood, this patient may have answered affirmatively to the question "Does the hearing aid help you?" for each hearing aid. Yet, these results clearly show that "help" assumes different proportions with different hearing aids. Any given patient will never know how good he might hear with a different hearing aid unless he tries that hearing aid.

It must be pointed out that the actual ranking of any given hearing aid for this one patient cannot be generalized to the population at large. With this in mind, we stress that the low performance with this patient for any given hearing aid does not imply that any given manufactur-

er offers a poor quality instrument. It merely points out that substantial differences in hearing aid/ear interactions do exist and that the word "custom" when used with hearing aids does not mean "best."

Treating Tinnitus With Electromyographic Feedback

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Our purpose was to study the relationship between EMG activity at the frontalis muscle site, and behavioral severity ratings of tinnitus and annoyance. More specifically, our intent was to examine the covariation of behavioral severity ratings with decreases, as well as increases in EMG activity, using biofeedback procedures in a single adult female subject with intractable tinnitus. A second purpose was to assess the generalization both between and within sessions of treatment effects.

The subject in this investigation was a 60-year-old female with a unilateral hearing loss. The hearing impairment was of sudden onset and was reportedly accompanied by severe ringing tinnitus.

Tinnitus and Annoyance Ratings. Two ten segment scales were constructed to permit the subject to rate first, the severity of her tinnitus, and second, the degree to which she was annoyed by it. The subject recorded tinnitus and annoyance magnitude ratings throughout the course of the investigation upon awakening, and each hour thereafter until bedtime, as well as before and after each session.

Psychoacoustic Measurements. Once during each phase of the investigation, two aspects of the subjects' tinnitus were measured. First, the pitch of her tinnitus was estimated. Second, the stimulus most similar to her tinnitus was presented to the normal ear at a minimal intensity level. A loudness balancing technique was utilized which required the subject to match the "loudness" of the stimulus in her normal ear to the "loudness" of the tinnitus in her impaired ear.

A Grass ink-writing polygraph was used to simultaneously record three types of data: 1) the raw EMG signal, 2) the average integrated signal, and 3) the cumulative integrated activity as a function of time.

Miniature electrodes were applied over the frontalis muscle sites using standard procedures. The subject was seated in a comfortable chair in a sound attenuated chamber out of view of the instrumentation.

Each session was divided into five-minute segments with about three minutes between segments. Each session was comprised of from five to seven five-minute segments, and was separated by at least 24 hours.

Phases of the investigation were designated as baseline, treatment, or follow-up. To evaluate generalization between and within treatment sessions, we began and ended each session with a five-minute segment of no feedback. During treatment segments, the subject's task was to keep the broad band noise associated with EMG activity off

During following-up and baseline segments, no feedback was provided to the subject with regard to her EMG activity. Feedback criteria were systematically increased or decreased using a progressive shaping procedure.

The data were analyzed using a "double reversal" type of signal subject experimental design. Contingent auditory feedback resulted in a gradual and consistent decrease in frontalis EMG activity. This decrease became relatively stable as treatment progressed, when compared to baseline levels. The high levels of EMG activity during pre- and post-session baseline segments for the first three treatment sessions stood in contrast to those in later sessions of the first treatment phase. Further highlighting the effects of auditory feedback. This generalization of decreased EMG levels between and within sessions clearly demonstrated that the subject could control frontalis EMG activity in the absence of auditory feedback after she had sufficient training. Such findings were anticipated and were not new.

However, analysis of the behavioral severity ratings of tinnitus and annoyance revealed that post-session ratings were always less than pre-session ratings during the baseline phase, despite the absence of auditory feedback. A similar pattern of severity ratings occurred during the first treatment phase. Further, no substantial difference in absolute magnitude was observed between tinnitus and annoyance severity ratings made during the baseline phase and those made during the initial treatment phase. In fact, the lowest severity ratings for both tinnitus and annoyance occurred during the first baseline session in the presence of the highest EMG activity levels.

Psychoacoustic measurements of the subject's tinnitus made during the first baseline and treatment phases were compared. No predictable changes were noted. We held frequent conversations with the subject throughout the course of the investigation. About half-way through the first treatment phase, she began to report a change in her "coping strategies." She also reported such feeling states as "establishing a kind of communication union; a feeling of security; completion; happiness; peace; and joy." At one point, she reported feeling that she was "in control."

A unique feature of this investigation was the introduction of a reversal phase. That is, an attempt was made to actually increase the subject's frontalis EMG activity by presenting broad band noise until EMG levels were above a pre-selected microvolt level. During this phase, auditory feedback resulted in substantially increased EMG activity levels. During the first session of this phase, post-session tinnitus and annoyance severity ratings were, for the first time, greater than pre-session ratings. However, this trend did not continue. In fact, a pattern indistinguishable from that seen during the baseline and first treatment phase reappeared. No essential change in the subject's psychoacoustic description of tinnitus was noted. Finally, this reversal phase occasioned reports from the subject of such

feeling states as "... a thought track rather than an experience not euphoria." These comments stood in contrast to those made during treatment phases designed to decrease the subject's EMG activity levels.

Following the reversal phase of the investigation, a baseline phase was re-introduced. During this period, EMG activity patterns became somewhat erratic. They were typical of those seen during extinction procedures, and they likely resulted from confusion of the subject's internal response criteria. Behavioral severity ratings maintained their usual level and pattern, and no change in psychoacoustic judgements of tinnitus were noted.

Subsequent to this baseline phase, a second and final treatment phase was introduced. An immediate decrease in frontalis EMG activity was observed as soon as auditory feedback was re-introduced, accompanied by a change in behavioral rating patterns or in psychoacoustic judgements of tinnitus.

Finally, follow-up baseline data were collected at three and six week intervals after the last treatment session. All of the findings during this follow-up period were similar to those observed during the final treatment phase.

In summary, our procedures were effective in manipulating EMG activity, but the resulting changes in EMG levels were not systematically related to the subject's severity ratings of tinnitus and annoyance.

Second, the psychoacoustic judgements made by this subject showed no predictable change from one phase of the investigation to the next. For a number of reasons, we believe these kinds of measurements may be inappropriate for assessing treatment effects when treatment is directed toward the modification of psychological reactions to tinnitus.

Third, while some might be intrigued by the notion that reduced EMG activity promoted reduced anxiety, increased blood flow to the cochlea and, therefore, reduces the severity of tinnitus, this idea derives no support whatever from the results of this investigation.

Finally, despite the lack of a systematic relationship between EMG activity and behavioral ratings of tinnitus and annoyance, and despite a meaningful change in the subject's psychoacoustic description of her tinnitus across the phases of this investigation, she did report the development of psychological strategies which were associated with both increases and decreases in EMG activity. Given the controls of this investigation, the outcome observed might best be explained as a "placebo effect." Nevertheless, it is logical to assume the presence of some independent variables, which are empirical in nature and are common to the and possibly other methods of treating tinnitus, which could be isolated and controlled experimentally. These variables should be identified. Until they are, the indiscriminate use of EMG biofeedback procedures for the routine clinical management of persons who suffer from tinnitus should be discouraged.

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Abstracts . . .

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Hearing Loss Patterns
in Sick Newborns
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Graduates of Intensive Care nurseries have an impressively high incidence of deafness, 1:62 live discharges. We deafened 22 of these babies before discharge by using an automated hearing screening system. Their medical records and the records of 70 control babies were reviewed and compared for probable risk factors. In general, the hearing loss babies seemed sicker than the controls. Their hospital stay was twice as long as the control group. Anoxia, as reflected by low APGAR scores, was 7.6 times more common in the hearing loss group. Foetal distress, complicated deliveries, and hyperbilirubinemia seem to be key ingredients in most deafness. Anoxia later on, as reflected by the diagnosis of respiratory distress syndrome, made little difference. Uncomplicated prematurity, or the use of ototoxic antibiotics are irrelevant features.

The results of this on-going study testify strongly in favor of hearing screening in ICU Nurseries.

Sentac Abstracts

Auditory Fusion in Infants
A Behavioral Means of
Assessing
One Aspect of Central
Auditory Function

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Existing behavioral procedures used in the assessment of central auditory function have not been effective in testing children under five to six years of age. In fact recent data showing the wide dispersion of scores obtained on children under 10 years of age suggest difficulties in interpretation for children between five and 10 years of age. Among the problems in application of the existing procedures with children are the dependence on language as well as the memory load imposed by the measurement task. This paper described a procedure which is not dependent on language as the response mode and which minimizes and controls memory load.

Fusion of two segments of a speech sound presented dichotically into a single percept requires fusion of the dichotic parts in the central auditory system. The task involves teaching infants to respond when they hear a specific speech sound and not to respond to any other signal. The response used is a head turn coupled with visual reinforcement for correct responses.

The signals used are computer generated speech tokens as well as computer generated formant segments of the same speech-sound tokens. The formant segments are selected so as to allow correct identification of the speech sound when they are combined but not provide enough information to be recognizable

when presented singly.

The infant is trained to respond to a selected speech sound under didactic presentation while not responding to other speech sounds or the single presented formants. Once the infant has demonstrated success at this level, the presentation mode shifts to both didactic and dichotic. If the infant responds correctly when the two formant components of the target speech sound are presented dichotically, he/she has demonstrated central fusion of the formant signals. Failure to respond correctly to the dichotic fusion task while successfully responding to a monaural or didactic fusion would suggest a breakdown in central fusion.

This paper reported on work completed to date on young infants and provided a video demonstration of an eight-month-old child. It was suggested that the same task could be modified to assess other aspects of central auditory function.

Behavior Changes Associated with the Resolution of Middle Ear Effusions

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Children having middle ear effusion were judged by their parents to be less obedient and harder to control than were children who were free of middle ear effusion. When members of both groups were re-examined 6-12 weeks later, those having normal middle ears on both visits had no change on the behavioral indices. Those children who had middle ear effusion on the first evaluation showed improved behavior, as judged by parents, whether or not they had responded to treatment of the serous otitis. These data suggest that diminished auditory acuity does in fact lead to behavior changes, but that parent and child adjust to alterations in behavior and acuity in the interval between the first and second examination.

The Effect of Early Onset of Otitis Media on Educational Achievement

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Otitis media has recently been established to be more prevalent than anyone ever believed. Development of modern electronic techniques in detecting otitis media makes it important to know whether or not otitis media is needed of any great importance in terms of the child's total life potential. The following study was designed to test the effects of acute episodes of otitis media occurring in the first eighteen months of life on subsequent educational achievement. Two groups of children were collected from practices of the three participating pediatricians

comprising 72 pairs. The pairs were made on the basis of one group having zero attacks of otitis media the first eighteen months of life being observed from birth by the pediatricians and the second group having three attacks of otitis media observed in the first eighteen months of life. Each pair was matched with another from the second group by birth dates, within a six week period excluding the birth year, sex, occupation of the father, and his professional, technical skill, semi-skilled and unskilled, and by the school attended in the Huntsville school district, and the year of testing, that is, whether they were tested in the third or sixth grade. The tests used to compare the two groups of students were the SRA test or Science Research Associates Test for academic achievement. This test was chosen because all children in the Huntsville school system are given this test at sometime. Sample areas are directly related to academic subjects. The test has good reliability across school years. The test yielded values for reading, language arts, math and a composite score. Comparison of the mean along with the standard deviation and standard error reveal that the one-tailed t-test reveal that only the composite score was significantly different in favor of the students having had no episode of otitis media in the first eighteen months of life. The math approach significance but at only a 10 probability level. Language arts and reading, although the mean was apparently six months above the mean of those having three episodes of otitis media was not found to be significantly different due to the wide standard deviation. This study of patients seen in Pediatric practice from 1959 to 1963 with tests being made at the third and sixth grades in Huntsville school system simply adds one additional piece of evidence to the fact that early onset of otitis media is significant in a later school achievement.

A Review of Transneuronal Changes of the Auditory Central Nervous System as a Consequence of Auditory Defects

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During the last three decades there have been numerous investigations revealing a consistent pattern of transneuronal changes of various portions of the central auditory nervous system which have been associated with either anatomical defects in the peripheral auditory apparatus (cochlear and/or acoustic division of the VIII nerve), or with reduction of auditory stimulus to the cochlea (auditory deprivation). The changes are essentially consistent from species to species, and qualitatively similar regardless of the type of peripheral deficiency which was effected. These will be reviewed in this report.

The anatomical changes may or may not have implications in the care and habilitation of hearing

deficits in man. As will be seen from the data, certain broad characteristics of the resultant central auditory nervous system changes are known in various species. Whether or not the same changes occur in man and how they might manifest themselves is unknown. It is hoped that one effect of this review will be to provide a basis to ask critical questions in the area of human audition and neuropathology.

The data which is now available suggests certain hypotheses. These are:

1. The earlier in development of an animal that there is an anatomical loss of the inner ear and its nerve, the greater the anatomical effect will be on the central auditory pathways.

2. Anatomical loss of the inner ear and its nerve or auditory deprivation during the immediate postnatal period in the rodent and the cat will result in changes in the primary and second order auditory nuclei of the brain stem.

3. The anatomical effects of auditory deprivation in the newborn mouse are, in the main, irreversible.

There are still a large number of open questions concerning the physiological and behavioral effects of these changes. Furthermore, there is almost no data concerning the effects on the thalamus and the cortex in either the chick, the rodent, or the cat. Another area in which there is a need for more information is to correlate the developmental stage of the inner ear and the time which the auditory deficit is made with the developmental stage of the central nervous system. The mouse, for which there is a large body of data, does not develop a mature inner ear in regard to anatomy and physiology until about the second week of postnatal life. The mouse brain is likewise immature until about the 20th day of postnatal life. The inner ear in the chick, rat and the cat also mature before the central nervous system. There is a similar pattern of development in man, in that the inner ear appears to be mature, anatomically and physiologically, at birth and perhaps as early as the 7th or 8th

month of gestation, whereas the central nervous system may not be mature until after the first decade of life. Yet it is known that the physiological responses of the brain stem in man to sound appear to reach its maturity between the 12th and 18th month of age. The characteristics of these different rates of maturation and their effect on the consequence of the various auditory deficits, either due to anatomical lesions or deprivations, or the central nervous system in terms of anatomy, and ultimately, physiology and behavior.

Synopsis of Paper-Overview of Objective Hearing Tests

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The importance of early identification and treatment of hearing impairment is becoming increasingly apparent. Ideally, positive identification of the degree of impairment should be made by age six months and rehabilitation with amplification begun. Newer objective audiometric tests may make this ideal practical in the clinical setting.

Early identification of hearing impairment includes the cribogram and impedance testing. If either or both of these tests indicate normal hearing, it is unlikely that hearing impairment exists. On the otherhand, any abnormality in either of these tests requires thorough evaluation including brainstem electric response audiometry.

Threshold for detection of brainstem responses to a broadband click is an indication of the hearing thresholds in the three to four kHz region. In cases of flat

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Southern Audiological Society Meets

The Seventh Annual Convention of the Southern Audiological Society was held at the Monteleone Hotel in New Orleans, August 30 through Sept. 1, 1978. The program of technical and scientific papers featured Dr. Paul Guth, Dr. Michael Pollack, and Dr. Lindsay Pratt.

Officers elected for 1978-79 were President John C. Cooper (Texas), President-Elect—Carl W. Asp (Tennessee), Secretary-Treasurer—William H. Andersen (South Carolina), and Member-at-Large—Thomas O. Davidson (Tennessee).

The 1979 meeting of the society will be held in Savannah, Georgia, September 5-7, 1979.

Sentac Meets in Santa Barbara

The annual meeting of the Society for Ear, Nose and Throat Advances (SENTAC) in Children was held at the El Encanto Hotel in Santa Barbara December 8-10, 1978. The new president, pediatrician Robert Kramer announced several changes in SENTAC policy. Papers presented at this meeting will be published in the new Journal of Pediatric Otorhinolaryngology, edited by Robert Ruben, past president of SENTAC.

Almost the entire section on Audiology and Otology was devoted to the problems of early otitis media in infants, and on the measurement of hearing and auditory problems in infants and children. Some of the key papers are abstracted below.

Article Review

Developmental And
Psychoeducational Sequelae of
Chronic Otitis Media

By:

Peter W. Zinkus
Marvin L. Gottlieb
Mark Schapiro

in *Am. J. Dis. Child*-Vol 132, Nov.
1978
pp. 1100-1104

This article presents compelling evidence that severe and recurrent otitis media in early life has a long lasting effect on the language and educational development of children between the ages of 6 and 11 years. This study manages to avoid some of the problems of other studies in this field such as possible differences in intellectual or socioeconomic levels. Tests were administered and scored by persons unaware of the otitis media history of the children. Forty children (average 8.5 years) were selected from a larger group referred for comprehensive evaluation because of academic underachievement. Their scores on the Wechsler Intelligence Test for Children-Revised were compared, purely on the presence or absence of documented evidence of severe and continuing otitis media during the first three years of life. All children were from white, middle class backgrounds. Those suspect for prenatal, perinatal, or post-natal CNS injuries, as well as those with severe behavioral or emotional disorders were not included in the study. Children with visual perceptual dysfunctions were also not included, nor were those with IQ's below 85.

The following defects were observed in the 18 children with severe early otitis media at the P. 95 level of confidence when compared with the 22 non-otitis children: **Developmental** — acquisition of a 4-10 word vocabulary, ability to formulate and utilize sentences of three or more words; **Intelligence Testing** — worse on both verbal and non-verbal segments, but these overall scores were strongly influenced by subset scores dependent on auditory processing skills (mental arithmetic, auditory sequential memory, concept formation); non-verbal skills were reduced only by those tests involving auditory and language processing skills. **Academic Skills** — worse scores on word decoding and spelling skills.

The following parameters were among those not different for the two groups: **Developmental** — walking and motor skills; **Intelligence Testing** — general fund of knowledge, expressive vocabulary, pure visual processing tasks, analytical reasoning; **Academic Skills** — intelligence as related to reading level, arithmetic computation skills.

Though all children were referred for suspected academic difficulties, the actual test performance on word recognition, spelling and arithmetic were equivalent or above grade level in some cases. This occurred in 13 of the 22 otitis cases but in only 3 of the non-otitis children.

Reviewed by —Blair Simmons

SCIENCE and Sex

As most AAS members know, the senior editor of *Corti's Organ* is an ardent advocate of the Equal Rights Amendment. Just to remind readers of the urgency of ERA I have gleaned some interesting items from recent issues of *SCIENCE* and from *Natural History*, for your edification. Did you know for example, that Broca (of Broca's area) was one of the worst of all male chauvinists? And did you ever really question why Nature in her great wisdom created two sexes as a necessary condition to evolution? *SCIENCE* did. So from the pages of these austere journals—

The Evolution of Sex. John Maynard Smith. Cambridge University Press, New York, 1978. Cloth \$21.95; paper \$6.50. Reviewed in *Science* (by Egbert G. Leigh, Jr.), 202:1274-5, 1978.

The reviewer of this book finds it pleasant, even charming, rich with interesting asides. It is a book for biologists steeped in the wonder of evolutionary processes, but for others it is fascinating for even attempting to answer the philosophical question of why there should be two sexes in most of the animal and plant kingdom, instead of one — or three? Smith demonstrates first that sex facilitates evolution, and then theorizes as to how it is maintained.

Historically, it was thought by Fisher that the only use of sex is to enable the simultaneous fixation of favorable mutations. Sex and recombination seemed to indicate a stream of favorable mutations and a genetic system organized to facilitate natural selection. But it seemed mathematically impossible to quantify the advantage of sex and how much it benefited the individual and the species.

Smith feels that the root of the problem is the "50% cost of sex": most populations spend as much effort on male as on female functions, whether in raising as many females as male offspring as in gonochores, or in spending as much effort seeking to fertilize the eggs of others as making eggs, as in hermaphrodites. A theory of anisogamy explains why sperm are so much smaller than eggs. "Why one gamete should sit and wait with the baggage while the other travels fast and light to seek her out." The sperm is the object of a competition that rarely increases the number or quality of offspring. The cost of sex is the offspring that are sacrificed by the wasted effort of this competition.

The cost of sex can be overcome, providing the genotype or the environment is changing. An illustration from Williams proposes that in trees, where many seedlings from few parents compete for a gap sufficient for one adult, a sexual parent with different offspring has as many chances as it has offspring of producing the best genotype there. An asexual parent with identical offspring has only one chance at the gap, however many seedlings it leaves there.

Smith agrees with Fisher that sex allows a mutant to be tested in many genotypes and to be selected according to its average contribution to fitness rather than

according to the fitness of the genotype where it came from. So sex does facilitate evolution. But Smith is not so certain as to what maintains it.

Smith shows that selection favors sexual species of animals. Few asexual forms are found in the tropics, where plants and animals run coevolutionary races with predators and competitors. There seems to be an advantage accruing to recombination if a gene enhancing it were closely enough linked to a new favorable recombinant to hitch a ride on it. For example, alleles increasing mutability "hitch rides" from the spread of new favorable mutants to which they are closely linked. Mutator alleles can make mistakes, but a mistake kills only one mutator, while a good mutant can spread its mutator through a population. This aspect argues for the efficacy of small selective differentials.

Well, we never said sex was easy to understand, but we're glad that someone out there is trying to figure out how it all started. We're not going to rib you about this.

Marion Downs.

Women's Brains: Stephen Jay Gould. In *Natural History*, Oct. 1978, pp. 44-50.

The science of anthropometry was used by prominent scientists in the 1800's to make devastating attacks on women's intelligence. No other than Paul Broca (1824-80) devoted untold effort to demonstrating that brain size accounted for the inferiority of women, blacks, and apes. Broca's conclusions were based on the larger brains of men in modern societies and on a supposed increase in male superiority through time. On over 400 brains at autopsy he calculated an average weight of 1,325 grams for males, 1,144 for women, or 14% difference. But this great scientist made no attempt to measure the effect of the height differences, stating that body size cannot account for the entire difference because "we know, a priori, that women are not as intelligent as men". (When modern scientists reexamine his data and correct for height, age, degenerative processes and body build, the true difference comes close to zero). But Broca used his data on women's brains to apply to other groups: blacks, poor people, criminals, children as well as women were all denigrated by the measure of brain size. "Men of the black race have brains scarcely heavier than women" stated one of Broca's disciples. This led to claims that anatomically and emotionally, both women and blacks were like white children—and that white children, by the theory of recapitulation, represented an ancestral (primitive) adult stage of human evolution.

The argument for the increasing differences between men's and women's intelligence was based on the measurements of 13 pre-historic skulls found in L'Homme Mort Cave. Broca described only 99.5 cc difference between these male and female brains as against 129.5 to 220.7 in modern days. Using these data

and Broca's other findings, one of Broca's chief disciples, Gustav Le Bon in 1879 published a vicious attack on women: "All psychologists who have studied the intelligence of women recognize today that they represent the most inferior forms of human evolution and that they are closer to children and savages than to an adult, civilized man. They excel in fickleness, inconstancy, absence of thought and logic, and incapacity to reason. . . . The day when, misunderstanding the inferior occupations which nature has given her, women leave home and take part in our battles; on this day a social revolution will begin, and everything that maintains the sacred ties of the family will disappear." (Sound familiar Phyllis Schafly?)

In 1961 at the Anthropological Society of Paris Broca won acclaim for his statement: "In general, the brain is larger in mature adults than in the elderly, in men than in women, in eminent men than in men of mediocre talent, in superior races than in inferior races. . . . There is a remarkable relationship between the development of intelligence and the volume of the brain."

The wonder is, with this background, how we have ever gotten to the point where we can now state: "Gentlemen, it is no empty rhetoric to say that women's battles are for all of us."

—Marion Downs

(Abstracts) and (Abstracts) and
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Minimal Standards for Hearing Aid Performance

Hyman Goldberg

Robert E. Sandlin

Victor P. Garwood

Board of Medical Quality
Assurance, Dept. of
Consumer Affairs
State of California

This document is a Technical Report submitted from the Hearing Aid Dispenser Examining Committee of the State of California. It attempts to develop a standard by which hearing aids can be measured on hearing impaired individuals which would yield criteria sufficient to differentiate between acceptable and non-acceptable fittings. On the whole, this reviewer believes that the authors have succeeded admirably in demonstrating that such a standard is indeed possible.

A review of the literature shows that it is pointless to defend further the value of speech stimuli as reliable, repeatable measures of hearing aid function. It is obvious that accurately measurable acoustic signals should be employed. In the place of speech signals, narrow-bands can yield the best results in sound field, as they are effective in smoothing the sharp peaks and valleys introduced into response curves as a function of acoustic reflection.

The signals of choice are bands of random noise the width of a critical band with a roll-off characteristic of 32 dB per octave or greater at 500, 1000 and 2000 Hz. (Steeper roll-off characteristics will be required for individuals with hearing loss contours greater than 32 dB per octave).

A quiet room is recommended in which the ambient noise on the "B" scale will be 50 dB-B or less. This should not interfere with threshold measurements of the signals selected.

Measurements at the location of the head should be taken in sound pressure level (SPL), not re: audiometric zero. Subjects should be placed nine inches from the sound source. The tests with the aids should include:

- Initial setting of a MCL when a 60 dB SPL shaped speech noise signal is presented in a sound field.

- Aided threshold measurement of narrow bands. (Unaided thresholds having been obtained)

- Aided tolerance levels, presenting the narrow bands in 5 dB steps from 70 dB to 90 dB maximum.

- Harmonic distortion measurements of the aids.

- Minimal acceptable acoustic gain should be at least 30% (PdB 30) of the unaided value for narrow bands measured at 500, 1000, and 2000 Hz.

- No tolerance problem should be reported in the 70-90 dB range of presentation of the narrow bands.

- Harmonic distortion should not exceed 25% total distortion when the gain curve at 500, 1000 and 2000 Hz is relatively flat (+3 dB).

The authors tested their standard on seventeen adult individuals ranging in age from 3 to 81 years, who had been habitual users of hearing aid amplification for at least one year.

- On the tolerance level assessment, 8 ears failed at one or more test frequencies, 8 on the retest.

- On the PdB 30 criterion, 1 ears failed at 500 Hz, 12 failed at 1000 Hz and failed at 2000 Hz.

- On the harmonic distortion test 7 failed at 500 Hz, one at 1600 Hz.

The opinion of the authors was that the recommended standard was reasonable even in view of the failure rate evidenced by the study. The magnitude of the differences between the various measures were small, and it was felt that any of the hearing aids could have met the standard with proper adjustments. They therefore recommend that hearing aids be subjected to mandatory performance standards such as these.

There is no question that accurate measurement standards are sorely needed, and that the procedures outlined here have been well thought out. The authors are to be commended for taking a strong stand against the use of speech stimuli in the evaluation of aids, and for producing realistic alternatives. It is hoped that they will think through the weakest link in the process: that of the setting for MCL, which as described depends on the subjective judgment of the wearer of the aid. Once this hurdle is overcome it would seem reasonable to begin to make such standard measurements mandatory.

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Abstracts From Sentac cont. . .

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hearing impairment, the click is a good indicator of the entire audiogram. On the other hand, with a steeply sloping loss, click evoked brainstem potentials will overestimate the degree of hearing impairment. Conversely, when low frequency loss predominates, click-evoked brainstem responses may indicate normal hearing when, indeed, a significant loss is present.

At the Ear Research Institute the technique of derived brainstem potentials using high-pass masking has been used to solve the frequency specificity problem.

The brainstem response to a broad-band click is first recorded and stored in the computer. The procedure is then repeated in the presence of 8 kHz high-pass masking noise. The resulting brainstem response represents the contribution from the entire cochlea except for the 8 kHz and above region, that portion which was masked by the high-pass noise. The second response is then subtracted from the first response and the brainstem response which arose from the 8 kHz region and above portion of the cochlea results. This procedure is repeated with successively lower cutoff frequencies of the masking noise. Octave-wide contributions from the cochlea to the brainstem response are thus recorded. Early experience with this technique indicates that it may be possible to reconstruct the audiogram with sufficient accuracy to confidently fit a hearing aid in a very young patient.

Ideally all children with a high risk of hearing impairment would be identified with the cribogram and impedance audiometry. Confirmation of the degree of loss would then be made by brainstem audiometry and definitive treatment begun at least by the age of six months.

Brain Development and Language Disabilities

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The brain is precocious in its development, the major anatomic landmarks being formed by 10 weeks gestation. Neurophysiological reflexes are observed as early as 7 weeks of gestation. Thus, the truly "critical" period of brain development is in the first 10-12 weeks of fetal life.

Hemispheric specialization for language development begins prior to birth. Anatomic evidence of a larger left planum temporale is evident as early as 29 weeks gestation.

Sexual differentiation of the brain depends upon exposure of the fetal brain to male hormones during pregnancy. Girls acquire language earlier than boys, possibly because hemispheric specialization is more evident in females earlier in development than in males.

Many neurologic disorders are more common in boys than girls, particularly language and learning disabilities. The left temporal lobe in boys appears to be particularly vulnerable to injury during early life.

Clinical entities which are being found with increasing frequency

to be associated with delayed language development include neonatal asphyxia, hyperbilirubinemia, bacterial meningitis, and cytomegalovirus infection.

Further basic research into areas of fetal neurology as they are related to brain and language development will increase our knowledge of the diagnosis, management, and prevention of childhood language disorders.

Auditory Processing Deficits in Children With a History of Chronic Middle Ear Problems

R. Ray Battin, Ph.D.
Hugh Conway, M.A.
Battin Clinic
Houston, TX

This study was designed to investigate if children with a history of early, chronic middle ear problems would demonstrate more severe deficits in the auditory modality than those learning disabled without such a history.

Records of 293 youngsters from predominantly white, upper middle class families were coded for computer analysis. Of these 293 children, 99 (37%) had a history of ear (aches), ear infections, running ears or fluid.

The following test battery was administered: The Illinois Test of Psycholinguistic Abilities (ITPA), The Wechsler Intelligence Scale for Children—Revised (WISC-R), or the Stanford-Binet, test of intelligence, the Peabody Individual Achievement Test (PIAT), and the Goldman-Fristoe-Woodcock Test of Selective Attention.

The profile of the ITPA, the intelligence tests, and the PIAT indicated no significant differences among the two groups.

Using the same test battery described above, 26 additional youngsters with a history of middle ear problems were seen. With this population the parents were also interviewed. Results from this group when compared to the previous population were the following:

1. Slightly higher scores in the full scale intelligence test.
2. Stronger auditory reception and auditory association skills but a slightly greater depression in verbal expression.
3. Deficits in handling listening in noise.

In summary, our findings suggest that while children with a history of middle ear problems do indeed show a profile reflecting deficits in the auditory-verbal mode, these deficits are not as severe as other "learning disabled" children. Furthermore, the child's environmental, developmental and health history should be considered when attempting to study the effects of early middle ear problems.

The Effect of Mild to Moderate Hearing Loss on Learning the Language of Mathematics

Moya L. Andrews
and Cynthia J. Brabson
Indiana University
Bloomington, Ind.

Many linguistically handicapped children have difficulties in learning mathematics. Such children have a double handicap. They encounter the language of

mathematics, a language which itself has a variety of both oral and written representations, in a classroom where the language of instruction is already a problem for them.

There is now additional evidence to suggest that even mild to moderate hearing losses, such as those resulting from recurrent middle-ear disease can contribute to a general, though in some cases subtle, linguistic problem which subsequently affects the learning of basic mathematical concepts. Relational ideas are particularly difficult for children to understand if they do not hear the entire sentence and process only part of the information provided.

Many unstressed words such as prepositions are critical in understanding certain oral arithmetic problems. A child may not realize that "add" and "and" words perceived to have similar oral movements, have different written forms. Similarly, the child may have trouble sorting out the various words used in problems to express the concept of addition. Teachers may use "combine, bought more, found more", or "got another" for example. Lessons that stress the relationship between the fundamental concepts and the various symbolic representations of these concepts are important. Piaget's (1965) approach to mathematical concept development is also helpful in planning programs to suit children with these special needs.

The Effect of Mild to Moderate Conductive Hearing Loss on Language Development in Children with Neurological Impairment

Sylvia M. Davis, Ph.D.
and Vincent W. Byers, Ph.D.
Department of Audiology and Speech Pathology
Louisiana State University
Medical Center
New Orleans, La. 70119

Customarily, the development of language has been considered to begin with the appearance of first words; however, evidence suggesting that language development begins at birth continues to mount. Without a doubt, language is highly dependent upon auditory skills. Results of recent investigations have revealed that even mild conductive hearing problems, if recurrent, may have deleterious effects on language learning. When abnormalities within the auditory system are detected during infancy or at some point during the language learning years, the child is in need of some medical attention and services of communication specialists.

The obvious rationale for early detection and intervention is that young children are more amenable to skill acquisition than are older children and that secondary handicapping conditions can possibly be prevented. The purposes were: 1) to describe hearing status for the children between zero and three years of age diagnosed as having neurological disorders; 2) to describe language assessment and management procedures utilized with children who present differing neurological impairments; and 3) to discuss the effects of mild to moderate conductive hearing losses on language development in children with neurological impairment.

Hearing assessment and language assessment procedures were repeated at periodic intervals during a 24-month period. Analysis of these longitudinal assessments suggests that middle ear pathology in a neurologically impaired group does not necessarily impede the normal course of language development. Some of the children with middle ear pathology do show a marked delay in language development. While other children with equal or greater middle ear pathology show no language delay. All children demonstrated a language age commensurate with their mental age derived from psychological assessments conducted at 6-month intervals.

The variable of middle ear pathology appears to be a factor in language delay, but it must be examined within a context of other variables if a language delay is present. Possible variables that seem to warrant consideration include: age of onset of middle ear pathology, degree and duration of the loss, stiffness of middle ear system and other handicapping conditions. Also, language intervention and stimulation procedures following early identification, may alleviate or impede deleterious effects on language development.

Audiometric Evaluation of Infants 12-18 Months of Age

Bonnie Forman-Franco and
Allan L. Abramson
Division of Otolaryngology and
Communication Disorders
Long Island Jewish/Hillside
Medical Center
New Hyde Park,
New York

Behavioral Observation Audiometry (BOA) in conjunction with Acoustic Impedance studies has infrequently been evaluated in the 12-18 month infant population. Therefore, a one year prospective

study, was done to gather additional psychoacoustical measurements on this select age group.

Subjects included 73 children (42M, 31F) from the Long Island Jewish/Hillside Medical Center's neonatal registry, seen between the ages of 12 and 18 months. All infants had audiologic evaluations consisting of speech detection and hearing threshold levels sound field and under headphones. Electroacoustic impedance including tympanometry, compliance and acoustic reflex measurements were also attempted.

Complete audiometric results were obtained from 75% (55) infants during the initial audiometric evaluation; 73% (53) provided binaural tympanograms. Only fifty percent of the patients cooperated for all four frequencies attempted on the acoustic reflex studies with a 4% incidence of absent reflexes. Impedance studies confirmed audiometric findings in 77% of the infants evaluated.

Audiometric testing including tympanometry and acoustic reflex measurements have become an important tool in screening the pediatric population. Early detection of a hearing loss is important in the development of speech and language as well as the start of any rehabilitative therapy.

Attempts were made to determine psychoacoustical measurements utilizing BOA and acoustic impedance on seventy three 12-18 month old children. The greatest difficulty encountered in this study was the lack of infant cooperation. Seventy three percent of the population cooperated for tympanometry; seventy five percent cooperated for behavioral observation audiometry. These findings suggest a correlation of reliability between BOA and impedance testing in this select age group. Of the patients who were cooperative for acoustic reflex testing at 500, 1000, 2000, and 4000Hz, four percent elicited no responses. It is generally accepted that there is a five percent no response rate in adults. Of the sixty three percent having acoustic reflex responses, an estimated ten to fifteen percent provided behavioral rather than elicited responses. Nineteen percent failed either form of testing requiring further follow up care.

If reliable acoustic measurements are to be achieved when testing an infant population, then a comprehensive hearing testing program consisting of combined behavioral observation audiometry and impedance studies should be performed.

AAS Annual Meeting Dallas, Texas

meets with the American Academy of Otolaryngology.

Contact: F. Blair Simmons, Program Chairman,
Department of Otolaryngology, Stanford University
Medical Center,
Stanford, California 94305

Purdue Sponsors Telecourse

Purdue University, in cooperation with the Indiana Department of Public Instruction, Division of Special Education, is pleased to offer this telecourse. Its purpose is to assist speech-language pathologists, audiologists and special educators in keeping pace with new information and clinical advances as they relate to the communicatively handicapped preschool child.

The focus of the course will be on identification of, and management techniques for young children with hearing loss. A broad range of pertinent topics including materials for language, speech and auditory intervention will be provided. Issues concerning educational services, alternative communication modes, and infant programs will also be discussed.

The telecourse will utilize the facilities of the Indiana Higher Educational Telecommunication System (IHETS). Participants will view LIVE telecasts originating from the Purdue University, West Lafayette Campus. Telereponse units (talk-back) at each center will make possible teacher/learner interaction. To assist in the mastery of the material presented, the following learning resources will be available:

1. A toll free telephone "hotline" will be maintained throughout the semester for persons wanting individual conferences with the instructor.

2. Participants wishing to review earlier lectures may request 3/4" color videotape cassettes, audiotape cassettes (regular speed), and audiotape cassettes (compressed speed-reduces listening time 50%).

Persons interested should contact: Robert G. Showalter, M.A., Associate Professor, Audiology and Speech Sciences, Purdue University, West Lafayette, IN 47907. Phone: (317) 494-8006.



Maico Features Computer Audiometer

A new, 4-color brochure featuring the Maico MA26 Computer Audiometer is now available from Maico Hearing Instruments, Inc., Minneapolis, Minnesota.

This 6-page descriptive brochure provides important information for your company's hearing conservation program. It explains how, by using the MA26 Computer Audiometer, you can cut employee hearing test time by 30% or more, minimize errors, and yet achieve greater accuracy in testing.

The MA26 Computer Audiometer presents an automatic

printout of test results for each employee, including step-by-step documentation of each threshold. This data can also be transmitted to your company's main computer. The printout record can become a permanent part of an employee's personnel file, and can assist you should medical compensation questions arise.

For a free MA26 Computer Audiometer brochure with complete specifications, write to Maico Hearing Instruments, Inc., 7375 Bush Lake Road, Minneapolis, Minnesota 55435 or call our toll free number 800-328-6366.

International Symposium on Amplification in Education

An International Symposium on Amplification in Education sponsored by the Bill Wilkerson Hearing and Speech Center will be held in Nashville, Tennessee on September 26, 27, and 28, 1979. Some of the general program topic areas include: Sensory capabilities of hearing impaired children, Educational uses of classroom amplification, Desirable characteristics of amplification systems, and Selection of amplification systems. In addition, registrants will have the opportunity to participate in small group workshops on the applications of different types of amplification systems, measuring the classroom environment,

and the use and care of classroom amplification. Some of the faculty include Eric Wedenberg, M.D., who will present the W. W. Wilkerson Memorial Lecture, Arthur Boothroyd, Ph.D., Julia Davis, Ph.D., Marion Downs, M.A., Norman Erber, Ph.D., Gloria Hoversten, M.A., Vernon D. Larson, Ph.D., Daniel Ling, Ph.D., Andreas Markides, Ph.D., Noel D. Matkin, Ph.D., Wayne Olsen, Ph.D., Steffi B. Resnick, Ph.D., Mark Ross, Ph.D. and Daniel M. Schwartz, Ph.D.

For further information contact Vanderbilt Continuing Education, 305 Medical Arts Building, Nashville, Tennessee 37212.



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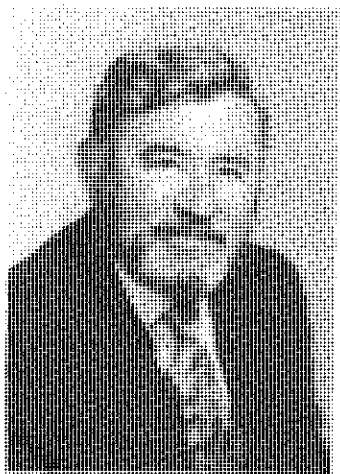
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Glorig Receives CRS Amplifon Award

Past AAS president Aram Glorig has been awarded the cherished Amplifon CRS (Research and Study Center) Award. The award, which carries a \$6,000.00 cash prize, and awarded each year, is bestowed on an outstanding researcher who has contributed to the advancement for studies on deafness. Candidates are nominated for the award and reviewed by an International Prize Committee of 19 members. Mr. A. C. Holland, in announcing the award to AAS, said that Glorig was elected unanimously.

Award ceremonies will be held in the spring, both in Milan and, if possible, in the U.S.A.



Aram Glorig

West Virginia Speech & Hearing Assoc. Holds Spring Meeting

The Spring Convention of the West Virginia Speech and Hearing Association will be held April 18-21, 1979, at the Ramada Inn in South Charleston, WV. This year's convention will be high-

lighted by an outstanding list of guest speakers including Kenneth Berger, Ph.D., Kent State University; Eugene Cooper, Ph.D., University of Alabama; Frederick Darley, Ph.D., Mayo

Clinic; Stephen Kasden, M.S., Pawtucket, R.I.; and Derek Sanders, Ph.D., State University of New York, Buffalo. For further information contact Richard L. Squires, President-Elect

WVSHA, c/o West Virginia Speech and Hearing Association, P. O. Box 3699, Charleston, WV 25335.

Noise/News Begins Eighth Year Of Publication

NOISE/NEWS, published bi-monthly for the Institute of Noise Control Engineering, begins, with the January-February 1979 issue, its eighth year of serving the noise control community. During this period, there were two very significant bills passed by the U.S. Congress: the Noise Control Act of 1972 and the Quiet Communities Act of 1978. The Occupational Safety and Health Administration (OSHA) also took important steps towards a revision of its workplace noise regulation and federal agencies such as EPA and DOT have issued many proposals and regulations concerning noise. All of these items have been regularly reported in NOISE/NEWS.

More than 1500 government reports on noise have been listed, and contract award information is published regularly. Standards

news and news of national and international noise Conferences appears in each issue. A limited number of specimen

copies of NOISE/NEWS are available upon request in order to acquaint potential readers with the content of NOISE/NEWS.

Copies may be obtained by writing to NOISE/NEWS, P. O. Box 1758, Poughkeepsie, NY 12603 U.S.A.

INCE To Sponsor Noise-Con Seminar

The Institute of Noise Control Engineering (INCE) will sponsor a Seminar on Noise Control, the NOISE-CON Seminar, in conjunction with the 1979 National Conference on Noise Control Engineering (NOISE-CON 79).

The Seminar, to be held at Purdue University in West Lafayette, Indiana on 26-28 April 1979, will emphasize the fundamentals of noise control engineering, machinery noise control, in-plant noise, and measurements and facilities for noise control. The staff for the Seminar is made up of

practicing noise control engineers selected by the INCE Board of Directors.

This is the eighth Seminar which has been organized by the Institute to acquaint individuals just entering the field with the basic principles of noise control and with practical methods for control of machinery and in-plant noise.

The fee for the NOISE-CON Seminar is \$375.00 which includes all texts and lecture notes and a copy of the NOISE-CON 79 Conference Proceedings. The Conference itself, which will be held

on 30 April - 2 May, has the theme "Machinery Noise Control." It is sponsored jointly by the Institute of Noise Control Engineering and the R. W. Herrick Laboratories, Purdue University.

A NOISE-CON Seminar flyer will be available in mid-February; the flyer will contain information on the content of the Seminar, the staff and registration forms. For further information, write to the NOISE-CON SEMINAR, P. O. Box 3469, Arlington Branch, Poughkeepsie, NY 12603 U.S.A. or call (914) 462-6719.

International Electric Response Audiometry Study Group Meets

MEETING:

The International Electric Response Audiometry Study Group will hold its biennial symposium on the campus of the University of California, Santa Barbara, from Monday, August 6, through Thursday, August 9, 1979. The meeting will be hosted by the Speech and Hearing Center of the University of California, Santa Barbara.

PROGRAM:

The scientific sessions of the Symposium will be devoted to all aspects of ERA including electro-cochleography, brainstem evoked potentials, cochlear

microphonic and summing potentials, frequency following responses, middle evoked potentials, late evoked potentials and the contingent negative variation—all depending on the topics of submitted abstracts. The sessions will include short lectures (15 minutes), special invited lectures, round table and group discussions and demonstrations of the recording in man of the various evoked potentials. Topics for round table discussions are invited.

Members who are interested in presenting lectures are invited to submit according to the following tentative deadlines:

Lecture Titles—January 15, 1979.

Lecture abstracts (250 words)—March 31, 1979.

Registration—April 31, 1979.

In addition, there will be a social program, a tour of the Santa Barbara area, and a separate accompanying persons program.

Titles, abstracts and requests for further information should be addressed to:

M.I. Mendel, Ph.D.
Speech and Hearing Center
University of California
Santa Barbara, Calif. 93106 USA

Free Volumes Of NCE For New INCE Associates

The Institute of Noise Control Engineering has announced that two free volumes (six issues) of the bimonthly technical publication **Noise Control Engineering** will be given to individuals who become new Associates of the Institute in 1979. The offer, intended to encourage individuals interested in noise and its control to participate in the activities of the Institute, will enable new Associates to begin building a library of back issues of NCE, the only publication in the United States which publishes refereed articles devoted exclusively to noise control.

Any individual interested in noise control may become an Associate of INCE; Associates

receive the bimonthly publication **Noise/News** in addition to NCE. **Noise/News** contains articles of broad interest in noise control, reports of federal regulations and legislation, contract information, lists of government reports and other useful noise control information. Associates also receive mailings of meeting programs of National and International Conferences organized by the Institute.

The INCE Associate application form and specimen copies of both **Noise Control Engineering** and **Noise/News** are available from the Membership Secretariat, INCE, P. O. Box 3206, Arlington Branch, Poughkeepsie, NY 12603 U.S.A.

For AAS Membership
information write:

Membership - American Auditory Society
1966 Inwood Rd.
Dallas, Texas 75235
Call (214) 783-3036

Calendar of Events

1979 FEBRUARY

3-8
THE SECOND SYMPOSIUM ON NEUROLOGICAL SURGERY OF THE EAR, Sarasota, FL. Tuition: \$400; residents and military \$200. Contact: Herbert Silverstein, M.D., P.A., 1849A Hawthorne St., Sarasota, FL 33579.

8-9
TINNITUS WORKSHOP, Washington, D.C. Contact: American Tinnitus Association, P.O. Box 5, Portland, Oregon 97207.

15-17
THE SECOND INTERNATIONAL CONFERENCE ON AUDITORY TECHNIQUES, Hilton Hotel, Pasadena, CA. Co-sponsored by the HEAR Center and the Alexander Graham Bell Assn. Contact: HEAR Center, 301 E. Del Mar Blvd., Pasadena, CA 91101.

16-17
ELECTRONYSTAGMOGRAPHY AND THE DIZZY PATIENT, Miami, FL. A two-day workshop on testing, interpreting and understanding the dizzy patient, conducted by Darrel L. Teter, Ph.D. and Frederick H. Linthicum, M.D. Fee: \$150. Contact: Tracoustics, Inc., Austin TX 78764 or call (512) 444-1961.

16-17
ELECTRONYSTAGMOGRAPHY WORKSHOP, Good Samaritan Hospital, Nursing Bldg., 2167 N.W. Marshall St., Portland, OR. Conducted by Dr. David Wilson, otoneurologist in private practice. Contact: Dr. Harlan D. Conkey, Dept. of Speech Communications, Oregon State University, Corvallis, OR 97331, or call 503-378-4685 or 754-2461.

23-24
CLINICAL ELECTRONYSTAGMOGRAPHY, Advanced Course, Miami, FL. Sponsored by Instrumentation and Control Systems, Inc. Course coordinated by F. Pullen, II, M.D. of the University of Miami School of Medicine, and C. Cabeza, M.A., of the Miami Hearing and Speech Center, 12 hours. Category 1 credit. Fee: \$200. Contact: Marion Servos, ICS, Inc., 520 Interstate Rd., Addison, IL 60101 or call 312-543-6200.

24-March 3
MID-WINTER SYMPOSIUM ON NEUROTOLOGY, (Snowmass, Aspen), Colorado. Sponsored by: American Hearing Research Foundation and Northwestern University Medical School. Contact: Jack D. Clemis, M.D., Program Chairman, American Hearing Research Foundation, 55 East Washington Street, Suite 2105, Chicago, Illinois 60602.

25-March 1
36TH ANNUAL MEETING OF THE AMERICAN CLEFT PALATE ASSOCIATION, San Diego, CA.

MARCH

3-10
THE 13TH COLORADO OTOTOLOGY-AUDIOLOGY WORKSHOP, Vail, CO. Tuition: \$250 for week (\$150 for spouses) or \$50 per day. Contact: 13th Otolaryngology-Audiology Workshop, Box B210, 4200 E. 9th Ave., Denver, CO *0262, or call toll-free 800-323-0639.

3-10
TINNITUS WORKSHOP (in conjunction with 13th Colorado Otolaryngology-Audiology Workshop).

23-24
THE SECOND SYMPOSIUM ON THE APPLICATION OF SIGNAL PROCESSING CONCEPTS TO HEARING AIDS, sponsored by Pennsylvania State University, Speech Pathology and Audiology Dept. Contact: Pennsylvania State University, Kent R. Addis, Conference Coordinator, 410 J. Orvis Keller Bldg., University Park, PA 16802.

MARCH

28-31
9TH INTERNATIONAL HEARING AID SEMINAR, Islandia Hyatt House, San Diego, California. 10 Short Courses—Excellent Faculty. Registration: \$150.00 plus \$20.00/Short Course. Sponsored by: Speech, Hearing and Neurosensory Center, 8001 Frost Street, San Diego, CA 92123. Address correspondence to: Robert E. Sandlin, Ph.D. at the above address.

30-31

CLINICAL ELECTRONYSTAGMOGRAPHY, Los Angeles, CA. Sponsored by Instrumentation and Control Systems, Inc. Courses coordinated by F. Pullen, II, M.D. of the University of Miami School of Medicine, and C. Cabeza, M.A. of the Miami Hearing and Speech Center, 12 hrs. Category 1 credit. Fee: \$200. Contact: Marion Servos, ICS, Inc., 520 Interstate Rd., Addison, IL 60101 or call 312-543-6200.

31-April 7

COMBINED OTOLARYNGOLOGICAL SPRING MEETING, Los Angeles, CA. Contact: Harry W. McCurdy, M.D., Exec. Director, American Council of Otolaryngology, 1100-17th St., N.W., Suite 603, Washington, D.C. 20036.

APRIL

1-6

FOURTH ASIA-OCEANIA CONGRESS OF OTORHINOLARYNGOLOGY, Sidney, Australia. Sponsored by the Oto-Laryngological Society of Australia. Contact: The Congress Secretariat, Otol. Society of Australia, GPO Box 2609, Sydney N.S.W., Australia 2001.

8-21

WEST VIRGINIA SPEECH & HEARING ASSOC. S. Charleston, W. Va., Contact Richard L. Squires, President Elect, WVSHA PO Box 3699, Charleston, W. Va. 25335.

19-20

TINNITUS WORKSHOP, Boston, MA. Contact: American Tinnitus Assoc., P.O. Box 5, Portland, OR 97207.

27-28

CLINICAL ELECTRONYSTAGMOGRAPHY, Toronto, Canada. Sponsored by Instrumentation and Control Systems, Inc. Courses coordinated by F. Pullen, II, M.D. of the University of Miami School of Medicine, and D. Cabeza, M.A., of the Miami Hearing and Speech Center, 12 hrs. Category 1 credit. Fee: \$200. Contact: Marion Servos, ICS, Inc., 520 Interstate Rd., Addison, IL 60101 or call 312-543-6200.

30-May 2

NOISE-CON 79 - MACHINERY NOISE CONTROL, Purdue University, West Lafayette, IN. Sponsored by the Institute of Noise Control Engineering/USA and the R. W. Herrick Laboratories, Purdue University. Contact: Noise-Con 79, 116 Stewart Center, Purdue University, West Lafayette, IN 47909 or call 317-749-2533.

MAY

9-11

INTERNATIONAL SYMPOSIUM ON OTITIS MEDIA WITH EFFUSION, Columbus, Ohio. Sponsored by Ohio State University College of Medicine. Contact: David Lim, M.D., Department of Otolaryngology, College of Medicine, Ohio State University, 456 Clinic Dr., Columbus, OH 43210.

13-16

ASSOCIATION OF SERVICE PROGRAMS IN COMMUNICATIVE DISORDERS, Wentworth by the Sea, Portsmouth, New Hampshire. Contact: Hubert L. Gerstman—Local arrangements New England Medical Center Hospital, Speech, Hearing and Language Center, 185 Harrison Avenue, Boston, MA 02111 (617) 956-5300.

17-18

TINNITUS WORKSHOP, Chicago, IL. Contact: American Tinnitus Assoc., P.O. Box 5, Portland, OR 97207.

17-19

INTERNATIONAL SYMPOSIUM ON THE HEARING IMPAIRED CHILD, Cincinnati, OH. Sponsored by the Dept. of Otolaryngology and Max. Surgery, University of Cincinnati Medical Center, the Communicative Disorders Foundation, the Children's Hospital Medical Center of Cincinnati and CONMED. Accredited for CME, 22.5 credit hrs. in Category 1, the AMA's PRA program. Contact: Allan Be. Seid, M.D., Asst. Prof. of Oto. & Max. Surgery, University of Cincinnati Medical Center, Children's Hospital, Elland and Bethesda Ave., Cincinnati, OH 45229 or Dr. Robert Keith, Div. of Audiology and Speech, 234 Goodman St., Cincinnati, OH 45267.

24-26

WORKSHOP ON STAGGERED SPONDAIC WORD AND COMPETING ENVIRONMENTAL SOUND TESTS with Jack Katz, Laramie, Wyo. Contact: Ben J. Koperski, M.A., Dept. of Speech Pathology/Audiology, University of Wyoming, P.O. Box 3311, 30 Ross Hall, Laramie, WY 82071, (307) 766-6426.

JUNE

20-27

8TH WORLD CONGRESS OF THE WORLD FEDERATION OF THE DEAF, Varna, Bulgaria. Contact: The Bulgarian Organizing Committee, 3 General V. Zaimov Blvd., Sofia, Bulgaria 1527.

21-22

TINNITUS WORKSHOP, Philadelphia, PA. Contact: American Tinnitus Assoc., P.O. Box 5, Portland, OR 97207.

22-23

CLINICAL ELECTRONYSTAGMOGRAPHY, Chicago, IL. Sponsored by Instrumentation and Control Systems, Inc. Courses coordinated by F. Pullen, II, M.D. of the University of Miami School of Medicine, and C. Cabeza, M.A. of the Miami Hearing & Speech Center, 12 hrs. Category 1 credit. Fee: \$200. Contact: Marion Servos, ICS, Inc., 520 Interstate Rd., Addison, IL 60101 or call 312-543-6200.

JULY

25-27

INTERNATIONAL WORKSHOP ON THE "AT RISK" INFANT, Tel Aviv, Israel. Write to: International Workshop, P.O. Box 16271, Tel Aviv, Israel.

AUGUST

6-11

NINTH INTERNATIONAL CONGRESS OF PHONETIC SCIENCES, Copenhagen, Denmark.

SEPTEMBER

5-7

VIII ANNUAL CONVENTION OF THE SOUTHERN AUDIOLOGICAL SOCIETY, Savannah, GA.

11-14

VIII INTERNATIONAL CONFERENCE ON NOISE CONTROL ENGINEERING, Warsaw, Poland. Verbal and poster-form presentations in all branches of noise control activities are solicited. Contact: Inter-Noise 79, IPPT, PAN, ul. Swietokrzyska 21, 00-049, Warszawa, Poland.

13-14

TINNITUS WORKSHOP, Atlanta, GA. Contact: American Tinnitus Assoc., P.O. Box 5, Portland, OR 97207.

26-28

INTERNATIONAL SYMPOSIUM ON AMPLIFICATION IN EDUCATION, Bill Wilkerson Hearing and Speech Center, Nashville, Tenn. Contact Vanderbilt Continuing Education, 305 Medical Arts Bldg., Nashville, Tenn. 37212.

27-28

TINNITUS WORKSHOP, San Diego, CA. Contact: American Tinnitus Assoc., P.O. Box 5, Portland, OR 97207.

OCTOBER

25-26

TINNITUS WORKSHOP, New York, NY. Contact: American Tinnitus Assoc., P.O. Box 5, Portland, OR 97207.

NOVEMBER

16-19

AMERICAN SPEECH AND HEARING ASSOCIATION, Atlanta, GA.

26-30

ACOUSTICAL SOCIETY OF AMERICA FALL MEETING, Salt Lake City, Utah.

29-30

TINNITUS WORKSHOP, DALLAS, TX. Contact: American Tinnitus Assoc., P.O. Box 5, Portland, OR 97207.

1980

JUNE

22-27

14TH WORLD CONGRESS OF REHABILITATION INTERNATIONAL, Winnipeg, Canada.

AUGUST

4-8

INTERNATIONAL CONGRESS ON EDUCATION OF THE DEAF, Hamburg, Germany. Write to: German Convention Service, Kongressorganisation, Walter Stohrer OHG, Hohe Bleichen 13, D-2000, Hamburg 36.

4-7

18TH INTERNATIONAL ASSN. OF LOGOPEDICS AND PHONEATRICALS, Wash., D.C.

Pre-register for
October AAS
Meeting in Dallas
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More Abstracts,
Pictures From
Recent Meeting
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Journal of The American
Auditory Society to
Change Drastically
See Page 1

CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 4, No. 3

July, 1979

'Mr. Ear' To Be Carhart Lecturer

The annual AAS Carhart Lectureship Award goes this year to Aram Glorig, founder and first president of AAS. The Executive Committee voted unanimously to designate Glorig for the 1979 honor. This prize follows closely the April Amplifon Research and Study Center Award he received in Italy, culminating the most distinguished career in the medical-audiology profession.

Glorig was indeed one of the first Medical Audiologists in history and deserves the title "Mr. Ear" for his life-long devotion to auditory problems. Together with Norton Canfield he helped develop the field in the Army where Raymond Carhart also began his career. Following World War II Glorig became head of the Walter Reed Speech and Hearing Center, where he established the complete hearing aid and aural rehabilitation service that has been used as a model ever since.

In 1952 Glorig became director of the AAOO's Sub-Committee on Noise in Industry. There he put out the classic studies on the

effects that became the basis for all noise-in-industry programs.

In 1960 Glorig became Director of the Callier Hearing and Speech Center in Dallas. He built this center into a facility that became a model for education of the deaf, audiological services and research activities. He continued to direct investigations into noise effects as well as other areas related to hearing. On his retirement from Callier in 1977 he became director of Research for the Otologic Medical Group in Los Angeles, where he continues to make outstanding contributions. In the April 1979 issue of the Journal of the American Auditory Society he gave a classic report on Hearing Loss in the Aging that should be read by all audiologists.

Glorig's great emphasis on noise in Industry makes it appropriate that his title for the Carhart Lecture will be: **Noise: Past, Present and Future**. It will be a rewarding experience for AAS members and guests to hear this great statesman in the field of audition. AAS will be proud to salute "Mr. Ear."

Simmons Arranges AAS Program

Blair Simmons as Program Chairman for the 1979 meeting has put together a program to top even the outstanding offerings of last year. He has arranged special talks on Mondini deafness by Michael Paparella and by William and John House, as well as reports on Evoked Responses and other topics (see complete program below).

The highlight of the program will be the Carhart Memorial Lecture by Aram Glorig entitled:

Noise: Past, Present and Future.

It is appropriate that this program will be held in conjunction with the Academy of Otolaryngology meeting in Dallas. It will begin at 8:30 October 9th and take up the entire morning.

Simmons has arranged with the Academy to have this meeting a recognized activity of the Academy. The AAS meeting will be held in room E410 at The Dallas Convention Center. A preregistration form and program are on page 9.

AAS Journal Veers to 'Ears'

(Editor's Note: Just as we are going to press comes the news that The Journal of the American Auditory Society will undergo a major change and it will be vastly expanded. President Sam Lybarger gives us a summary of the changes in the following story).

As a result of two conferences in Baltimore with Williams & Wilkins, publisher of the Journal of the American Auditory Society, that were attended by Don Harris, Ross Roeser and myself for AAS and Alma Wills and Jim Gallagher for Williams & Wilkins, a new plan for our journal was worked out and has been approved by the AAS Executive Committee.

Starting with the first issue in 1980, the journal will have a broader scope that we believe will be extremely interesting to our members and to other subscribers. In addition to the present type of original articles, the new format will add a series of regular sections to bring additional useful ideas and information to serve the varied needs of our membership. Such new sections as book reviews, techniques and applications in hearing aids, foreign translations, residents and interns page, clinical notes and invited editorials are under consideration. Advertising space will be made available and advertising solicited by Williams & Wilkins.

To emphasize the fact that we are beginning a fresh, new concept for our journal, a new name will be adopted starting in 1980. The new name will be:

**EAR and HEARING
Journal of the
American Auditory Society**

Ross J. Roeser has accepted the assignment of Editor-in-Chief of the new journal and is already in the process of building his editorial staff for the regular sections to

be added. Ross's dedication and enthusiasm with respect to AAS matters will be of tremendous importance to the success of the new undertaking.

J. Donald Harris will continue as an important editor in the new journal, covering the area of original articles with the expertise that he has demonstrated as Editor-in-Chief of our present journal. Don will remain Editor-in-Chief for the journal in its present format through 1979, completing the three remaining issues to be published this year.

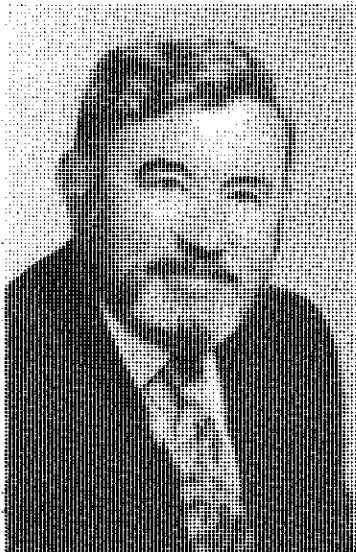
Alma J. Wills is the person at Williams & Wilkins responsible for publication of American Auditory Society journals. She is an experienced and competent individual who contributed many of the ideas for the new journal and who is enthusiastic about making our journal very successful.

To make the new Journal a financial success for ourselves—that means keeping dues at as low a level as possible—and for Williams & Wilkins—that means returning a fair profit—we need the help of every member to increase our membership. In attending various meetings earlier this year, I found many people unaware of AAS and the fact that it was formed to foster cooperation between the medical, audiological and hearing aid professions. Many of these people need only to be told about AAS and asked to join our Society. We need a vigorous membership campaign and you will be hearing more about this in the near future.

Let's give our new editorial staff our fullest cooperation and support for the great job that I know they are going to do.

A final word—Corti's Organ will, of course, be continued in its highly successful form.

Sam Lybarger, President



Aram Glorig

Program of the 1979 AAS Annual Meeting

8:00—Registration opens

9:00—Metabolic Mapping of Cortical Activity. William F. Rintelmann.

9:15—Binaural Interaction in Human Auditory Evoked Responses. Robert A. Dobie.

9:30—Mondini Deafness: Theory and Results of Endolymphatic Shunt Surgery. William House and John House.

9:45—Mondini Deafness: A Review of Temporal Bone Histology. Michael Paparella.

10:00—Percent Hearing Loss: What You See Ain't What You Get. Niel Ver Hoef.

10:15—The Effectiveness of Rescreening in a School Conservation Program for Conductive Hearing Loss. R. J. Pellerin and J. C. Cooper, Jr.

10:30—Recovery of Suprathreshold Auditory Test Function after Removal of C.P.A. Tumors. G. Richard Holt.

11:00—Brainstem Evoked Response Audiometry Results from Hydronic Patients. Claude P. Hobeika, Dorsey Ann Flemming, Andrea B. Rappaport, and Gayle P. Riemer.

11:30—Word Discrimination in Quiet and Noise by Children and Adults: A Second Look. Gail D. Chermak, and Joan Dengerink.

11:45—Aram Glorig's Carhart Memorial Lecture: Noise: Past, Present and Future.

12:45—Business Meeting.

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Editorial

A TRIBUTE TO J.D.

In this issue is announced a radical change in the Journal of the American Auditory Society. A new name, a new editor, a new format, a new editorial policy—all designed to stimulate circulation at a time when competition is running wild among new rival journals. Whether Ear and Hearing will win, place or show remains to be seen, but it should fill a particularly valuable cross-disciplinary niche.

AAS is strongly indebted to J. Donald Harris for presiding at the starting gate of the Journal. From scratch he developed a new publication, using all the facilities at his command to make it go. No one else could have given the journal an immediate impetus nor molded it into a scholarly event.

J. D. maintains such a low profile that few people recognize the tremendous contribution he has made to the profession in general and to AAS in particular. A Renaissance man, he was once described in Corti's Organ as "a pianist of stature, a classical scholar, an appreciative naturalist and a philosopher of the

Letter from England

Dear Editor:

Among the fringe benefits of being an itinerant symposiast nothing could have given me more pleasure than the opportunity of meeting you and other friends again. The occasion was the Second International Symposium on Recent Advances in Otitis Media with Effusion in Columbus: inspired by our dear friend Ben Senturia and splendidly organized by David Lim. A most successful meeting; whose conclusions and directives will guide our work for many years to come.

It is interesting to note that also on this side of the Atlantic interest in Otitis and its sequelae has been growing, e.g. in epidermoid cholesteatoma, cholesterol granuloma (see recent papers in the Journal of the Royal Society of Medicine and Journal of Laryngology).

I cannot help wondering why some of the well founded histopathological and experimental findings continue to be ignored by some workers.

On the way to Columbus a week

in New York has given us the opportunity not only to enjoy revisiting the Rockefeller University, an oasis of flowers around the hallowed old and new buildings of this great institution, but also to applaud the progress of the team Ruben-Vande Water at Einstein. There was more to come in Los Angeles where the Ear Research Institute never ceases to inspire and stimulate me. About that in my next letter.

We have returned to England in a terrifying thunderstorm and drove home from the airport in blinding rain. But at last the anticyclone from the Azores has moved nearer to England and we have enjoyed a walk in the nearby woods without wearing a raincoat. Since a gallon of petrol now costs £1.12p, that is more than two dollars, walking is good for the health of senior citizens, if you know what I mean.

Wimbledon is coming... you will be joining us in watching on television the progress of your famous 'Superbrat'!

—Imre Friedmann

Minnesota Hosts Sensorineural Symposium

An International Symposium on Sensorineural Hearing Loss, Vertigo and Tinnitus is being presented by a group from the University of Minnesota headed by Mike Paparella. It will be held under the combined sponsorship of the University, Hearing Instruments Institute and Lions International District 5M.

An extensive faculty includes: Hugh Barber, M.D.; Charles Berlin, Ph.D.; D. Thane Cody, M.D.; Bud Danylchuk, D.D.S.; Hallowell Davis, M.D.; Arndt Duvall, III, M.D.; William Ely, M.S.; Michael Glascock, III, M.D.; Robert Gorlin, D.D.S.; Marcos Goycoolea, M.D.; Jacabo Guzowski, M.D.; Jerome Hilger, M.D.; Howard House, M.D.; William House, M.D.; James Jerger, Ph.D.; John Kenwood, Frank Lassman, Ph.D.; Gunnar Liden, M.D.; David Lim, M.D.; John Lutter; Ralph Lynam; Brian McCabe, M.D.; David McCullough, M.D.; Tetsuo Mori-

sciences as well as of the arts." He has "demonstrated his deep comradeship with classical literature and arts, and has shown in his speaking and writing an abiding love of the English language."

We thank J.D. for coming to the aid of the infant Auditory Society and lending his great resources to the start of its journal. No scholarly society can be successful without a scholarly publication, and J.D. has gotten us off and running in his exemplary style. There are few scholars of his ilk still around and we hope he will continue to be an elder statesman for this growing society.

MPD & RJR

Telephone Pioneers Pioneer BSER

Brain stem evoked response testing has been reported at numerous learned societies, but a group of volunteers is making the technique available on a mass basis. The Telephone Pioneers of America are a group of veteran telephone employees who are committed to supporting projects to aid communicative disorders. With the guidance of Phillip Peltzman, San Francisco audiologist and EEG experts, they are manufacturing a simple screening BSER unit capable of rapidly screening the hearing of newborn babies.

The Pioneers are providing the instruments plus trained volunteers to do the testing in field trials in various hospitals in California and other states. The information from the screening test goes to a central computer in San Francisco, where statistics will be recorded and the results interpreted.

Peltzman is a former member of the Joint Committee on Infant Hearing Screening of ASHA, Pediatrics and Otolaryngology. He has published extensively on EEG recordings in neonates.

Glorig Receives Prize For His Contribution

The 1978 Amplifon Research and Studies Centre International Prize was awarded to Dr. Glorig, a world known U. S. Otolologist, for his outstanding contribution to the study of industrial noise deafness, through which both public awareness of the hazard and U. S. legislation to prevent it were obtained.

Dr. Glorig was awarded the prize (worth approximately \$6,000 and considered the most important honour for audiology) at the Milan (Italy) Press Club on the 5th of April, 1979, where a packed assembly of his colleagues listened to Prof. Gino Sacerdote, former Director of the "Istituto Galileo Feraris" of Turin, extolling his praises. Industrial noise and its harmful effects on hearing is a dramatic problem in today's world and its importance has now been finally recognized in Italy, involving both

public opinion and scientific and political awareness.

Therefore the attribution of the prize to Dr. Glorig was particularly useful to attract public attention to this problem, in Italy, and to stress the importance of finding the means to solve it.

On the 6th of April, after the prize ceremony, Dr. Glorig was the guest of honour at a meeting organized by the Italian State Occupational Insurance Organization, (INAIL), where he delivered a highly successful "magistral lecture" before over 300 delegates.

Previous CRS prize winners have been: Prof. Tokura Suzuki (Japan), Prof. Erik Wedenber (Sweden), Prof. Hallowell Davis (U.S.A.), Prof. James Jerger and Prof. Jozef J. Zwislocki (U.S.A.), Mrs. Suzanne Borel Maisonn (France) and Prof. Michele Anslan (Italy).



Dr. Aram Glorig being presented with the Amplifon CRS International Prize by Mr. Charles Holland at the Press Club in Milan (Italy).

Milan, April 5th, 1979

**AAS
Annual
Meeting
Oct. 9**

Report From British Society of Audiology

A meeting of the British Society of Audiology was held in London on April 27, 1979. The chairman of the meeting was Mr. M.C. Martin, O.B.E. The following are abstracts from the meeting:

CURRENT TRENDS IN THE USA

by Samuel F. Lybarger

Acoustical Consultant Mc-Murray, Pennsylvania, USA

Governmental regulation of "medical devices" by the U.S. Food and Drug Administration includes hearing aids. ANSI Standard S3.22 was developed with the aim of providing highly reproducible test methods and is used in FDA regulations to compare actual hearing aid performance to that stated by the manufacturer. One new concept in this standard is the use of the "entrance pressure method" of determining input sound pressure level.

Other areas of activity in the USA are:

"In-situ" measurements of hearing aids using the KEMAR manikin or free-field testing of individuals with hearing aids by dispensers.

Determination of desirable frequency response in hearing aids; the work of Pascoe is of particular interest.

Wide-band hearing aids with specialized earmold "plumbing" proposed by Killion.

Signal processing in hearing aid amplifiers for noise reduction (Graupe and Causey) or for special types of compression.

Tinnitus research and the use of tuned random noise maskers.

PSYCHOACOUSTIC FACTORS RELEVANT TO DESIGN OF HEARING AIDS TO COMPENSATE FOR SENSORIENEURAL HEARING LOSS

by B. C. J. Moore

Department of Experimental Psychology, University of Cambridge

The differences between normal listeners and those with sensorineural hearing impairments are described in relation to the following basic psychoacoustic factors: loudness, masking, lateral suppression, pitch perception and temporal acuity. The effect of these differences on the ability to identify and discriminate sounds is discussed. It is concluded that conventional hearing aids can only be of limited benefits, and that severe problems can be expected under conditions of background noise or high room reverberation.

The rationale and drawbacks of hearing aid designs (such as multi-channel compression) which attempt to compensate for sensorineural hearing loss is discussed. In some cases of sensorineural hearing loss the ability to extract information from acoustic inputs may be so limited that speech comprehension will only be achieved by a combination of acoustic and lip - (speech) read information. In these cases there may be an advantage in extracting prosodic features from the speech, and presenting only those features.

TOWARDS A SCIENTIFIC BASIS FOR HEARING AIDS

P. L. Lyregaard

Oticon Research Unit
Snekkersten, Denmark

The hearing aid of today is, despite many years of development, little more than an amplifier of sound. Recent developments in microelectronics have opened up vast possibilities of processing the acoustic signal before reaching the ear, but the type of processing likely to benefit hard-of-hearing persons most remains to be determined.

Evidently the starting point should be the characteristics of the hearing impairment to be alleviated by the hearing aid, and the acoustical characteristics of the signal, but it would appear that scientific investigations of the psychoacoustics of auditory disorders are much less advanced than in the case of normal hearing.

It is also timely that the art of selecting and adjusting a hearing aid to a particular hearing impairment be scrutinized such that, hopefully, hard scientific fact may prevail over the present intuitive approach.

"WHERE DOES THE USER WANT TO GO?"

Mr. J. Neville Brown

Engrams Hearing Aids
2 Shepherd Street, W.I.

Every hearing aid user knows the answer to that question without hesitation. He wants to go straight to what he believes would be the ultimate stage; he wants to have a hearing aid that cannot be seen when in use, that requires no manual adjustment, and that gives him perfectly normal "natural" hearing. Most users would be prepared to forego the first two requirements if the third one could be attained; although in practice, the achievement possibilities would appear to be the other way round.

With the user's viewpoint in mind, some questions are made, and some suggestions asked, in the hope that they may give some indication of the answer to the question "Where do we go from here?"—or, at the very least "Where should we be trying to go from here?"

RECODING OF SPEECH FOR THE DEAF

Dr. M. Velmans

Department of Psychology
Goldsmith College, London

In cases of sensorineural hearing loss, where residual hearing exists only in the low frequency region (e.g. below 2 kHz) selective amplification may be insufficient to restore intelligibility to speech. Under these circumstances it may be desirable to "Recode" information normally distributed in the higher frequencies (e.g. 2 to 8 kHz) into a detectable low frequency form.

In general, the rationale underlying recoding device design has proceeded largely from informa-

tion theory or engineering considerations e.g. focussing on how to "squeeze" information normally occupying an 8 kHz bandwidth into a 2 kHz bandwidth. It appears, however, that the degree of added benefit which may be obtained by recoding varies considerably with the mode of recoding employed, with the residual hearing bandwidth and with the relative ability of patients to make use of their residual hearing.

A given recoding technique, therefore, if it can be shown to be of benefit, should be supplied in the context of a "clinical package." This would consist of a procedure for diagnosing those patients likely to benefit from the technique, means for fitting the device (e.g. for setting an optimal mix of "recoded" and "non-recoded" information) and means for assessing the precise benefit obtained. An example of one such "clinical package" currently under development, will be discussed.

DESIGN PHILOSOPHY OF EQUIPMENT FOR HARD OF HEARING CHILDREN

Mr. Thaler
Siemens Ltd.
Germany

The paper follows the development from nonaural to stereo group training systems and discusses the acoustical advantages of the stereo system. The theme is developed to discuss modern day freedom of movement systems and looks at the technical aspects of infra-red transmission. Finally the paper examines technical developments to be expected in the future.

THE EFFECTS OF HEARING AID FREQUENCY RESPONSE MODIFICATION

Mr. B. W. Lawton

B.S.V.R. University of Southampton

The miniaturisation of hearing aid components for the popular behind-the-ear aids has led in some cases to less available power and narrower, irregular frequency range. Is the frequency-restricted, amplitude-distorted amplified sound the best that can be provided? This problem is of particular importance to the National Health Service which issues aids on the philosophy that for the majority of aid users, a single frequency-gain characteristic provides optimum amplification.

A study was conducted to determine whether smoothing and extending the frequency response of the N.H.S. BE-11 (behind the ear) hearing aid would have any beneficial effects upon the speech discrimination of hearing impaired aid users. Free-field speech audiometry is quiet and in noise showed significantly improved speech discrimination using modified response hearing aids. The response changes also produced significant improvements in the judged quality of amplified sound.

A CONTROLLED FEEDBACK HEARING AID

Dr. M. J. Bennett

Clinical Measurement Section
Department of Mechanical Engineering
Brunel University, Uxbridge

A hearing aid has been devised which will accept and cancel acoustic feedback as part of its normal operation. In standard aids, acoustic feedback occurs whenever the output sound from the earpiece receiver is of sufficient intensity to excite the input microphone. The aid goes into oscillation and the output level rises to a maximum. This produces severe discomfort and possible damage to the ear. The problem is particularly severe with high gain aids and in children where their rapid growth prevents a good ear mould fit from being maintained.

The new aid shifts the input signal to produce a slightly lower frequency and amplitude at the receiver in the presence of feedback conditions. When this signal itself feeds back, it will again be shifted and the cycle repeated. This process totally inhibits feedback oscillations. In normal use the shift process is inoperative and no additional signal distortion occurs.

PRIORITIES FOR HEARING AID RESEARCH

M. C. G. Rice

I.S.V.R., The University
Southampton

The sensori-neural hearing loss patient has loudness, pitch and temporal coding inadequacies, which cannot be wholly rectified by electro-acoustic means, because no instrument can either restore or adequately substitute for degenerated sensory cells and nerve fibres.

Nevertheless efforts have been made to try and improve such patients ability to perceive sound by fitting them with some form of hearing aid. This process has been aptly described by Shipley as "a utilisation of the practitioners accumulated experience combined with a process of trial and error." In fact some forty years of research have produced no definite scientific basis for the fitting of hearing aids, and it may well be a myth to suppose we can reliably relate a patient's hearing loss to a suitable prosthesis. Furthermore we can almost categorically state that we do not know why particular hearing aids are found satisfactory by particular patients.

Assuming hearing aids can be of worthwhile value it is not unreasonable to expect that future research should be at least minimally co-ordinated if clearly identifiable and quantifiable progress is to be expected. This presentation outlined some factors felt to be worth of consideration in such a context.

Dictionary of Acoustic Terminology

The following contribution to further the state-of-the-art originally appeared in the May 1978 issue of EDI-tion published by Engineering Dynamics International, St. Louis, MO. It is republished below as an important addition to the literature.

Acoustic—Instrument issued to play billiards
Alias—Banned by consultant when moonlighting
Ambient—Not understood
Audiogram—A singing telegram
Attenuation—One more than a nine-uation
Background Noise—Wife's nagging
Baffle—Short course in acoustics
Broadcast—All girl orchestra
Broadcast—One used on a woman
Diode—Poem about death
Feedback—Upchuck
Flogging—A punishment combining flogging and spanking
Free Field—One that can be homesteaded
Frequency—One that doesn't cost anything

Ground Loop—Forward somersault
Hertz—Frequency (Avis—2nd harmonic)
Histogram—Telegram from an historian
Impact—Deed of a mischievous child
Loudspeaker—Mother-in-law
Microphone—Telephone for mid-gets
Multiplexed—Perplexed by many things simultaneously
Narrow Band—Orchestra in single file
Noise—Medical attendant in a Brooklyn hospital
Obake—Average for October
Ohm—English house
Pink Noise—Detente
Random Noise—Congressional debate
Reverberation—Replacing the verb in a sentence
Spectrum—Discharging Cuban liquor from the mouth
Standing Wave—Female naval person at attention
Transmission Loss—Clutch out

"I was hungry and you formed a committee to investigate my hunger. . .
I was homeless and you filed a report on my plight. . .
I was sick and you held a seminar on the situation of the underprivileged. . .
You have investigated all aspects of my plight. . .
And yet I am still hungry, homeless and sick."

Anonymous

Abstracts From Vail Conference

(Continued from April Issue)

OTOTOXICITY AN IATROGENIC DISEASE

by Robert Brummett
University of Oregon

Over the past several years it has been well documented that a devastating ototoxicity can result in patients who receive both an aminoglycoside antibiotic and a loop inhibiting diuretic. The aminoglycoside antibiotics that are currently in use are streptomycin, neomycin, kanamycin, gentamicin, tobramycin, amikacin, and paromomycin. The available loop inhibiting diuretics are ethacrynic acid and furosemide. Furthermore, two experimental loop diuretics, bumetanide and piretanide interact well. None of the other classes of diuretics exhibit this interaction.

The characteristics of this interaction is that it takes place within a few hours of the time that single doses of each drug are given. The interaction effect can be monitored by a depressed ability of the cochlea to generate the AC cochlear potential and is seen about two hours after the drugs have been administered.

Clumping of the nuclear chromatin of the outer hair cells can be seen one hour after drug administration and at two hours, a loss of the smooth endoplasmic reticulum of the subsurface cisterna is seen. Four hours later the cells are markedly damaged and may be dead. Alterations in the mitochondria are not seen before 4 hours.

While this effect is rather specific for the loop inhibiting diuretics, it is not so specific for the aminoglycoside antibiotics. All of the aminoglycoside antibiotics can produce the interaction, but in addition, so can the non-aminoglycoside antibiotics; viomycin, capreomycin and polymyxin B. The antibiotics, vancomycin, polymyxin E and spectinomycin do not produce the interaction. It, therefore, appears that antibiotic induced interactions with the loop inhibiting diuretics may be a much more general phenomenon than is currently believed and special attention should be directed to monitoring auditory function in patients receiving any antibiotic therapy in combination with a loop diuretic.

HIGH CONCENTRATION OXYGEN INHALATION AS PROTECTION AGAINST NOISE INDUCED HEARING IMPAIRMENT

by David Lipscomb

A series of research projects was reviewed in which it was found that for both humans and chinchilla, inhalation of Carbogen (95% O₂, 5% CO₂) provided a degree of protection from intense sound stimulation. Regardless of whether the Carbogen inhalation occurred immediately before, during or immediately after noise exposure, the groups inhaling Carbogen experienced slightly less post-stimulatory TTS; the TTS recovery rate was accelerated; and, in animals, very

intense sound exposure resulted in less histologically observable damage for Carbogen treated subjects. It was concluded that Carbogen has a potentially useful application in cases of accidental noise exposure as post-stimulation treatment or in cases wherein adequate hearing protection cannot be guaranteed, pre-exposure inhalation of Carbogen can have a degree of protective value.

THE EFFECTS OF EARLY MIDDLE EAR PROBLEMS ON LATER LEARNING DEVELOPMENT REVISITED

by R. Ray Battin

The high incidence of early otitis media has focused attention on the long range effect on developmental auditory, language, learning skills. Pediatricians, Otolologists, Audiologists and Psychologists have documented delays in auditory processing and language-learning skills in youngsters with a history of early, chronic otitis media.

Since patients who consult with the above professionals are referred because of problems and thus may present a biased population, we decided to administer our comprehensive neuropsychological test battery to children with a positive middle ear history but who appeared not to have experienced behavior, speech, language or learning problems. Included among the tests were the Stanford Binet test of Intelligence, Illinois Test of Selective Attention, Attention subtests from the Detroit Test of Learning Abilities and the Templin-Darley Test of Articulation Development. Three children who had been followed otologically and audiologically from infancy because of chronic otitis media and who had documented, repeated, mild conductive hearing losses during the early years were administered the complete test battery. Two of the youngsters tested in the superior range of abilities, the third in the high average range. All three received a mean scaled score of 42 on the ITPA, the general population mean is 36. The means for the auditory-verbal subtest of the ITPA were 43, 46 and 42.

In summary, some children are susceptible to delay in auditory-language-learning skills when reoccurring otitis media is present during the early years while other children are not. It appears that the developing auditory-language-learning system can handle a stress such as a mild conductive hearing loss if other factors such as maximum environment, general health, familiar background, language background, neo-natal and natal history are positive. Additive stress factors may be the reason for variation in the punitive effect of middle ear disease during the formative years.

Identification and Implications of Visual Impairments for Hearing Impaired Persons: An Overview of a Project by Frank Caccamise, Donald D. Johnson, Nancy J. Kadunc, and Anita Rothblum

and
Identification of Visual Impairments in a Young Adult Deaf Population by Frank Caccamise, Lowell F. Hamilton, Donald D. Johnson, and Nancy J. Kadunc

These two papers provided an overview and initial results of a vision research project being conducted by the National Technical Institute for the Deaf (NTID), Rochester, New York. This project has three main objectives: 1) to determine the types and incidence of visual impairments among hearing-impaired college age students attending NTID; 2) to determine the most appropriate means for identifying these visual impairments; and 3) to assist in the providing of appropriate counselling relative to educational and career experiences for persons with both hearing loss and visual impairment.

Comparative vision tests results for NTID students were presented, with these comparisons involving: 1) personal questionnaires for students, 2) off-campus general health physicals, 3) off-campus ophthalmological examinations, 4) on-campus ophthalmological examinations, and 5) an on-campus visual screening program. This screening program includes the use of the Ortho-rater, Titmus Stereo Tests, and Iphihara Color Vision Test. Visual parameters assessed include acuity, refraction, binocular vision, color vision, and peripheral vision.

Based on the above comparisons, recommendations were made for revision of visual screening referral criteria for in-depth visual examination by a vision specialist. Further, recommendations were made for continued research involving comparisons of vision test results from off-campus general health physicals, on-campus visual screening, and on-campus ophthalmological examinations. This research should provide for additional information needed for visual impairment type and incidence data for NTID students (objective 1), and should further clarify the most appropriate means of identifying visual impairments among hearing-impaired persons (objective 2).

Also, plans have been made to conduct interviews with instructors in various technical areas and to conduct follow-up as indicated in order to provide information that will facilitate appropriate academic career counselling with persons having both hearing and visual impairments (objective 3).

Given the importance of vision to persons with hearing losses, it is recommended that: 1) an in-depth vision assessment be done routinely upon discovery of a hearing loss, and 2) re-assessment of visual functioning, as well as auditory functioning, be done periodically for all deaf and hard-of-hearing persons.

THE EAR AS IT WAS MEANT TO BE SEEN

by David Lipscomb

It is awesome to review the known capacity of the ear in dis-

tinguishing the presence of sound and in differentiating between a wide range of acoustic signals according to their meaningfulness. This immensely complex interactive group of specialized tissues did not simply spring instantaneously into being. Millions of years were spent using considerable experimentation and countless forms to achieve the highly sensitive and functional auditory mechanism.

A major theme throughout all we know about the development of hearing is the economy of creation:

- The ear takes up surprisingly little space—an economy which keeps the head no larger than necessary.

- Throughout the progressive stages of development, ear forms were provided which adequately served—but did not outperform the central nervous system, an economy which precluded expanding ability beyond the point of diminishing returns.

- Redundancy in auditory signals has been matched by redundancy inherent in auditory functions to economize on transfer of the information content of each stimulus.

- The developing inner ear took on an increasing role as an analyzer, leaving the central nervous system free to develop greater perceptual skills—an economy in neural organization.

- Providing the simplest structure which could accomplish a given task has been the policy in design of the auditory mechanism throughout the range of structure variation—an economy in tissue acquisition and usage.

- No special anatomical, biochemical, mechanical or architectural principles were invented to serve audition. The ear was designed utilizing existing principles according to the most economical method to employ each principle or set of principles.

In sum, the design and structure of the ear is so complete and so intelligent that it is an impossibility to conceive or to manufacture a system of the size and complexity of the ear which even comes close to the quality of performance we take for granted in our hearing sense.

WILLEFORD BATTERY IN CHILDREN

by R. Ray Battin

The ability to adequately integrate and decode auditorily is one of the problem areas observed in the learning disabled population. Audiologists are taking an increasingly greater interest in evaluating auditory dysfunction as it relates to learning problems. The Willeford battery was initially developed for diagnosing central auditory disorders in adults. It has been used with children with age norms established by Willeford in 1978. Audiologists using the test battery have reported a need to establish norms on their own population when using the battery with children and report lower scores for the Filter Speech and Binaural Fusion subtests.

Twelve children of normal or above intelligence with confirmed

learning problems in the auditory modality and twelve high achieving youngsters with no learning problems were administered the Willeford battery. The non-learning disabled children were able to perform the competing sentences and alternating speech subtests without difficulty. Performance on the Binaural Fusion and Filtered Speech tests fell below Willeford age norms. Further, age performance patterns were not observed. The obtained means for the Binaural Fusion test was 69% with a range of 35% through 95% for the low pass to the right ear and 51% with a range of 30% through 75% for the low pass to the left. The filtered speech test presented a mean of 52% (vs Willeford's 66%) with a range of 40% through 64% for the right ear and 46% (vs 66%) for the left. Three children (25%) had an ear difference which exceeded 10%.

Of the twelve learning disabled, the mean scores were below the normals on all four subtests. However, only three presented depressed scores on the competing sentences subtests and two children did poorly on the alternating speech test. Eight children did poorly on the filtered speech test while seven experienced difficulty with the Binaural Fusion subtest.

Two children who did poorly on the entire battery were placed on Ritalin and retested after six weeks on the medication. Both demonstrated significant improvement on all subtests suggesting attention focusing ability is a critical factor in handling the test task.

Due to the depressed scores experienced by our population, the test battery was administered to eight adults of varying linguistic backgrounds. It was found that individuals with a southern, bilingual or black language background had the same difficulty with the Binaural Fusion and Filtered Speech subtests as did our normal children.

In summary, the Filtered Speech and Binaural Fusion subtests appear to be heavily influenced by the linguistic background of the individual. Norms must be established for each clinic's population, and even then, the language background must be known before the results can be interpreted. Non-language based tests would appear to be the test of choice for evaluating brain stem function. Attention focusing skill also appears to be a critical factor in this battery. In fact, this may be what we are testing in the learning disabled child.

CENTRAL AUDITORY LESIONS

by Moe Bergman

Our work in this area is centered about a rehabilitation hospital for CNS pathology where we have applied tests of CNS dysfunction to two populations: those with cerebral cranial injury (CCI) and others with vascular accidents (CVA).

There were two major differences between these two groups

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The CCI patients suffered diffuse lesions, usually following severe head injuries, while the CVA patients were selected for our study on the basis of a single stroke, with a single focused lesion. Further, there were great age differences between the head trauma patients, most of whom were in their late teens or early twenties, while the CVA patients tended to bunch around age 60. It was evident that the testing must therefore be appropriate to the expected diffuseness or specificity of the lesions and be based upon norms established for the indicated age.

The results of our tests on the CCI patients both supported and deviated from the findings of Lynn and Gilroy's taken mostly from tumor cases. The competing sentences test quite consistently supported the existence of one-sided hemispheric lesions and the RASP test exposed brain stem involvement, where there was neurological evidence of the latter, although there were exceptions to the expected findings.

The results on the CVA cases, selected for lesions other than temporal lobe involvement, and generally free of associated aphasia, strongly indicated that extremely pathologic findings on the competing sentences test (100% on the ear ipsilateral to the central lesion and 0% on the contralateral ear) occurs consistently when the lesion is in the non-dominant (usually right) cerebral hemisphere, but the opposite tends to occur when the lesion is in the dominant hemisphere.

It is clear that results, on such tests of central lesions, are influenced by age, language background and even personality of the patient. Most importantly, the understanding of speech, under stressful listening conditions, depends upon systems of central function located in brain areas which are in different and often distant locations from each other.

While the present findings from the use of tests of CANS disorders are encouraging, we must recognize that the value of such tests in the search for topographic diagnosis is still uncertain.

THE DEVELOPMENT OF THE EAR

By David Lipscomb

In this workshop session, the earliest precursors to the auditory sense were discussed in detail to lay the groundwork for understanding more sophisticated, yet similar, structural entities contained in the mammalian inner ear. A review of the progressive steps in development of the ear ranged from aquatic auditory mechanisms, through amphibian, reptilian and avian species. The appearance of the first quasi-air conduction ears in early reptilian forms initiated a discussion of the relationship between jaw development and middle ear structure and function. Finally, the external ear, largely a structure for mammals was presented completing the remarkable chain of events leading to our human hearing.

BSER ABNORMALITIES IN MULTIPLE SCLEROSIS

by George E. Lynn

In 100 MS patients, abnormal

BSER recordings occurred in 6 or 29% of 21 cases of possible MS, 12 or 44% of 27 cases of probable MS, and in 40 or 77% of 52 cases of definite MS. The most significant abnormal BSER sign of brainstem dysfunction was increased interpeak latency between Waves I to III and III to V. Reduction in amplitudes, alteration in wave morphology and poor repeatability among trials were other aspects of abnormal responses frequently seen in MS. In about 2/3 of the probable and definite MS cases with abnormal BSER, findings indicated bilateral involvement of the brainstem. In most of the early or possible MS cases with abnormal BSER signs, the recordings suggested unilateral brainstem dysfunction. Abnormal BSER may be either focal, indicating involvement at some specific level of the auditory system anywhere from the auditory nerve to the mid-brain level, or may indicate diffuse involvement of the central auditory pathways of the brainstem. Changes in the BSER pattern over time were common and often quite marked during periods of exacerbation and remission of symptoms. Repeatability among trials often became very poor which was another abnormal feature of the BSER. Specific case material was shown to illustrate these findings.

BSER is very sensitive to the effects of MS lesions on the evoked electrical activity of the auditory system in the brainstem and a high percentage of MS patients will have abnormal tracings. BSER recordings are helpful in the diagnosis of MS, in differentiating level of involvement in the brainstem and are also very useful in monitoring the course of MS patients.

TEFLON-INTERPOSITION IN THE SURGERY OF OTOSPONGIOSIS

by J. Causse, J. B. Causse, J. Bel, R. Cezard & P. Michaux

Otology Clinic (Beziers-France) SUMMARY

This technique of stapedectomy, the "teflon-interposition," i.e. teflon piston against vein graft, was presented for the first time in Paris in 1963, fifteen years ago, and then at the International Congress held in Tokyo in 1965.

This technique is a combination of two SHEA's techniques: vein graft stapedectomy and teflon-piston. This combination seems to eliminate most of their drawbacks, chiefly perilymph fistula, thanks to a thin teflon-piston 0.6 mm against a living tissue graft, that is a vein. This technique is methodically described and each of the four operative steps are first illustrated then followed by the surgical application.

Then the method is applied to each of the footplate anatomical types most usually encountered, i.e. more or less encroached: first thin footplates, then "biscuit" footplates, finally, obliterated otospongiosis. Each case is first illustrated by an animated cartoon, then by surgical operating.

The audiometric results, generally good, are shown by the presentation of an extreme, but typical, case of Carhart's notch disappearance. The way of formation of this notch is described in relation to this case which shows its disappearance through a flattening of the curve. The value of the functional results

seems due to the use of a living tissue graft, preferably the vein.

BSER IN LOCALIZATION OF POSTERIOR FOSSA LESIONS

by George E. Lynn

The major points reported in this paper were:

1. In the normal BSER recordings obtained at 75 and 85 dB HL (11 clicks per second), the important components of the response are the absolute latency of Wave I and the I to III and III to V interpeak latencies. Amplitudes, wave morphology and repeatability among trials are other important aspects of the response pattern.

2. In all 21 cases of confirmed extra-axial cerebello-pontine angle (CPA) lesions involving the auditory nerve, Wave I was abnormal in the recordings from the ear ipsilateral to the affected side. In 8 patients with large CPA lesions displacing the brainstem, the III to V interwave latency in the contralateral ear recordings was also abnormal.

3. BSER in patients with intra-axial pontine lesions revealed a normal Wave I when the auditory nerve was not involved. The ipsilateral I to III inter-wave latency was abnormal in patients with lesions localized primarily at the ponto-medullary junction of the brainstem or the caudal pons. Voltages and wave form of components above Wave I were also abnormal. In lesions localized to the mid and rostral portions of the pons, the I to III interwave latency was normal, and the III to V latency abnormal in the contralateral ear recordings. Diffuse and bilateral pontine lesions affected the I to III and III to V interpeak latencies, amplitudes and wave form on both sides.

4. Lesions at the mid-brain level were shown to affect the latency, amplitude and/or wave morphology of Wave V on one or both sides depending on the extent of involvement. BSER could not differentiate intra and extra-axial brainstem lesions at this level.

BSER is exquisitely sensitive to lesions of the posterior fossa. All components of the response pattern are important if one wishes to differentiate intra and extra-axial lesions, the level of the lesion within the brainstem and the side primarily involved. Interesting cases were presented to illustrate the localizing value of BSER in neurological disorders.

MEDICAL MANAGEMENT OF OTOSPONGIOSIS AND NaF THERAPY

by J. and J.B. Causse
Otology Clinic (Beziers-France)

I. PROBLEMS OF POST-OPERATIVE THERAPY

Among the abundant literature dealing with otosclerosis surgery, very rare are the papers mentioning postoperative care. In fact the problems of the stapedial fixation can be easily cured thanks to a sure diagnosis, a safe functional technique, based on a supple transmission to an elastic and valuable living tissue graft, and a surgeon's technical skill. But much more difficult to be solved are cochlear problems following stapedectomies.

We think that medical surveillance after stapedectomy is as important as the operation itself. We are used to saying "half and half."

As the responses of an ear to a

stapedectomy are now better understood as we now have the means to combat the main causes of cochlear drop, we believe that all stapedectomized patients should be carefully surveyed by systematic audiometric check-ups to be able to detect a cochlear failure early, and then to treat the cochlear drop vigorously by all means available in each case.

II. BASIC OF POST-OPERATIVE THERAPY

Postoperative therapy is easy to justify:

1/ Changes in perilymph pressure and operative trauma, even if slight, cause hair cells to suffer from a shortage of oxygen and glycogen, as well as for any sensorial cell in the body. Perilymphatic oxygen tension decreasing causes tinnitus and cochlear drop in the area of the cochlea, as well as dizziness or vertigos are the labyrinthine reaction to this defect. Moreover surgical micro-trauma, enhanced by intraoperative bleeding, has a side-effect on the vascular permeability. The escape of serum from the capillaries and the toxic action of serotonin from the platelets induces hydrops within the labyrinth, while sludging of red cells within the capillaries slows the circulation and promotes anoxia with further capillary damage and temporary or permanent hair cell trouble. Last of all, noise exposure at this early postoperative period increases hair cells oxygen consumption and is especially harmful at this time (1). The only means to combat the shortage of perilymph oxygen is to increase the intralabyrinthine blood flow to bring oxygen to the hair cells through the stria vascularis, inhalation of carbon dioxide-oxygen being less efficient than vaso-active drugs.

2/ Labyrinth blood supply is given by the internal auditory artery, which is an end-artery, originated in the vertebral basilar artery through the posterior cerebellar artery. Thus cochlear blood flow consists of 9/10th vertebral artery blood and 1/10th carotid artery blood, that is to say that its origin is mainly vertebral, consequently of peripheral value.

3/ Cochlea and posterior labyrinth are contained in the same bony shell, supplied by the same internal auditory artery and bathed in the same fluids. Consequently, vaso-active drugs acting on this posterior labyrinth, for instance in Meniere's disease, must act efficiently on the cochlea. Moreover the membranous structures are almost similar, but with their peculiar responses: hearing loss and tinnitus for the cochlea, vertigos for the posterior labyrinth.

Such reasons seem to be evident from the anatomical, physiological and pathological point of view. But a great discrepancy appears between the widespread clinical use of so-called "vaso-dilator" drugs and the experimental results on animals. These divergent opinions are not surprising, for the cochlear blood vessels react differently under normal and pathological circumstances and the experimental conditions in animals cannot be identical to the pathological ones in humans after stapedectomy. Moreover experiments on animals were always done by continuous intravenous perfusions, while for the last twenty years, we have been publishing that in clinical practice on patients discontinuous intravein-

ous injections only are effective. One should not confuse an active capillary plasticity and a passive one. It is obvious that intra-cochlear bony canaliculi arteriolae have no motivity, but also that any vaso-motivity acting above them, will consequently act on these passive capillaries. This passive plasticity easily explains the action of vaso-active drugs on undilatable terminal bone arteriolae, and thus on stria vascularis, but only by discontinuous intravenous injections.

As a matter of fact, it seems that the vasodilation in the cochlea does not necessarily cause an increase in cochlear blood flow because of the associated hypotension caused by perfusion. For this reason, we have always recommended discontinuous intravenous injections repeated 3 or 4 times a day on patient always in decubitus for at least half an hour.

Last of all, if opinions are divergent on the clinical action of same vasodilators on the cochlea, physiologic and pharmacologic studies of the autosomic control of cochlear blood flow, have produced conflicting evidence and the studies of agents whose effect on cochlear blood vessels is not mediated directly through the adrenergic and cholinergic nervous systems, have also produced conflicting observations, according to the methods used. But it seems that some drugs have earned universal approval of clinicians and researchers (2, 3, 4): those are Papaverine, considered as the safest, the most effective and the best tolerated. Histamine and Betahistine, intravenous injections of hypertonic glucose solutions, and inhalations of 10% carbon dioxide with 90% oxygen. As for the Nicotinic acid, SUGA and SNOW (5, 6 and 7) stated that it has no effect on cochlear blood flow, whereas OKA (8) reported that intramuscular injections of niacin dilated cochlear vessels in the guinea-pig. The choice of drugs acting on cochlea blood vessels remains wide.

III. IMMEDIATE POST-OPERATIVE CARE

The early postoperative period is critical in any stapedectomy requiring daily bone-conduction audiograms and Weber test from the 5th postoperative day (and sometimes before) to detect a possible cochlear drop immediately. This condition is prerequisite in order to obtain an effective action of vaso-active drugs, which generally become inactive 36 hours after the cochlear drop. The drop in cochlear response is evidenced by a decline in bone conduction levels greater for the upper tone range, a shift of pure tone and speech Weber test to the better ear (operated on or not) and a distortion with impaired discrimination in speech audiometry. Tinnitus and vertigo are very often absent at this early period and never should be waited for. The practice of deferring the first audiogram to the third or fourth week after stapedectomy eliminates any possibility of reversing cochlear disorders.

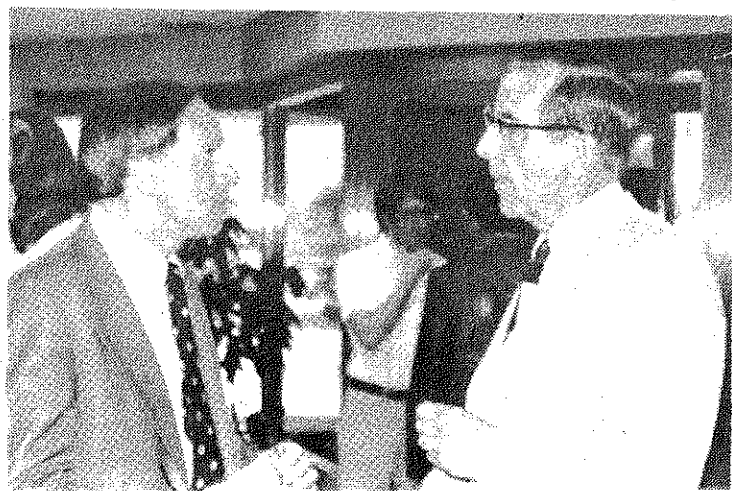
The set of drugs to improve cochlear blood flow, thus to afford oxygen and glycogen to the hair cells and to combat the labyrinthine reaction, is made of:

a/ Vasodilators: the first used is the old nicotinic acid, always given by repeated intravenous in-

(continued on page 8)

AAS Membe

At The International Symposium on The Hearing Impaired Child



Bert Jaffee with the English surgeon Mr. Wilson at the Cincinnati Conference.



Allen Reid, the investigator of the Cincinnati Conference.



LaVonne Bergstrom and George Shambaugh Dr. Shambaugh was an honored guest at the Cincinnati Conference.



John Shallup and friends at the Cincinnati Conference.



The English Surgeon at the Cincinnati Conference, Mr. Smith.



Bob Keith with the Director of the Cincinnati Conference, Susan.

The Hearing Instruments Workshop for the Three Professions at Philadelphia, May 18-19.



Mary Ann Armour, Ray Rich



Lindsay Pratt



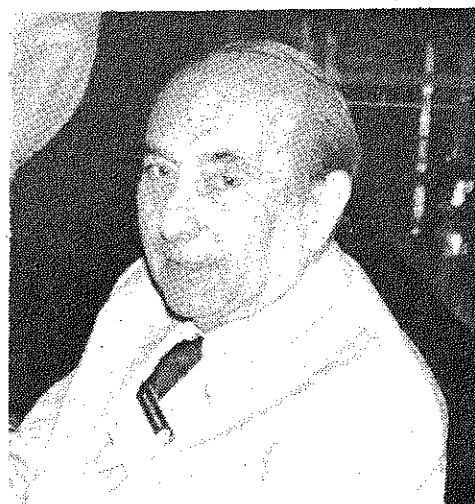
Ray Rich and Jim Endicott

s And Others

At The International Symposium on Otitis Media



Jan Zarnoch & Sylvan Stool Discoing after meeting. Stool presented School for the Deaf Study.



Imre Friedmann discussed the Pathology of Otitis Media. He is our English correspondent.



Earl Harford and Fred Bess enjoying Columbus' best. Both presented papers at the Symposium.



Jennifer Harford was an eager listener.



Jerry Klein, Boston presented an excellent epidemiological report on Otitis Media.



Paula Menyuk, Boston gave an impressive discussion of language and hearing.



John Ferraro & Jerry Northern. Northern participated in the Impedance Screening Debate.



Margareta Moller and Jim Jerger. Moller headed group on O.M. related to Screening & Identification. Jerger chaired Sequelae program.

Abstracts...

(continued from page 5)

jections made intermittently three to five times a day, and never by continuous perfusions. This method "massages" the impaired intra-labyrinthine circulation, brings oxygen to the hair cells through the stria vascularis and promotes recovery of cochlear function. It should begin 36 hours after the operation (to avoid increased postoperative bleeding) and last till the 20th day in decreasing doses.

The second vaso-active drug that we use, is **Papaverine**, which has earned universal approval of clinicians and researchers. It increases cochlear blood flow considerably and decreases the systematic blood pressure only slightly. Moreover it relaxes smooth muscles of large blood vessels, particularly during vagospasm. Its effects are relatively long lasting. It appears to be the drug of choice.

The third vasodilator is **Histamine** (and Betahistine) given by progressive intravenous dilute dosage, as in Meniere's disease. Many authors, chiefly G. E. SHAMBAUGH, are convinced that this method is the best, but its action on the blood flow of the cochlea and of the brain is too often neutralized by a fall in arterial blood pressure.

Inhalations of 10 per cent carbon dioxide and 90 per cent oxygen increase cochlear blood flow with little changes in systemic blood pressure. GANDIN (9) recommends them to combat hair cell anoxia. G. E. SHAMBAUGH and John SHEA are using 5 per cent CO₂ and 95 per cent O₂ at 6 liters/minute, for 5 minutes every hour, for the first three postoperative days.

There are many newer drugs, but more expensive and often less active, such as pyridyl carbinol (RONICOL) and Naftidrofuryl (PRAXILENE).

Additional therapy includes:
—small doses of **Heparin Sodium** (2500 units) by subcutaneous injection twice or three times daily after the third postoperative day (Not before to avoid increased bleeding in the middle ear). At these very small doses, Heparin helps vasodilators action, tends to resorb exudates and prevents phlebitis.

—**Steroids**, added to usual antibiotics, are helpful because of their anti-inflammatory effect on the middle ear and tubal function.

—**Hypertonic glucose solution**, 20 cc, given three times a day by intravenous injections in case of Cochlear drop, dizziness or tinnitus. It increases cochlear blood flow and brings glycogen and oxygen to hair cells.

—**Hydrocortison Hemi-succinate** is the most recent. Given by intravenous injection of 500 mgr., three times a day, rapidly decreased to twice and finally once a day, and added to increased doses of vasodilators and to hypertonic glucose solution, it combats cochlear drop with effectiveness, on condition that this set of 3 drugs is administered as soon as possible before the 36th hour.

IV. MAINTENANCE THERAPY

It consists of drugs administered for varying length of time depending on their type and their desired goal.

1/ **MILD ORAL VASODILATORS**, such as dihydroergotamine mesylat (Hydergin),

dihydroergotamine (Dihydroergotamine), papaverine, pyridyl-carbinol (Ronicol), naftidrofuryl (Praxilene).

Large doses, even for months, must be avoided, for they favour passive congestion and thus promote enzymatic activity. But slight doses must be given for months, and even for years, for cardio-vascular patients.

Thanks to this maintenance therapy, following the immediate postoperative treatment, bone conduction levels generally increase over the preoperative ones. But we must take into account the disappearance of CARHART's notch thanks to the stapedectomy and the difficulties in measuring the precise cochlear reserve by bone conduction.

2/ **SODIUM FLUORIDE THERAPY** is given to act on the cochlear otospongiotic impairment. In the first lecture on the enzymology of otospongiosis, we have studied the mechanism of sensorineural loss in pure cochlear otospongiosis and in the stapedial fixation combined with a cochlear involvement.

The mechanism of NaF therapy is an enzymatic action on the first phase of destruction, the most important in regard to the bony foci and inner ear fluids. NaF seems to increase the antitrypsin activity reactivated through the alpha 2 macroglobulin and thus to balance tryptic activity which has a toxic action on the hair cells and destroys the collagen fibrils of the bony otic capsule, chiefly in the stapedial area.

The effect of fluoride medication is twofold: an early effect of fluorides, very efficient on the microfoci expelling the cytotoxic enzymes into the labyrinthine fluids, in retarding or arresting the sensorineural deterioration in otospongiosis; a less evident, more gradual and long-term effect in reducing the bone-remodelling activity of the focus.

Objective evidence of the favourable effect of fluorides on otospongiotic foci is afforded by: 1) repeated polytomographic studies (1); 2) extensive statistical analysis of large numbers of treated and untreated patients (we have available computerized data on 10,441 cases with long-term results on operated or unoperated otospongiotic patients over a 10 year period with various NaF doses); 3) comparative dosages of trypsin concentration in perilymph before and after NaF therapy. (10,11). In this study, undertaken with Jose URIEL and Josette BERGES, the results clearly show that the trypsin amount significantly decreases in about 66% of patients with moderate doses of NaF, generally 45 mg a day, the results having been corrected in relation to control series.

Optimum dosage is determined by the concept that, as NaF acts by presence more than by weight (as any enzymogenesis regulator does), we must reach an **action threshold**, below which it does not act and beyond which its activity does not increase in relation to the doses. Clinical trials with various doses from 3 to 60mgr daily, led us to the notion that: 1. **very small doses** ranging from 3mg to 6mg daily are sufficient to act on pure cochlear otospongiosis, less active than the stapedial fixation from the enzymatic point of view; 2. on the contrary, doses must be **greater**, ranging from 15mg to 45mg daily for stapedial fixations with a cochlear compo-

ent, in which an important enzymatic activity is needed to cause both bone rebuilding of the niche and spreading of hydrolytic enzymes into the labyrinthine fluids. Larger doses of 60mg to 120mg daily did not appear to give any better results, for 120mg daily did not appear to give any better results, for NaF has a **double action** according to the doses (JOWSEY) (12): NaF doses of 60mg daily or more cause a pseudo-haversian rebuilding resulting in the formation of a very fragile new bone, whereas doses of 45mg daily or less do not increase bone formation and act only on enzymatic activity. For this reason, we always give our patients **moderate doses** of NaF, ranging from 15mg to 45mg daily, to stop cochlear deterioration without increasing stapedial fixation. Therefore, we do not need to add vitamin D and Calcium supplement to prevent formation of abnormal bone.

Starting from this data, we generally prescribe:

1/ **for adults:**

—**60mg daily**, five days a week, only for advanced otospongiosis with a very active cochlear component, and for the cases on which less important doses have not acted; and always for a very short period of time, 6 to 8 months at the very most.

—**45mg daily**, continued for 2 years, as a starting postoperative treatment for all surgical cases with a progressive cochlear component.

—**30mg daily**; for 2 years also, as a maintenance dose following the previous one, if the yearly audiometric surveillance shows a good stability of bone conduction levels;

—**15mg daily** as a lasting dose for years, till inactivation of the otospongiotic foci proved by bone conduction stability for 2 to 4 years;

—**3mg to 6 mg daily**, continued for years, for pure cochlear otospongiosis as well as preoperative therapy for stapedial otospongiosis with an important progressive cochlear deterioration.

2/ **for children**, we give much more moderate doses, ranging from 1.5mg to 10mg daily, to avoid possible stunting of the growth by a too early calcification of the long bone matrix.

Surveillance of this lasting NaF therapy must be three-fold: 1/ audiometric check-up once a year in order to check the stability or the progression of the bone conduction levels; 2/ polytomography X-ray investigation to verify NaF's action on the bony otic capsule every year; 3/ X-ray investigations of the long bones, lumbar column and pelvis, every two years to detect possible fluorosis.

There is **no toxicity** at these moderate doses, chiefly if we consider that part of NaF is destroyed in the digestive tract by tricalcic phosphate and calcium carbonate. Doses that we prescribe, are below the therapeutic security levels and thus far below toxic doses. What is more, we have never seen any fluorosis on more than 10,000 cases surveyed by computer. We must only be careful with patients suffering

Tolerance is generally good and gastric intolerance very rare, if NaF is prescribed in enteric coated tablets. This is the only means to avoid NaF dissociation by gastric acids, resulting in production of very harmful hydrofluoric acid provoking severe gastric troubles, and in suppression of

NaF activity. We must only be careful with patients suffering from a chronic nephritis, as impaired excretion of NaF might lead to toxic concentrations in the blood. On the contrary, the moderate doses are compatible with cardiovascular diseases, for the sodium doses correspond to 8.20mg per 15mg NaF enteric coated capsule, that is 24.60mg for 45mg NaF daily. Lactose generally used as excipient, must be avoided for patients suffering from diabetes.

The **functional results** yielded by our computerized data on 10,441 cases with a follow-up ranging from 3 months to 10 years, are favourable.

But "**favourable results**" only means arrest of cochlear deterioration in cases having a progressive cochlear component because NaF acts only as a stabilization factor, and so it cannot improve hearing, except in children. Moreover a follow-up of one or two years at least is indispensable to have a sure approach to the problem, because the otospongiotic disease generally develops by progressive steps, separated by inactive periods due to spontaneous balance enzyme-antienzyme. For this reason, we have always **corrected** the functional results in relation to equivalent control series, taking into account the 25% **spontaneously non progressive otospongiosis**, operated or unoperated.

We have summarized our main computerized data in two tables (Tab. I and II). **Table 1** shows higher doses in surgical cases than in medical ones, as already reported. **Table II** proves that the various doses have been correctly established to pass slightly over NaF action threshold since percentages in relation to different doses related to enzymatic activity, are similar for medical cases and surgical ones, that is 66.41% for medical cases and 67.52% for surgical cases.

As for its **action on stapedial fixation**, NaF seems to slow it in some cases, but it is very difficult to evaluate. It is obvious that NaF action cannot release stapedial fixation for moderate doses of 45mg or less act only on the first otospongiotic phase of lysis and thus only prevent the second phase of pseudo-haversian rebuilding. Larger doses increase the stapedial fixation, as already related.

Fluoride action on vestibular function clearly appears. Patients generally show less vertigo or dizziness after some months of NaF therapy, as well as less tinnitus for cochlear function. Moreover we experienced a series of 224 comparative studies by means of torsion swing test ENG recording, before and after NaF therapy on operated or unoperated otospongiotic patients: the more or less irritative type tracing, usual in otospongiotic patients, tends to become less irritative or even normal in almost 70% of operated ears and 60% of unoperated ears in relation to the control series after 6 months or more of NaF therapy.

These results have been recently confirmed by an important paper of Thane CODY and Hillier BAKER (13), who stated that the administration of a combination of calcium gluconate, sodium fluoride and vitamin D controlled vestibular symptoms in a high percentage of patients who had vestibular symptoms, and stopped the deterioration in hear-

ing in patients who had cochlear deterioration. The action of NaF on vestibular symptoms was also supported by COLE and FUNKHOUSER in 1972. (14)

V. CONCLUSION

NaF is a logical therapy to combat cochlear deterioration, for which there was no therapy before. It is till now the only drug which can slow or arrest the activity of otospongiotic microfoci in more than half the operated or unoperated otospongiotic patients. Moreover, it controls cochlear and vestibular symptoms in a high percentage of patients who had tinnitus and/or vertigos. Its action seems safe and effective at the moderate doses that we recommend.

SUMMARY

The authors wonder why the amazing progress made in the past half-century in the diagnosis and surgical treatment of stapedial otosclerosis has not been supported by postoperative care. Presently, better knowledge of cochlear and vestibular pathology and of the enzymatic mechanism of otospongiosis, allows them to prevent a high percentage of cochlear deterioration after stapedectomy thanks to a close audiometric surveillance and to adapted postoperative medical therapy.

They state the basis of the postoperative care and review the numerous drugs to be applied in the immediate postoperative period, and later for a more or less long time. The effectiveness of each drug is studied, first vasodilators, - second enzymogenesis regulator, i.e. NaF. They emphasize NaF therapy and give all necessary indication on its action, doses, tolerance, contraindications and side-effects.

They conclude in stating that the medical management of the disease is valuable and the postoperative therapy effective in a high percentage of cases. As for NaF, it seems to be logical, safe and effective at the doses they recommend.

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Speech Pathologists Have Laws Too

With the spate of pseudo-scientific adages—such as Murphy's Law, Peter Principle, Jennings Corollary etc.—Corti's Organ is happy to announce a soothsayer of great magnitude among our own colleagues. And a speech pathologist, no less. He is Gordon Schuckers of Louisiana State University Medical Center, Shreveport, who has come up with what we consider the most telling of all such profound exhortations. Herewith is printed the latest brain child of this author, lecturer, poet, philosopher, and great human being:

GORDON'S LAWS

- I. You can't make me angry without my permission.
- II. I myself personally am redundant, etc., etc., etc.
- III. The problem with being assertive is—if you're dumb it really shows.

IV. Convicts and convictions are similar: each involves a locked-up person.

V. There are performers and critics—fortunately for the latter there are the former.

VI. Everything in your body is ultimately connected to your brain—unless you have a Ph.D.

VII. Anxiety is the price you pay for being a racehorse instead of a cow.

VIII. The difference between arrogance and modesty is ability.

IX. The object of work should be doing—not viewing.

X. Bases become biases when you add an I.

Berger Holds Hearing Aid Prescription Workshop

Kent State University is sponsoring a one-day workshop on "Hearing Aid Prescription" on October 20, 1979.

Speakers will be Kenneth W. Berger, Ph.D., Mead C. Killion, Ph.D., Joseph P. Millin, Ph.D., and Eric N. Hagberg, M.A.

Registration fee is \$35.00, including lunch and workshop materials. Registration is limited. Contact: Kenneth W. Berger, Ph.D., Speech and Hearing Clinic, Kent State University, Kent, Ohio 44242. Telephone (216) 672-2672.

Middle Ear Effusion Poses Problems

One of the highest-powered meetings in the country is the Columbus Conference on Recent Advances in Middle Ear Effusion, held this year on May 9-11 at the Ohio State University College of Medicine. David Lim, Charles Bluestone and Ben Senturia were the committee putting together an outstanding number of otitis media papers from throughout the world.

Honored at the meeting was Sven Ingelstedt of Sweden, whose studies on middle ear pressure and gas absorption remain classics in the field. A large group of his Swedish associates participated in the meeting, as well as lecturers from Japan, Israel, Germany, Austria, England, France, Denmark, New Zealand, Finland and Italy.

This brilliant assemblage was not as well attended as it deserved, due possibly to the onset of a financial recession in this country—or possibly to the flood of

meetings that has engulfed us this year. For any one interested in the ear the Columbus meeting was a must on the schedule.

An awesome amount of research was presented by the group from the Pittsburgh Children's Hospital. This group explored eustachian tube and middle ear function in great depth.

A departure from purely medical topics was the introduction of a section on the educational sequelae of otitis media. Two excellent papers were presented by Paula Menyuk and Frances Horowitz on the effect on psycholinguistic skills of early otitis media, pointing to the need for regional studies which will provide information about both the short and long-term effects of the disease on language development that can be used in planning educational intervention. The interest in this non-medical phase of the sequelae of otitis media is a signal advancement in the field.

BOOK REPORT

Acoustic Tumors edited by William F. House and Charles M. Luetje is written in two volumes. This is a report on the first volume, **Diagnosis**. The second volume on **Management** will be reported in the next issue.

The book is a report of five hundred patients with unilateral acoustic neuromas operated by members of the Otologic Medical Group in Los Angeles between 1968 and 1975. There were 275 females and 225 males ranging from age 9 to 76 with equal occurrence on right and left sides.

The history of acoustic tumor surgery is discussed with reference to the work of Cushing from 1900-1917, the "Dandy Era" from 1917-1961, and the present work pioneered by House.

The second section on pathology suggests that tumors arise from excessive schwann cell proliferation at the schwann-glia junction near the porus acousticus internus. The anatomy of the anterior-inferior cerebellar artery (AICA) is discussed in relationship to the cerebellar pontine angle tumors as well as the loop of AICA often found within the internal auditory canal (40%) and usually giving

rise to the internal auditory artery (80%).

Tumor symptoms are categorized into three types: changes related to the internal auditory meatus (VII, VIII), changes related to the CPA (V, VI, IX, X, XI, and cerebellum) and distant effects due to internal hydrocephalus and increased intracranial pressure.

The Antoni A and B light microscopic pathologic configurations is well illustrated. In bilateral, or Von Recklinghausen's cases, the nerve fibers are more intact and not compressed to one side as much, but separated by growing tumor.

In section III, selected case histories are presented and the neuro-otologic evaluations detailed. The most common presenting symptom was unilateral hearing loss usually associated with tinnitus. Vestibular symptoms were present in 69%. The audiogram usually revealed a high tone loss (65%). Tone decay was complete or partial in only 77%. The acoustic reflex was absent or decayed in 80%. A reduced response with electronystagmography was found in 82% of cases. Petrous

pyramid x-rays were positive in over 90%.

Brainstem electric response audiometry (BERA) was accurate in detecting tumors in 96% of cases with an 8% false positive rate.

Routine evaluation has evolved to include audiogram with speech discrimination, petrous pyramid x-rays, ENG and acoustic reflex test with the BERA often replacing the ENG and acoustic reflex as a screening test. Computerized cranial tomography (CAT or EMI scan) is followed by a small dose Pantograph polytome study if the scan is negative. The CAT scan is helpful in estimating tumor size, differential diagnosis, and presence of hydrocephalus, although scanning was reliable only with tumors measuring 2.5 cm or larger.

The radiographic techniques are well discussed with excellent illustrations included.

(The second volume on Management will be reviewed in the next issue of Corti's Organ).

—by R. E. Mischke
Denver, Colorado

Audiology Congress Meets In Krakow In 1980

The International Audiology Society will hold its 15th biennial Congress in historic Krakow, Poland on September 2-6, 1980. Plenary sessions are being planned on the following topics:

- I. Evaluation of Auditory Function after Surgical Procedure.
- II. Etiologic Factors in Sensorineural Hearing Loss.
- III. Paediaudiology.

In addition to these round table sessions, contributed papers are invited on audiological topics. Applications may be sent to: Dr.

Andrzej R. Halama, Kopernika 23a, 31-501 Krakow, Poland.

A group charter flight is being planned for this Congress and will be announced in the next issue of Corti's Organ. Krakow will be a fascinating city to tour. It is an ancient walled city with a 13th century castle to visit. Scientists will be interested in seeing Copernicus' laboratory with his original instruments, located in the ancient University courtyard buildings.

AAS members will want to

attend their sister society's meeting, particularly as the I.A.S. had as one of its founders Aram Glorig, our own AAS founder. Ray Carhart also was one of the organizing members of the IAS, as were others like Ira Hirsh, Hallowell Davis and Richard Silverman.

The I.A.S. publishes *Audiology*, a highly scientific journal tightly edited by Dr. E. Konig of Basel, Switzerland. The editorial board includes Aram Glorig, Ronald Hinchcliff (U.K.), and Pierre Tremque (France).

Speech Conference Scheduled

The Ph.D. Program in Speech and Hearing Sciences of the City University of New York Graduate School is sponsoring a three-day conference on the "Speech of the Deaf: Research, Training and Personnel Preparation" from October 31 through November 2, 1979. The purpose of the Conference is threefold: (i) to provide in-depth coverage of recent research on the speech of the deaf, (ii) to explore how the results of this research can be used in improving speech training methods, and (iii) to examine the implications of the above on personnel preparation.

The Conference should be of interest and relevance to teachers of the deaf, audiologists, speech pathologists, university faculty and researchers in the area. The Conference is designed to facilitate a dialogue among the various contributors and between the audience and the contributors.

The practical application of research findings will be emphasized by the participation of experienced teachers, clinicians and researchers in "round table" discussions.

Participants will include leading figures in the field from the United States, Canada and

Europe. A sampling of topic areas include: recent research of the speech production and reception skills of the deaf; developmental aspects of phonological production and reception in deaf and normal hearing children; assessment procedures; sensory aids for speech training; recent developments in speech training strategies; and needs and approaches to personnel preparation.

For more information contact Irving Hochberg, Harry Levitt or Mary Joe Osberger, Ph.D. Program in Speech and Hearing Sciences, Graduate School, CUNY, 33 W. 42nd Street, N.Y., N.Y. 10036. 212-790-4367.

Blood Flow Biofeedback Training

Whenever a person becomes excited, afraid or anxious, the blood vessels feeding the skin and extremities (hands and feet) constrict. At the same time, the reverse occurs for the large blood vessels feeding the somatic muscles of the legs and arms. Dilation and constriction of specific blood vessels is an important part of the flight or fight reaction discussed earlier which increases the chance of an organism surviving physical confrontation and trauma. Vasodilation of the large vessels feeding the somatic muscle allow more oxygenated blood and nutrients to be fed to the muscles so that the organism will be stronger. Vasoconstriction of the vessels feeding the extremities and skin limits the loss of blood due to the skin being cut or broken. At the same time, sweating of the extremities increases. Decreasing blood flow to any part of the body will cause the temperature of that particular part to decrease. That is why people who are anxious or frightened have cold, sweaty hands and/or sometimes break out in a cold sweat.

An instrument that measures either or both the changes in temperature or opacity due to blood flow and converts these changes to a signal that allows the patient to be aware of his blood flow constitutes a blood flow biofeedback unit. Peripheral blood flow is usually measured in two ways:

1. by measuring the small temperature changes that occur as blood flow increases or decreases,
2. by using a plethysmometer that records changes in opacity of the tissue that occurs as blood flow changes.

The plethysmometer is sensitive to the blood flow because the more the blood flows the darker or more opaque (less light can pass through the tissue) is the tissue. The biofeedback signal can be in a variety of modalities. For example, a tone can be fed back to the patient that varies in frequency as the opacity or temperature changes. The higher the tone pitch, the more the blood flow.

Researchers (Snyder and Noble, 1968, and Simpson, 1972) have reported that patients can learn to voluntarily control vasoconstriction and dilation in their extremities.

Biofeedback training in which the amount of blood flow change is monitored and converted into a signal that varies proportionately to the blood flow enables a patient to gain control over his abnormal vasoconstriction or dilation.

Researchers have consistently found that most motivated people have the potential to voluntarily produce localized change in blood flow (Hadfield, 1920, Schultz, 1926, Menzies, 1941, and Varano, et al, 1965). Menzies and Schwartz, 1941, reported that individuals can cause vasodilation (increase in temperature) in an extremity by just recalling past experiences concerning warmth (Roberts, Kewman and MacDonald, 1973, and Barber, 1974). Conversely, some individuals could cause vasoconstriction (decrease in temperature) in an extremity by recalling experiences that caused the limb to become cooler. The human imagination can certainly alter our bodily functioning.

MIGRAINE HEADACHES

Migraine headaches have been

described as a human malady since the beginning of medical history. They usually begin in adolescence but can occur at any time. Migraines are characterized by a variety of symptoms including general irritability and nausea, photophobia (intolerance to light), vomiting, constipation or diarrhea. They often are precipitated by emotional conflicts or situational stress. Migraines may begin in a variety of ways. Sometimes the patient experiences scotomata (a spot within the visual field), hemianopia (loss of vision for one-half the usual field), unilateral parasthesia (abnormal sensations) and various speech disorders (Wolff, 1946).

Both tension and migraine headaches are characterized by an increase in blood flow to the head. The cranial arteries and blood vessels throughout the head dilate (Wolff, 1963). Migraine sufferers frequently report that they have cold hands and hot foreheads. Vasoconstriction occurs in the extremities which decreases the blood flow, that in turn decreases the temperature. The reverse occurs in the forehead, vasodilation increases blood flow, which in turn increases the temperature. The head pain occurs when blood is being pumped through distended or the dilated blood vessels. Migraine and tension headaches are qualitatively different disorders. Tension headache sufferers have usually higher frontalis muscle tension and lower forehead temperatures than migraine victims. They also respond differently to different treatment procedures. EMG feedback training has been shown to be approximately 70% effective in alleviating the discomfort of tension headaches. Whereas, migraine headaches are more successfully treated by blood flow feedback training (Sargent, Green and Walters, 1973; Wickramasekera, 1972, 1973, and Budzynski, et al 1973).

The abnormal vasoconstriction and dilation that characterizes migraine headaches is governed by the autonomic nervous system that is not normally under our voluntary control. Any method that would enable a migraine sufferer to voluntarily control the abnormal blood vessel activity can be of therapeutic value. Various techniques that cause vasoconstriction in the head and/or vasodilation in the extremities have been used in combination and in some cases alone, to successfully treat migraines. However, the best results have been obtained by using a combination of approaches. To date, no one method seems to be the best. Migraine headaches, like most stress-related problems, are best dealt with by using a combination of therapeutic programs that are tailor-made to suit the particular needs of the patient. The same psychosomatic or stress-related problem can have many different causes and, therefore, different types of treatment may be necessary.

Successful treatment of migraine headaches by biofeedback techniques alone and in combination with other techniques, has been reported by Sargent,

Green and Walters, 1973, Peper, 1973, Budzynski, 1973, and Wickramasekera, 1973.

The first procedure outlined was designed and validated by Sargent, Green and Walters, 1973, who were the first to report the use of blood flow feedback training to treat migraine headaches. Their training procedures, called autogenic-feedback training, combines temperature feedback training and autogenic suggestions (Schultz and Luthe, 1959).

Autogenic training was developed by Schultz and Luthe (1959) to induce relaxation in overly anxious or tense patients. The method involves the patient repeating to himself suggestions of heaviness and warmth. The goal of autogenic training and most relaxation training procedures is to increase parasympathetic arousal (autonomic nervous system activity that accompanies emotional arousal). As the patient relaxes, vasodilation in the extremities occurs and blood flow increases.

Schultz and Luthe present evidence to indicate that the suggestion of heaviness induces muscle relaxation and the suggestions of warmth cause vasodilation in the extremities. It makes sense from psychological standpoint to induce general relaxation in any patient that has problems involving decreased blood flow to the extremities. The autonomic system, when a person is relaxed, causes the blood flow to the extremities to increase. Migraine sufferers have been shown to respond favorably to relaxation training alone (Mitchell and Mitchell, 1971). Relaxation training in conjunction with blood flow training appears to be an unbeatable combination.

The Sargent, Green and Walters, 1973, autogenic-feedback training is as follows:

The patient first receives instructions in the use of the temperature feedback unit. A difference in temperature was recorded between the right index finger and the forehead. The patient can receive feedback concerning the temperature from observing the temperature gauge or the feedback tone. The clinician instructs the patient to passively attend to the tone or gauge and keep his hand temperature increasing. The patient is then given a sheet containing the autogenic phrases that he is to recite to himself. The first group concerns general relaxation of the whole body, as follows:

"I feel quiet... I am beginning to feel quite relaxed... My feet feel heavy and relaxed... My ankles, my knees and my hips feel heavy, relaxed and comfortable... My solar plexus and the whole central portion of my body feel relaxed and quiet... My hands, my arms, and my shoulders feel heavy, relaxed and comfortable... My neck, my jaws and my forehead feel relaxed... They feel comfortable and smooth... My whole body feels quiet, heavy, comfortable and relaxed."

After the patient learns the phrases, he is told to focus his attention on the temperature trainer. If he has relaxed, the temperature of his hand should

have increased at least slightly. Most people initially show some change. Next, he is given the next group of autogenic phrases that are designed to teach the patient to increase the blood flow specifically in his hands, as follows:

"I feel quite relaxed... My arms and hands are heavy and warm... I feel quite quiet... My whole body is relaxed and my hands are warm, relaxed and warm. Warmth is flowing into my hands, they are warm... warm."

Through repeated training, the patient learns to manipulate by his own volition the feelings in his extremities that are concomitant with vasodilation. As vasodilation occurs in his hand, vasoconstriction occurs in the head, and the migraine subsides.

Wickramasekera, 1973, used EMG feedback training as previously described by Budzynski, Stoyva and Adler, 1973, with migraine headache sufferers and then used temperature feedback training. He found that following the EMG feedback training using the frontalis muscle, the patients reported only a slight reduction in their headache pain. However, they still had as many headaches as before. Following the EMG training, he trained both patients to increase their hand temperatures by using temperature feedback training. The procedure was identical to that used by Sargent, Green and Walters, except that he did NOT use autogenic suggestions. The patient simply focused his attention on the feedback signal (gauge reading or tone) and concentrated on increasing his hand temperature. Both patients who had suffered from migraines for years, and had not responded well to other forms of treatments, found relief, and months after training, both patients reported that they had reduced their consumption of analgesics to occasional aspirin for non-headache related events. (p.434, Aldine, 1973).

The migraine sufferers have hand temperatures during their headaches of 70° to 80° or greater. Many patients find that as soon as they feel a migraine coming on, they can abort it by raising their hand temperature. However, if they are unable to block the oncoming headache within 15 minutes or so, the headache has most likely progressed to the point that some medication will be needed. Budzynski, 1973, states the goal of the treatment, "Eventually, migraine patients find they can exist without medication except in extreme circumstances or in cases of menstrual cycle headaches that occur once or twice each cycle."

The importance of home practice and stress-management outside the clinic cannot be over-emphasized. The patient must practice relaxation at least once every day. The rest of his family has to understand the importance of allowing the patient his 20 minutes to one hour period of isolation each day from the rest of the family.

written by:

Donald R. Keppner, Ph.D.
Psychologist
3620 N.E. Expressway
Atlanta, Ga.

Letters To The Editor

Dear Editor:

I was quite dismayed to read the recent article by Borton, et al, regarding the EMG biofeedback and the treatment of tinnitus, in the January 1979 issue of Corti's Organ. The comment that EMG biofeedback does not reduce anxiety and increase blood flow is correct. However, Borton, et al, left out any discussion regarding the method of temperature biofeedback. I hasten to point out that temperature biofeedback has been shown to reduce anxiety and increase blood flow because this method is a more direct link to the autonomic nervous system which in fact, controls blood flow (See Attached). EMG biofeedback does not provide that same connection.

I was further dismayed that this highly regarded publication printed an article suggesting that biofeedback as a treatment for tinnitus, be "discouraged" when the article was based on ONE patient. I refer you to Laryngoscope, March 1978, in which House reports on forty-one patients of which 80% (33) reported some degree of improvement. In direct contrast to Borton, et al, House encourages the use of biofeedback as a treatment modality.

I have referred over 20 patients with tinnitus to a biofeedback clinic and have found the House data to be supported. Much of the information presently being researched concerning the treatment of tinnitus with biofeedback is speculative, but evidence thus far does not suggest that its use be discouraged; in fact the evidence suggests that it should be strongly encouraged.

Sincerely,

Stephen D. Gannaway,
M.A. CCC-A

(Above paper on Biofeedback included).

Dear Editor:

In re De Rei Errata, the paper I gave at SENTAC, which you so kindly abstracted in Corti's Organ, appeared under the abstracts of AAS Papers. Can't you picture my friends scratching their heads and wondering, "where the hell was I when he gave that paper?"

Other than that, loved the issue!

Best regards,

Irving Shapiro, Ph.D.

Director

Center for Communication

Disorders

Harbor-UCLA Medical Center

CALENDAR OF EVENTS

AUGUST

6-11
NINTH INTERNATIONAL CONGRESS OF
PHONETIC SCIENCES, Copenhagen, Denmark.

20-25
ASPEN-SNOWMASS CONFERENCE ON VESTIBULAR DISORDERS. A week long study of developments in the treatment of disorders of the vestibular system, held in the heart of the Colorado Rockies. Guest of Honor L.B.W. JONGKESS, M.D. of Amsterdam, Netherlands; other distinguished faculty. Prefaced by two-day workshop in Electronystagmography, August 20-21. Contact Aspen-Snowmass Conference, P.O. Box 314, Arvada, CO 80001 (303-420-1448).

SEPTEMBER

5-7
VIII ANNUAL CONVENTION OF THE SOUTHERN
AUDIOLOGICAL SOCIETY, Savannah, GA.

6-8
INTERNATIONAL SYMPOSIUM ON SENSORI-
NEURAL HEARING LOSS, VERTIGO & TINNITUS,
University of Minnesota, Minneapolis. Write to: Con-
tinuing Medical Education, University of Minnesota,
Box 293 Mayo Memorial Bldg., 420 Delaware Street,
S.E., Minneapolis, MN 55455.

13-14
TINNITUS WORKSHOP, Atlanta, GA. Contact: Ameri-
can Tinnitus Assoc., P.O. Box 5, Portland, OR 97207.

17-18
NONLINEAR AND ACTIVE MECHANICAL PRO-
CESSES IN THE COCHLEA. The Institute of Laryng-
ology and Otology, 330/332 Gray's Inn Road, London
WC1X 8EE.

26-28
IV INTERNATIONAL SYMPOSIUM ON ACOUSTIC
IMPEDANCE MEASUREMENTS, Lisbon, Portugal.
For information write to: Organizing Secretariat,
Clinica Fono-Audiologica, Rua Conde Redondo, 119-3,
110 Lisboa-Portugal.

26-28
INTERNATIONAL SYMPOSIUM ON AMPLIFICA-
TION IN EDUCATION. Bill Wilkerson Hearing and
Speech Center, Nashville, Tenn., Contact Vanderbilt
Continuing Education, 305 Medical-Arts Bldg., Nash-
ville, Tenn. 37212.

27-28
TINNITUS WORKSHOP, San Diego, CA. Contact:
American Tinnitus Assoc., P.O. Box 5, Portland, OR
97207.

OCTOBER

9
AMERICAN AUDITORY SOCIETY, Dallas, Texas
Meets in conjunction with The American Academy of
Otolaryngology. Contact F. Blair Simmons, M.D.,
Stanford University Medical Center, Dept. of Otolar-
yngology, Stanford, CA 94305.

25-26
TINNITUS WORKSHOP, New York, N.Y. Contact:
American Tinnitus Assoc., P.O. Box 5, Portland, OR
97207.

28
HEARING AID PRESCRIPTION WORKSHOP, Kent
State University. Contact: Kenneth W. Berger, Ph.D.,
Speech and Hearing Clinic, Kent State University,
Kent, Ohio 44242.

13-18
SECTION ON OTOLARYNGOLOGY AND BRON-
CHESOPHAGOGY OF THE AMERICAN ACA-
DEMY OF PEDIATRICS, San Francisco. Contact:
Gerald B. Healey, M.D., Children's Hospital Medical
Center, Dept. of Otolaryngology, 300 Longwood Avenue,
Boston, MA 02115.

31-Nov. 2
CONFERENCE ON THE SPEECH OF HEARING IM-
PAIRED. (See page 10 for details).

NOVEMBER

13-14
SOCIETY FOR EAR, NOSE AND THROAT AD-
VANCES IN CHILDREN (SENTAC) 7TH ANNUAL
MEETING, Cincinnati. Write to: Bill Moran, M.D.,
Oklahoma City Clinic, 701 N.E. 10th St., Oklahoma City,
OK 73104.

16-19
AMERICAN SPEECH AND HEARING ASSOCIA-
TION, Atlanta, GA.

26-30
ACOUSTICAL SOCIETY OF AMERICAN FALL
MEETING, Salt Lake City, Utah.

29-30
TINNITUS WORKSHOP, Dallas, Texas. Contact:
American Tinnitus Assoc., P.O. Box 5, Portland,
Oregon 97207.

1980

FEB. 9-FEB. 16
FOURTH ANNUAL MID-WINTER SYMPOSIUM ON
PRACTICAL OTOTOLOGY, Snowmass (Aspen),
Colorado. Sponsored by: American Hearing Research
Foundation. Contact: Jack D. Clemis, M.D., Program
Chairman, American Hearing Research Foundation, 55
East Washington Street, Suite 2105, Chicago, Illinois
60602.

JUNE 22-27
14th WORLD CONGRESS OF REHABILITATION
INTERNATIONAL, Winnipeg, Canada.

JUNE 21-JUNE 25
REHABILITATION THROUGH AMPLIFICATION
WORKSHOP, Chicago, Illinois. Sponsor: American
Hearing Research Foundation. AMA Category I Credit.
Contact: Jack D. Clemis, M.D., Program Chairman,
American Hearing Research Foundation, 55 East
Washington Street, Suite 2105, Chicago, Illinois 60602.
Phone: (312) 726-9670.

AUG. 4-8
INTERNATIONAL CONGRESS ON EDUCATION OF
THE DEAF, Hamburg, Germany. Write to: German
Convention Service, Kongressorganisation, Walter
Stohrer OHG, Hohe Bleichen 13, D-2000, Hamburg 36.

AUG. 4-7
18th INTERNATIONAL ASSOCIATION OF LOGOPE-
DICS AND PHONATRICES, Washington, D.C.

SEPT. 2-6
XV INTERNATIONAL CONGRESS OF AUDIOLOGY,
Krakow, Poland. To submit papers or register, write to:
Dr. Andrzej R. Halama, Kopernika 23a, 31-501 Krakow,
Poland.



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Abstracts of Papers
Presented at
AAS meeting on Page 7

Read the Great Scientific Break-
Through of all Times, by A. Axel-
son and J. Miller on Page 3.

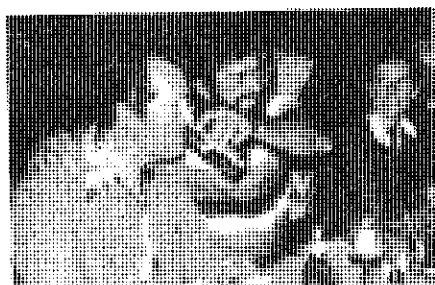
Technical Problems Delayed the
October Issue of Corti's Organ.
This Issue is the Fall, 1979/
Winter, 1980 Issue.

CORTI'S ORGAN

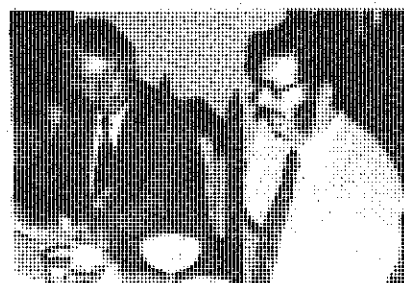
The Official House Organ of the American Auditory Society

Vol. 4, No. 4/Vol. 5, No. 1

Winter, 1980



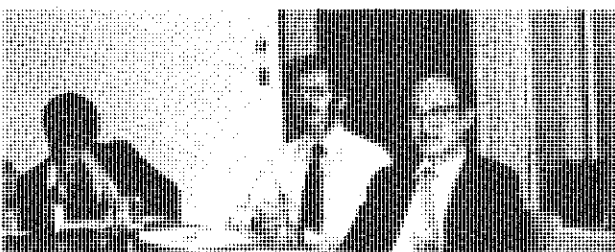
At dinner with the Board. Susan Conway-Fithian, Ross Roeser and Bruce Graham.



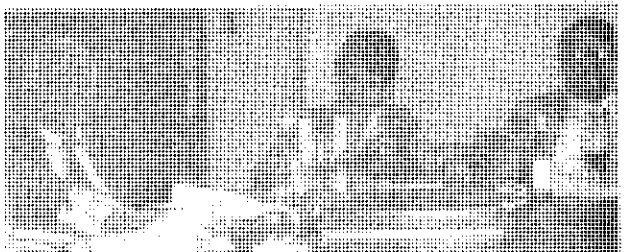
Ex-Pres. Blair Simmons with Pres. Elect for 1981 Ralph Nauntun.



AAS Members at dinner.



Executive Committee Members Malcolm Graham, Ralph Nauntun and Hiroshi Shimizu.



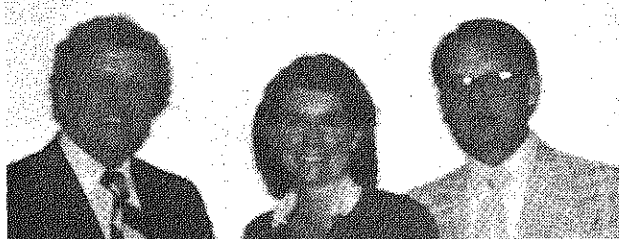
Gil Herer, Sue Kos, and Charlie Anderson at Executive Committee Meeting.

AAS at AAO is AOK

Good fellowship, good research papers, and the long awaited AAS presentation of its highest award, the Carhart Memorial, to AAS's first president Aram Glorig. These items were the bill of fare at the annual meeting of the AAS held in conjunction with the American Academy of Otolaryngology in Dallas, Texas on October 9. Blair Simmons as program chairman put together a stimulating program that included a number of distinguished scientists presenting some challenging scientific papers. But the most enthusiastically received was the lecture by Aram Glorig as the Carhart Memorial lectureship awardee for 1979.

Glorig presented a classic review entitled "Noise: Past, Present and Future" in which he described the origins of the noise problem, its recognition and the attempts man has made to solve the problem. No one else is as cognizant of all aspects of noise as Glorig, as he has devoted a lifetime to its study and attempts at solution. His interest began as long ago as 1943 when he dealt with noise exposure in the Army as an Army otolaryngologist. After the war he became Director of The Audiology and Speech Correction Center at Walter Reed Army Medical Center in Washington and continued his interest in noise induced hearing loss. Later he became chairman of the Subcommittee on Noise for the American Academy of Otolaryngology. There he published most of what is known about the problem of noise in industry, studies which are as valid today as they were then. From 1964 to 1977 he continued research into the problem as Director of the Callier Hearing and Speech Center and after leaving there went back to Los Angeles to pick up the threads of the work he had left there in 1964. There he is Associate Director of Research at the Ear Research Institute, is in charge of two major research projects, one on the aging ear and one on hearing aid design. In his office he examines patients who are involved in litigation for noise exposure and determines if the disability is related to the noise exposure. He serves as consultant in many litigation cases and on many committees concerned with noise in hearing. His excellent paper will be published in *Ear and Hearing*, so that members will be able to read it for themselves shortly.

Abstracts of the papers presented at the regular session of the AAS meeting are published in this issue. Readers can ascertain for themselves the high quality of the reports that were made.



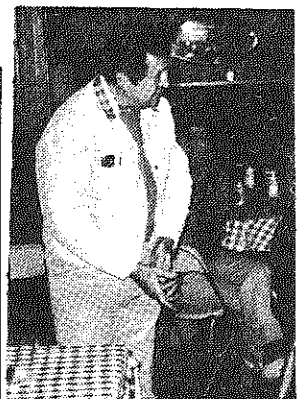
Three new Board Members attending the meeting—Malcolm Graham, Susan Conway-Fithian, and Charlie Anderson.



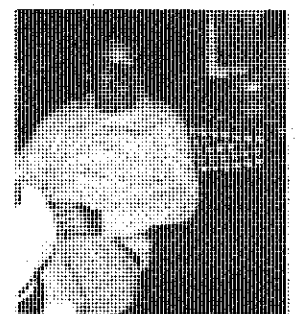
Sam Lybarger and Ross Roeser at Executive Committee Meeting.



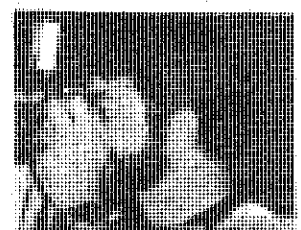
President Lybarger introduces Carhart Lecturer Glorig.



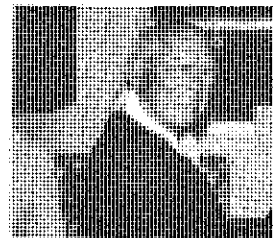
Bruce Graham telling his favorite joke at dinner.



Frank Brister.



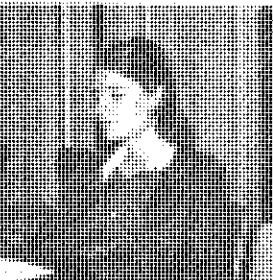
Editor of the new AAS Journal *Ear & Hearing*, taking pictures, Ross Roeser.



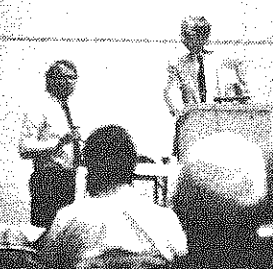
Mike Kos



Editor of Corti's Organ—Marion Downs.



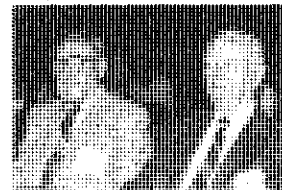
Newly elected Executive Committee Member—Susan Conway-Fithian.



Program Chairman Simmons flooring questions.



Questions being asked at the Scientific Meeting.



Award winner Aram Glorig listening with Howard House to AAS program.

Executive Committee Election winners announced

The following members were elected to the Executive Committee as a result of the election held last August:

Charlie D. Anderson	Ralph F. Nauntun
Susan Conway-Fithian	Hiroshi Shimizu
Malcolm C. Graham	John C. Sinclair
Ed W. Johnson	

These members will serve a four year term beginning January 1, 1980.

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Editorial:

A Spade is a Spade

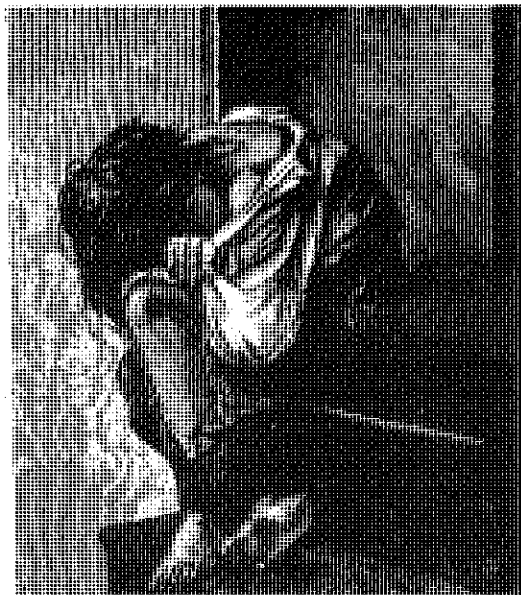
Well, we have to admit it - the docs really aren't that gung-ho about Audiology! Despite Blair Simmons' efforts to include the AAS meeting in the program of the Academy of Otolaryngology, the turnout was disappointing as compared with last year's attendance at the ASHA meeting. We'd better digest the fact that not many otolaryngologists care to learn more about audiology phenomena.

The good news of course is that the docs who do come to the AAS meeting are the elite of the Otolaryngology world: our own Blair Simmons, Aram Glogic, Ralph Naunton (the past and future presidents), Howard House, Malcolm Graham, Mike Paparella, Fred Linthicum, Hiroshi Shimizu, and several others. These men are a special breed of otologists who desire a more thorough understanding of the way auditory function relates to the anatomy, physiology and pathology of the ear. They are not satisfied with a grasp of mere routine clinical audiology. They are intellectually curious men who require a deeper knowledge of how the ear works in processing acoustic material.

Not that the acoustics and psycho-acoustics people attend any better when we meet with the Acoustical Society - the showing at the Miami ASA meeting was not that good either. But there are fewer of them and somehow we've been satisfied to have their best people with us too.

But facts have to be faced, and it looks as if two options are open to us. First, we can attempt a campaign to interest more otolaryngologists and acousticians in our society; and second, we can decide to cast our lot with the audiology group represented by ASHA, and hold meetings with them exclusively. If we do, the otolaryngologic elite and the acoustic elite will probably stay with us and be faithful in attending the meetings.

The Executive Committee would welcome hearing from the membership about this dilemma. Send your letters to Corti's Organ on this topic and we will publish them. MPD/RJR



Letter from England

Editors note:

PROFESSOR IMRE FRIEDMANN, our Foreign Correspondent for many years, was elected to the Fellowship of the Royal College of Surgeons, at a meeting of its Council on 12th April.

Every reader of Corti's Organ will want to congratulate him on this most recent of many honors, and to wish him well in his increasingly active 'retirement'.

Dear Editor:

I sent you a "Letter" and it ended just before the Wimbledon championships. You all have heard of the result and Jimmy Carter himself must have watched the Finals. The weather was glorious and the crowds huge in spite of the price of the traditional strawberries with cream: about two dollars for a small portion... Sport has dominated the last few weeks and has helped us to forget the energy crisis and all the other little and/ or threatening crises. We have so much to be thankful

for and to enjoy but party politics won't let us and we are dreading the Winter...

I attended the Gavin Livingstone Memorial Lecture in Oxford given by the well known audiologist from Manchester Professor Taylor on the Prevention of Sensorineural Deafness. A fascinating talk that has brought back memories of a great English gentleman. I saw Victor Goodhill for a moment but most of the audience had their thoughts already on the British Academic Conference in Birmingham. Let us hope that the rain although much needed will not spoil the social events.

I shall be very busy in the Fall starting in August and September working at various hospitals and trying to complete various publications. I hope I shall be on time with a chapter for a book to be published by a Denver pathologist.

Imre Friedmann

Letters to the Editor

Dear Editor:

An abstract of the paper we delivered at the 1978 American Auditory Society Convention appeared in the January 1979 issue of Corti's Organ. In the July issue, a Mr. Stephen D. Gannaway writes in to register his criticism over the content of the abstract, at the same time asking the editor to print an extended comment on treating migraine headaches with bloodflow feedback procedures. Mr. Gannaway has misinterpreted some of the information presented in the abstract and seems misinformed on several points. Consequently, we are taking this opportunity to respond to his communication.

Says Mr. Gannaway: "The comment that EMG biofeedback does not reduce anxiety and increase bloodflow is correct." Say we: That comment was not printed in the abstract, we presented no data upon which to base such a statement and, if Gannaway had the data, he didn't offer to share it. If he will re-read the abstract or, alternatively, have it read to him, he will find that we made a quite a different observation.

Says Mr. Gannaway: "However, Borton et. al. left out any discussion regarding the method of temperature biofeedback." Say we: We utilized electromyographic feedback throughout the course of the experiment and entitled the paper "Treating Tinnitus with Electromyographic Feedback." Stated differently, our paper did not deal with thermal feedback and any discussion of it would have been irrelevant to our purpose.

Says Mr. Gannaway: "...temperature biofeedback has been shown to reduce anxiety and increase bloodflow because this method is a more direct link to the autonomic nervous system which in fact, controls bloodflow (see attached), EMG biofeedback does not provide that same connection." Say we: Where is the support for that contention? The "attached" apparently refers to psychologist Keppner's monologue printed alongside the letters section. Unless our eyes deceive us and, alas, they do not appear to do so, Keppner makes no such assertion. What can Mr. Gannaway be talking about (More about Dr. Keppner in a minute)?

Says Gannaway: "I was further dismayed that this highly regarded publication printed an article suggesting that biofeedback as a treatment for tinnitus be 'discouraged' when the article was based on ONE patient." Say We: What Corti's Organ printed was not an article; it was an abstract and the difference should not have been unapparent. Even though the abstract mentioned a "double reversal" single subject experimental design, he apparently missed it. In fact, we utilized an "ABCABA" design, and Mr. Gannaway promptly fell into THE ONE SUBJECT TRAP.

Says Gannaway: "I have referred over 20 patients with tinnitus to a biofeedback clinic and have found the House (Dr. John House) data to be supported." Say we: Easy to say, difficult to prove. Where is the data? We hope Mr. Gannaway will provide some.

And herewith an observation of two of our own. (1) Mr. Gannaway has written a letter full of compounded anfractuities over the abstract of a paper, the data for which he has never laid eyes on. (2) We reached Dr. Donald Keppner, the Psychologist whom Gannaway credited with the accompanying piece on "Blood Flow Feedback Training." Dr. Keppner, in private practice in Atlanta and an enthusiastic and knowledgeable man, did not, however, know of Mr. Gannaway or the American Auditory Society or even Corti's Organ. After hearing what had been written, Dr. Keppner pronounced that although it was possible he could have written something on treating migraine patients, he did not remember writing what appeared in Corti's Organ. "As a matter of fact," he went on, "I did write some notes to go along with a lecture on this subject about five years ago, but I've never published them and they weren't about tinnitus." Mr. Gannaway appears to have taken considerable license in asking that such remarks be printed in support of his letter.

All in all, Mr. Gannaway's letter was a gross misinterpretation of our results and of the abstract which was published in

Corti's Organ. Had he addressed his concern to us instead of Corti's Organ, we would have been pleased to present him with our data and a more complete manuscript. We are always ready to grant our critic amnesty upon the showing of contrition and the promise to reform.

Cordially,
T. E. Borton
W.H. Moore, Jr.
S.R. Clark

Dear Editor:

As a proud new member of the American Auditory Society, I was particularly pleased to be invited by Mr. Pomerantz and Dr. Naunton to join its adjunct organization, the Greater Double Decibel Marching and Chowder Society.

I look upon this as a serious organization dedicated to establishing good will and fellowship among professionals in the related fields. As such, however, I believe that it should acquire all of the trappings of a true professional organization... such as a MOTTO and a SONG.

Though I did seek tacit approval of the following from Charlie Anderson, our leader here in Austin, I fear my query was ill-timed. His response was immediate, but not entirely intelligible. I hesitated to ask for clarification. (I did note that his remarks were primarily mono-syllabic, probably consisting of words with from 3 to 5 alphabetical characters.) The rest is referred to our friends in linguistics. (Lacking a more explicit answer, I feel I must interject at least a parenthetical disclaimer on his behalf.

Nonetheless, in the spirit of contribution to the cause, I propose the following:

MOTTO: "All Things in Modulation."

SONG: "Anthem to the Ear" (Sung to the tune of "All for Rice's Honor" - slightly modified)

Raise your glass and honor
The wondrous ear
Lavish praise upon her
Down your mug of beer.

All Things in Modulation,
And with frequency
Here's to the tube Eustacyan,
And to the Auditory Society.

(Cont. refrain)

Here's to Corti's Organ
May the hairs ever wave free.
Most wondrous of offices,
We love thee.

(Finish - with gusto!)

For we're the Greater Double Decibel
(Shout... I can't hear you well)
Marching and Chowder Society.

I do hope that these humble suggestions are accepted in the spirit in which they are offered, and that I will not seem forward in submitting same.

Yours very truly,
Wyndy Ellis

COCHLEOSCOPY:

A preliminary report of an ultimate Technique and Investigation



By: A. Axelsson and J. Miller

From the Institute for Cochleoexperimentalfiberoptics, and Microstructure, the Branch for Visualization of Hearing.

Introduction

Man's curiosity is as old as man himself. Curiosity relies upon the aid of the sensory organs of which vision has been of greatest benefit and significance (Glickstein, 1973, personal observation). The belief in what we see has always been greater than in what we hear, say, taste, smell, touch, etc. (e.g., I see, I see, as the blind man said; Plato). Medical curiosity has brought us the microscope and the endoscope, instruments with a seemingly ultimate refinement in our times. Few are the organs not being examined visually in the living patient. One of those, however, has been the snail, the cochlea, the organ of human hearing (Hawkins, et al., 1973, personal statements, Fig. 1).

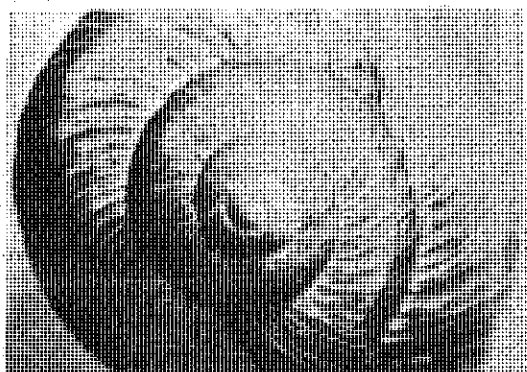


Fig. 1
The aim of the present investigation has been to develop a new method for such examinations - cochleoscopy or in our mother tongue, snail peeping.

Literature Survey

Surprisingly, the first mention of cochleoscopy derives from the famous French Savarin(1) who used a simple method of examining snails with a device called Le Miroir D'escargot. Savarin, who suffered from severe shortsightedness, used his mirror to evaluate whether the snails he was going to serve his guests really contained the delicate and delicious sought-for specimen ("Seek and Ye Shall find," Hallen, 1973, personal communication). This, then, was the first indirect application of cochleoscopy in lower animal forms.

Later, Hippocrates (2), walking the beaches of Peleponnessos one day picked up one of the abundant snails and observed closely the vestibulum of the snail. His constant curiosity made him take a stone and crunch the snail in order to get a direct view of the inside.

Eureka!!! The first direct cochleoscopy was fait accompli (Fig. 2).

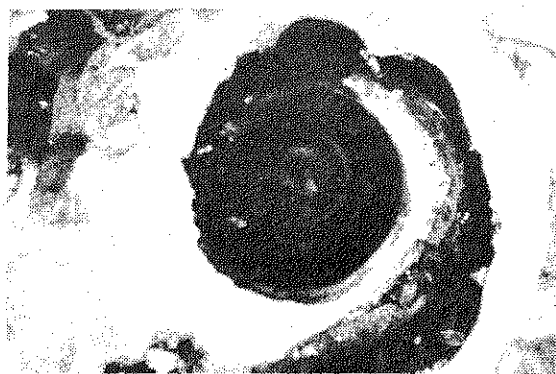


Fig. 2

FOOTNOTES

- (1)Savarin, Jean, 1945. L'examination de la nourriture avant de la manger. *Ann. Delicatesses.*, 1:2.
- (2) Hippocrates, Gary (Grandson(8) to the famous H), 1845; The diary of a Greek snail picker, J. Peleponessoss, 2:3.

The first documented cochleoscopies in the human were published years ago by Retzius (1837) who introduced a small straight tube in the cochlea of Swedish human cadavers. It is of some interest that Retzius' observations were directed on the lately much discussed "avascular channels" (Hawkins and Johnson, 1972, Fig. 3) which Retzius supposed constituted a particular sewage system for the cochlea. As is well known now, these channels are clearly documented to be post mortum artifactual collapsed vessels (Jordan, et al., 1973) a fact, which, Retzius, investigating the cadaver, obviously could not be expected to know. (3)

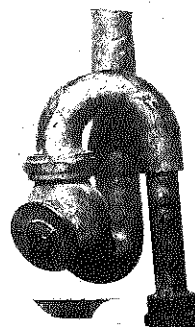


Fig. 3

It is to be noted that the approach first taken for development of cochleoscopy was based in part upon the experience gained by one of the authors (A.A.) during an intensive twelve-month postdoctoral study program in proctology. In this case, study and experience in a different orifice of the body provided the technical knowledge so necessary for the approach we have undertaken and found fruitful if not, indeed, satisfying.

Methods

Material:

A variety of subjects, human as well as animals, without racial regards or concern for sex, but with preference for sex, weight, sex, age, sex, height, sex, color, were used in the present investigation. As outlined below, certain defined groups proved particularly useful, i.e., aristocrats, bores, deaf, composers. However, most of the preliminary results are based on the findings in American volunteer medical students, other non-human primates, patients from Group Health, and American Indians (Fig. 4), since the availability and personal choice make these categories most easily achievable.

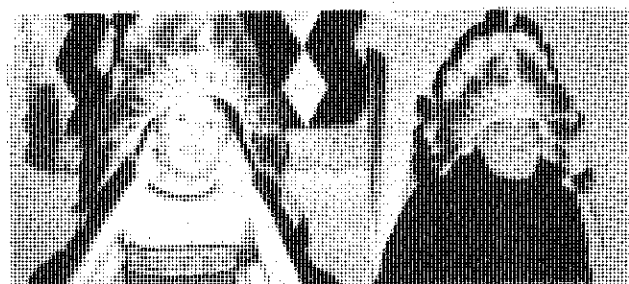


Fig. 4

Approach:

Briefly, our approach is based upon an attempt to introduce a flexible light source (fig. 5) and viewing tube into the labyrinth, in vivo, for the visualization of microstructure and function of the living cochlea. The primary characteristics of concern were: (1) size, (2) flexibility, (3) illumination, (4) visual definition and (5) an appropriate, astute and durable observer. As might be imagined, each of these characteristics presented a series of technical challenges on their own. However, the problems resulting from the interaction of each of these features (particularly # 5 with # 's 1-4) were of greatest difficulty and for future extension and development by young investigators (Liden, 1973) in this new, exciting field, must not be overlooked and cannot be underestimated. We have found it necessary to manufacture a set of cochleoscopy, each to be used for a particular clinical entity. (4) For development of our first cochleoscopy, we selected those most appropriate features of the gastroscope (fig. 6a), the fiberoptic system (Fig. 6b), and the Roto-Rooter (Fig. 6c). (5)

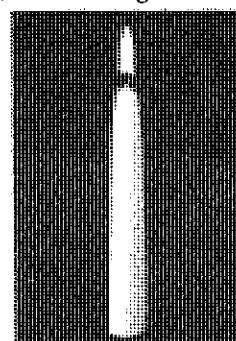


Fig. 5

FOOTNOTES

- (3)Admittedly, there was an earlier case published by Vergilius, (Rome, 53-63 AD) in a living female. However, it was later established that the case, in fact was a direct colposcopy which according to Vergilius' bad handwriting by the printer was misinterpreted as cochleoscopy.

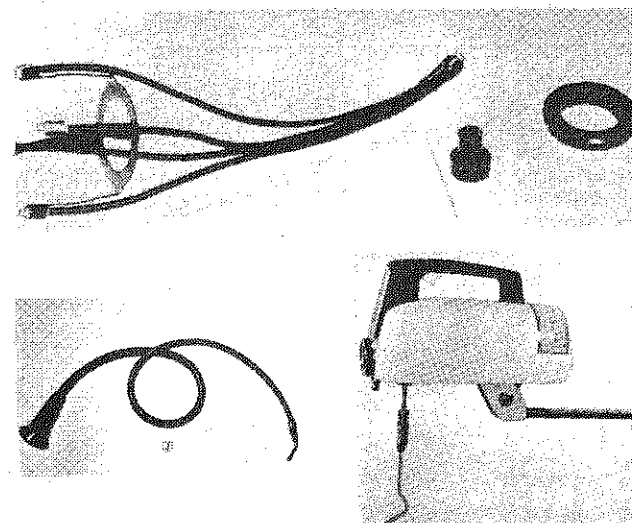


Fig. 6 a,b,c

Recording:

The closed circuit television system, (as employed by Lawrence in similar investigations of the cochlea) was of major use. Alternatively, a small 35 micrometer camera (camera obscura) on a loan from the Department of Histology in Uppsala University, was on occasion introduced through the lumen of the cochleoscopy for snapshots of the fine structure. In addition, the size of the cochleoscopy permitted one additional observation, electrical potentials at the tip site of the instrument.

Attachments:

The following attachments for the cochleoscopy have been found useful for manipulation of structures and treatment of pathological conditions. Most of these attachments are of sub-light microscope dimensions. Development was no small task. (6) (1) vibratory probe, (Fig. 7) for gentle massage of tired stereocilia (suggested by G. McCandless); (2) cannula (Fig. 8) for injection of vitamins, hormones, silastic,

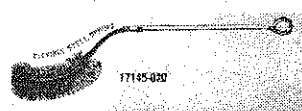


Fig. 7

Fig. 8

antibiotics, and more common medicines, (e.g., Heparin, Donaldson, 1973, personal preference) and for sampling of fluids. For repeated samples, however, we suggest using a disposable tip on the cochleoscopy (Hallen, 1973). (3) small rat-tooth forceps were found helpful for tissue sampling. (4) fine-toothed saw (Fig. 9) was used for trimming stereocilia (modified from Bohman's procedure).



Performance:

Fig. 9

The subjects can be assessed under local anesthesia (Fig. 10) or general anesthesia, the latter far to be recommended (Lamkin, 1973), somnolent information). Via an unconventional-Cont. on pg. 4

FOOTNOTES

- (4) These instruments are available commercially Millax Company Partners, Incorporated, Model No. 1-372, Patent Pending.

(5) This served to be a fortuitous decision, in that it worked. We must note that as in many fantastically beneficial discoveries, serendipity played a role. The ultimate solution to this difficult technical question came to the authors during one of our many evening working sessions. At the moment of careful application of the corkscrew to third bottle of wine (Chateau Troisième), the answer came simultaneously to both authors (perhaps slightly sooner to one, J.M.). Careful development of the idea was carried out on six additional subjects (Chateau quatrième-neuvième). The addition of a Roto-Rooter control device came unexpectedly the following morning.

- (6) Our special appreciation to the many small helpful comments made by Dr. H. Angstrom at the recent NASA meetings held in Guadalupor, Micronesia, June, 1973.

(Cont. from Page 3)

tional tympanotomy (Holmquist), the cochleoscope will be introduced through a, hopefully, small slit in the round window membrane (Axelsson) or a hole in the stapes footplate (Miller) or, lately, through the external wall (Hallen, Seattle,



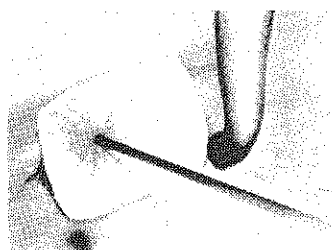
Fig. 10. Locally anesthetized patient assisting the cochleoscopist by indicating where the instrument should be introduced.

September, 1973) into the scala media or, admittedly more difficult, through the endolymphatic sac and duct (Axelsson & Miller). Cochleoscopy can easily be performed as an office procedure (Fig. 11).



Fig. 11. Patient (medical student) demonstrating the ideal position for right sided cochleoscopy.

The scope is gently pushed through the respective scala under close visual observation of intracochlear structures, the observer, and the audioscilloscope. Particular care must be taken in passage of Corti's duct, which due to the energy crisis is often poorly enlightened. The withdrawal of the instrument is achieved by completely opposite movement to the introductory. The introduction site must be sealed by a piece of chewing gum, well chewed, (Wrigley's et al., 1973, Fig. 12).



Technical Experiences Fig. 12

In addition to the visualization of the intracochlear structures, well known to all our readers, it has also been possible to add a device for registration of sound originating in the Organ of Corti. Any kind of sound, spoken or music, can be transmitted to the outside world. Surprisingly, this is not only the case with sound from the surroundings but also melodies or sentences that originate in the patient's mind (probably mediated via the aberrant bundle, Wersall, 1973). In this way, we are able to closely follow the patient's reaction of the procedure, critical or praising comments, and adjust the performance in accordance to them. The future of this "sonoprinting" cannot be overemphasized. Several composers have already expressed an interest in the advantage of the objective registration of their musical fantasies. However, a problem remains in excluding verbal garbage (G. Strothers) or indecent comments which all too frequently mixes into the musical associations.

Precautions

Electrophysiological

As is well known, the endocochlear potential originates in the stria vascularis (McPherson, 1973, personal observation). Our findings have made it possible to visualize the "battery" in the stria vascularis (Fig. 13). The first close-up examination of the potential, however, was quite uncomfortable to the investigator. The result of our curiosity and close

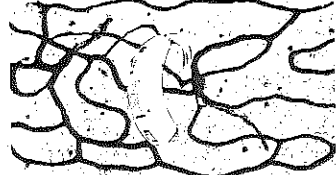


Fig. 13

observation of the origin of the DC potential was a severe electric shock. Later models of the cochleoscope are additionally equipped with a lightning rod grounded in the perilymph (suggested by B. Simmons).

Mechanical Trauma

It is to be noted that this procedure cannot be immediately put to use in humans by the naive operator. We suggest many hours of pre-op training on cadavers and animals (e.g. snails) prior to use in humans. This, of course, will vary with the motor competence and handball/ cigar/ coffee addiction of the surgeon (Donaldson, 1965-73). Our first attempt to introduce this device for exploration of the scala media was not without mishap. Just as the cochleoscope rounded the "hook region", the patient (Xavieria Hollander) suffered a severe gastro-intestinal disturbance (peripheral efferent in nature). This produced an inadvertent movement of the cochleoscope resulting in slight damage (arrows) to Corti's Organ in a restricted area of the basal turn (Fig. 14). (This patient has since been transferred to Los Angeles. However, unfortunately, a cochlear implant did not help. This result is noteworthy, however, since it may be the one case in cochlear implant did not produce satisfactory results that will be available in print.) Caution is suggested at all times in the use of this instrument. Untoward effects have been demonstrated to result in cochleoscopy which in turn may result in single cell isolation (Flock, 1973). Accidents, as these, should not discourage the naive investigator; they never discouraged the sophisticated one. Indeed, we feel our approach to the scala media is effective.

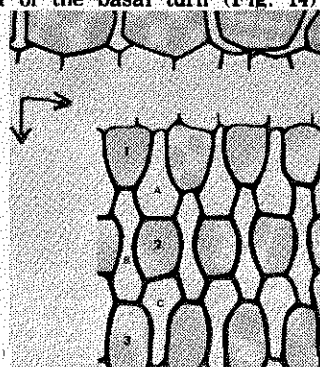


Fig. 14

Physiological Findings

Using the uninsulated tip of the cochleoscope, it was possible to determine the origin of the intracellular resting DC potential. This was only found in cases of severe sensorineural hearing loss, where the membrane literally "rested" on the hair cells. The potential measured at 23 V (Fig. 15) was recorded from the internal parts of the degenerated cells (DC).

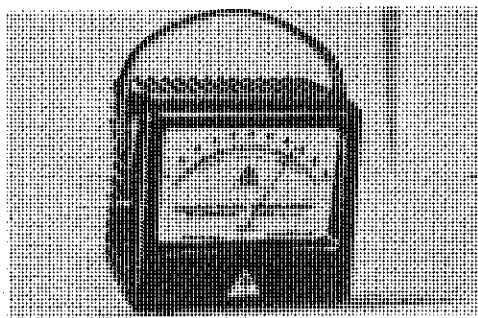


Fig. 15

Lately, critical foreign voices have been raised concerning the injection of contrast media in the intracochlear vessels ("rubber", Johnsson, 1973, Dallas). However, our experiences in aristocrat patients have demonstrated that these patients have naturally occurring Prussian blue of the same color and intensity as those animals injected with the contrast (Compare Figs. 16a and 16b).

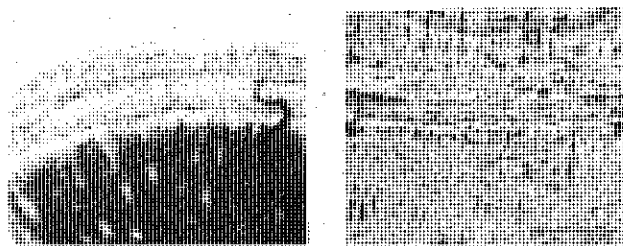
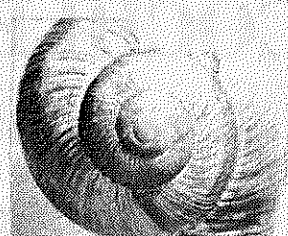


Fig. 16a Vessels from aristocrat containing "blue blood", 16b Vessel from monkey injected with Prussian blue (reprint kindly permitted by L.G. Johnsson)

This indicated that more aristocrats in the future should be examined both in vivo and in vitro, particularly if exhibiting hearing disorders. Additionally, in vitro examination of the cochlea of the bore, captured in the Schwarzwald in Germany, shows naturally occurring Prussian blue in the vessels of the left cochlea (Fig. 17). Clearly is is somewhat premature to generalize this isolated finding to humans. However, we do feel that this finding clearly supports and justifies further use

of Prussian blue injection for the study of the cochlear vasculature. Equally, we are open minded in the use of osmic acid if this stuff can be demonstrated intracochlearly in our future studies of any living animal (same goes for Araldite).



Pathology Fig. 17

Our extensive experiences in the maladies of the snail must here be space-limited to two conditions: Noise-induced hearing loss and prosperity disease.

1. Noise-induced hearing loss

The cochleoscopy clearly demonstrates the changes induced by noise (Fig. 18). In early stages (temporary threshold shift), first the extreme and then the whole basal turn was elevated and shifted upwards towards the second turn (as predicted by Snyder, 1973). Long-standing observations which required much patience from the patient and the voyeur clearly showed that the shift (elevation) Fig. 19

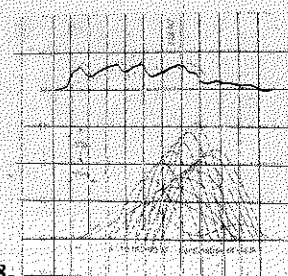
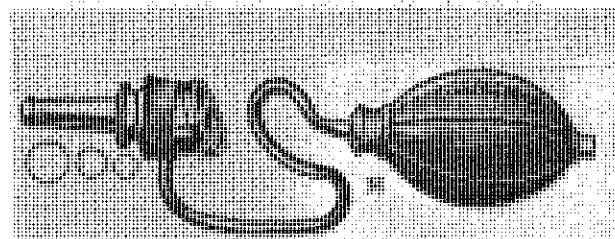


Fig. 18



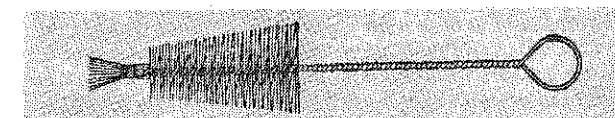
was temporary and the basal turn always reassumed its original position. Contrarily, in early stages of permanent hearing loss, the erection of the stereocilia is lost, they appear "tired, slacking, bent down, shrink, and then disappear (Fig. 19). The proud elevation of their heavy cover, the tectorial membrane (Lawrence) is lost and the cover rests directly on the cell bodies. Interesting and promising treatment measures permitted by the cochleoscope have made this degeneration reversible, also in pronounced cases. Different measures include:

oxygen supply directed to the outer hair cells (Fig. 20)



microinjection of vitamins in the cells Fig. 20

delicate caressing of the cell bottom by the aid of brushes (Fig. 21)



injection of hormones in the outer hair cells Fig. 21

administration of silence

the injection of silastic in the tectorial

membrane

the massage with a vibrator (Lim's Shaker Fig. 22)

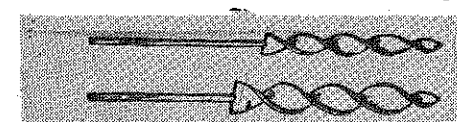


Fig. 22

2. Meniere's disease

Surprisingly, this condition was clearly established to be caused by two different etiologies: 1. We found it to be a dental entity being caused by decay of the Huschkes' dents. The cooperation of the microdentist has resulted in promising improvement of this condition by prophylactic means, i.e., fluor treatment (Shambaugh) and by the otodontic treatment of established disease by the use of tooth wheels. 2. We have been able to verify the pathological correlate of the disease named by the French Prosper Meniere which we, according to the promising treatment, would like to rename to Prosperity Disease. (Admittedly, one of the authors, J.M., wanted it to be renamed after him, i.e., Miller's Disease, which however was not accepted by the cowriter, who would rather use this descriptive name for flour allergy, formerly so

(Cont. on page 5)

(Cont. from pg 4)

common of Miller's noses.) The correlate to the disease has been visually verified to be the so-called Johnson's pink-pants (Fig. 23), a pathological formation of empty vessels similar to the well known Finnish long-drawers, located in the small



Fig. 23

bag, sacculus, and constantly pouring out large amounts of fluid without matter. The appropriate treatment for the disease is a general one, surprisingly also of Finnish origin, i.e., dehydration in dry sauna. The direct method for treatment is the so-called snail straw (cochleosuction), easily applied through the scope (a pre-op diet including Kim Chee is to be avoided. Lim.

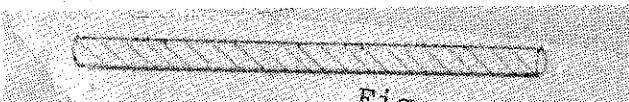


Fig. 24

Likewise, surprisingly, the sound created by the suction tip (Hallen's device) is very similar to the sound created by the oral removal of the delicious fluid in the far-away hiding places of the French escargot.

Conclusion

Time and space have limited us to regrettably short aspects of snail peeping or cochleoscopy. Immense, if not eternal, are the projections of this new method for the restoration of cochlear anatomy and function and diagnosis and therapy, such as the use of this procedure, device and approach to assist in the transplant of the living cochlea (Vernon, 1973, after Dallas, high flying suggestion). In future reports we hope to present to our readers, the almost unlimited experiences we now possess.

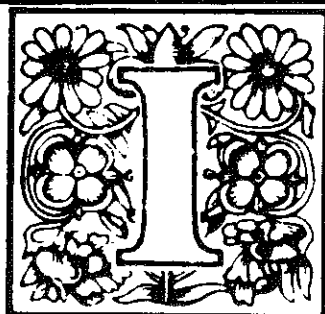


Multi-disciplinary Workshop on Rehabilitation through Amplification

The American Hearing Research Foundation is conducting a Multi-Disciplinary Workshop on Rehabilitation Through Amplification, June 20-25, 1980, at the Pick-Congress Hotel in Chicago, Illinois. The Workshop will be of interest to otolaryngologists, audiologists, hearing aid manufacturers and hearing aid dealers. Sessions on earmolds, tinnitus and masking, medical aspects of hearing impairments, testing of the hearing aid, acoustic testing, special considerations of amplification for infants and children, new federal legislation impact on hearing aid, acoustic testing, special considerations of amplification for infants and children, new federal legislation impact on

hearing aid dispensing, and lectures on the planning and organization of your business operation, are the informative areas that will be covered in this workshop. This continuing medical education offering meets the criteria for 34 hours of credit in Category I for the Physician's Recognition Award of the American Medical Association. For further information contact:

Jack D. Clemis, M.D.
Program Chairman,
American Hearing Research Foundation
Suite 2105
55 East Washington Street
Chicago, Illinois 60602.
Telephone number: (312) 726-9670.



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Behind the Iron Curtain with AAS

AAS's European counterpart, the International Audiology Society, will hold its XV Congress in Krakow in September 1980. To make it reasonable and congenial for AAS members to attend, group tours are being planned for members, their families and friends.

Among the AAS members who will present papers in Krakow will be Ralph Naunton, Aram Glorig, LaVonne Bergstrom and Marion Downs. Phillip Peltzman will also be on the program. There will be three plenary sessions:

(1) Evaluation of Auditory Function after Surgical Procedures, (2) Etiologic Factors in Sensorineural Hearing Loss, and (3) Paedaudiology. In addition, contributed papers will be presented.

Two options are being planned for the tour: one a seven-day trip to the Krakow Congress and back; the other an additional week's tour of Vienna, Budapest and Southern Russia.

TOUR 1

Sunday, August 31 leave New York
Monday, September 1 arrive Krakow
September 2-6 attend Audiology Congress
September 6 leave Krakow for Warsaw
September 7 tour Warsaw
September 8 return to New York

TOUR 2

Sunday, August 31 leave New York
Monday, September 1 arrive Krakow
September 2-6 attend Audiology Congress
September 6 leave Krakow for Vienna
September 7-8 tour Vienna
September 8 fly to Budapest
September 9-10 tour Budapest
September 10 fly to Kiev, Russia
September 11-13 tour Kiev
Sunday, September 14 leave Kiev for New York

TOUR 1

*Air Fare to Krakow and return from:

Dallas	
Denver	
Los Angeles	
Other Western Cities	\$895.00

Chicago	
St. Louis	
Detroit	
Other Mid-Western Cities	\$845.00

New York	\$695.00
----------	----------

TOUR 2:

Air Fare plus ground travel, hotel accommodations (with breakfast), for extra week in Vienna, Budapest & South Russia:

Add \$640.00 to above prices.

NOTE: These prices include special baggage handling, assistance at departure & hotels, and a cocktail party prior to departure at J.F.K. Airport.

*All fares are approximate & subject to changes such as fuel surcharges.

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Please send information on Krakow tour with the American Auditory Society.

Number in my party _____

Signed _____

Address _____

Raves on Vanderbilt Conference

One of the finest meetings in many years was held in Memphis in September, titled an **International Symposium on Amplification in Education**. Sparked by Fred Bess of Vanderbilt, it tackled some of the novel problems that professionals are faced with in carrying out the mandates of the 1975 Education for Handicapped Children Law.

The speakers pointed out the mind-boggling impact of the Law on the responsibility of speech, hearing and language clinicians as well as deaf educators. More and more these professionals will serve as adjuncts to the primary classroom teacher. It will be incumbent on them to manage effective amplification in the classroom whether with individual hearing aids, FM systems or other auditory trainers. A number of speakers addressed themselves to these problems, among them: Harry Levitt, Ph.D.; Norman Erber, Ph.D.; Dennis B. Fry, Ph.D.; Daniel Ling, Ph.D.; Julia Davis, Ph.D.; Arthur Boothroyd, Ph.D.; Mark Ross, Ph.D.; Wayne Olsen, Ph.D.; F.A. Niemoller, Ph.D.; Vernon D. Larson, Ph.D.; Noel D. Matkin, Ph.D.; Barry A. Freeman, Ph.D.; Steve Sinclair, M.A.; Derek Sanders, Ph.D.; Gloria Hoversten, M.A.; Daniel M. Schwartz, Ph.D.; Steffi B. Resnick, Ph.D.; Dennis Byrne, Ph.D.; Andreas Markides, Ph.D.; Larry E. Humes, Ph.D.; Fred H. Bess, Ph.D.; Don Riggs,

A.E. and Marion Downs, M.A.

Dr. Eric Wedenberg of Karolinska Institute in Sweden was the honor guest speaker, reviewing the history of the development of auditory training. Marion Downs gave the banquet address, "The 11th Commandment: Thou Shalt Listen".

Fred Bess, Barry Freeman and Steve Sinclair comprised the committee's responsible for this outstanding symposium. The transactions will be published. Watch for them.



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Abstracts of AAS meeting

Word Discrimination in Quiet and in Noise A Re-Examination

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Joan Dengerink

Department of Speech
Communication Disorders Program
Washington State University
Pullman, Washington 99164

The purpose of the present investigation was to establish developmental norms for word discrimination in quiet and in noise in a normally hearing pediatric population. A second purpose of the study was to investigate the influence of minor variations in noise level for word discrimination performance.

Twelve children from each of four age groups (X age \times 7, 9, 11, and 13 years) and 12 college students participated in Experiment I. Hearing sensitivity and tympanometric measures were within normal limits bilaterally for each subject. Each pediatric subject presented scores within one year of grade level on the language subtests of the *Iowa Tests of Basic Skills*. A Spondee Threshold (ST) was obtained for each ear for each subject.

An Auditec tape recording of *Northwestern University Auditory Test No. 6* (NU-6) served as test stimuli. Both NU-6 lists and white noise were presented via a GS 1701 audiometer fed into one TDH-49 earphone. Right or left ear of each subject was selected for experimental listening on an alternate basis. Each subject participated in two experimental conditions & word discrimination in quiet at 40 dBSL (re: ST), and word discrimination in white noise ($S/N \times 0$ dBHL)*. Order of experimental condition was randomly determined for each subject.

Eleven normally hearing college age adults and 7 of the original nine year olds (now ten years old) and 5 of the original eleven year olds (now twelve years old) participated in Experiment 2. Experiment 2 was identical to Experiment One except for the addition of a third experimental condition. The three experimental conditions of Experiment 2 were: 1) NU-6 discrimination in quiet (at 40 dBSL re: ST), 2) NU-6 discrimination in white noise ($S/N \times +2$ dB). In the latter condition the signal remained at 40 dBSL re: ST while the white noise was attenuated 2dBHL.

Word discrimination scores in percent correct were calculated for each subject for each experimental condition. The data was analyzed using factorial analyses of variances with repeated measures on one factor. Analysis of the data from Experiments 1 and 2 revealed significant condition effects beyond the .01 level of confidence. No significant age or age by condition effects were found in either set of data. Duncan's Multiple Range Test revealed that performance in quiet and in both noise conditions ($S/N \times 0$ and $S/N \times +2$) were all significantly different at the .05 level of confidence.

The data generated in the present experiments revealed the marked variability in word discrimination in noise performance of normally hearing subjects found by other investigators (Olsen et al., 1975; Cooper and Cutts, 1971; Keith and Talis, 1970). As noise level increased (S/N ratio decreased) variability increased word discrimination in noise did not vary consistently as a function of maturation; therefore, the present version of this test is too difficult to reveal developmental differences in speech discrimination in noise. One might have expected a significant age effect due to increased listening skills, experience, language facility, and attention capabilities of older children and adults compared to younger children (Chermak and Zielonko, 1977; Maccoby, 1967; Kalikow et al., 1977).

The data obtained with the adult subjects do not agree with the data of a similarly designed study (Olsen et al., 1975). Speech in white noise difference scores & word discrimination score in quiet minus word discrimination score in noise ($S/N \times 0$)* from Experiment 1 ranged between 52-70 percent for 50 percent of the adults. Olsen et al. (1975) found difference scores ranging between 20-28 percent for 60.6 percent of their normally hearing adult subjects. As Kruei et al. (1968) observed, differences in speech discrimination scores between clinics emphasize the need to control not only test materials but also equipment, environment, noise and talkers. As suggested by the results of Experiment 2 (and suggested by Coles et al., 1973) control cannot substitute for the collection of normative data, for a 2dBHL variation in noise level, which is acceptable under ANSI S3.6 (1969) calibration tolerances for speech audiometers, can result in significant differences between word discrimination scores. Therefore, differences in speech in noise scores between clinics may be due to calibration tolerances. Other variables contributing to the discrepancy in word discrimination in noise findings between clinics are: 1) the use of Auditec versus Northwestern recordings of the NU-6 lists (Wilson et al., 1976, found the Auditec intelligibility function to be displaced by 5.2dB to the higher sensation levels relative to the Northwestern recording); 2) the use of the TDH-49 earphones versus TDH-39 earphones, the former present a flatter high frequency response; and 3) different definitions of Ob S/N (OdBSPL or OdBEM).

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BINAURAL INTERACTION IN HUMAN AUDITORY EVOKED RESPONSES

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S.J. Norton

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and
Department of Otolaryngology
University of Washington
Seattle, Washington

Binaural interaction (BI) is a prominent feature of brainstem auditory function, as shown by single unit recordings, behavioral studies after experimental brainstem lesions in animals, and clinical studies. Since brainstem evoked responses (BSER) reflect activity in the brainstem auditory nuclei, it is appropriate to study BI in BSER.

Dobie and Berlin (1979) demonstrated BI in the BSER of guinea pigs. It was assumed that in the absence of BI, responses attributable to activity in the right and left "channels" would add according to the principle of superposition in linear systems. Thus, response to binaural stimuli would be equal to the algebraic sum of the responses obtained when the two monaural stimuli were given separately: $B(t) = R(t) + L(t)$. Any non-linearity could be detected by subtracting the sum of the monaural responses from the actual binaural response, and must be attributable to BI.

BI in guinea pig BSER is striking, reproducible, and persists for a surprising range of stimulus parameters: intensity to near threshold, t up to 3 msec., and I up to 40 dB.

This paradigm has not previously been applied to human BSER or middle-latency auditory evoked responses (middle AER). We studied both, because our pilot studies suggested a large inter- and intra-subject variability in BI in BSER.

Sixteen young subjects had BSER and middle AER recorded, using conventional stimulus and signal processing procedures, for monaural and binaural clicks at two intensity levels (approximately 65 and 35 dB - SL). Amplitudes and latencies of all peaks were measured; each binaural trace was compared to the appropriate "sum-of-monaurals" or "P" trace, since it represents the linear model's prediction of binaural response. Difference ("D") traces were generated by subtracting the P from the B traces.

Most subjects showed BI in BSER. The morphology of the response was similar to that seen in guinea pig BSER, although with increased latency (6 vs 4 msec.). However, there was considerable individual variation: some normal subjects showed no replicable BI. The latencies of response peaks in the "D" trace (representing BI) were always intermediate between peak latencies in the raw BSER. There were no significant differences in the group mean amplitudes and latencies of the B and P traces.

In contrast, a large BI effect was seen in 12/16 subjects' middle AER (the other four had been excluded from analysis because of very large, and presumably myogenic, potentials in the middle AER time frame). At both the high and low stimulus intensities, the amplitude of peak "Pa" was much smaller for binaural stimulation than for the sum of monaural responses.

As a first approximation, binaural BSER in man is

well-predicted by summing monaural responses. BI is present, but is subtle and highly variable. Differences between human and guinea pig recordings may be explained by innate experiments, stimulus parameter differences, etc. BI was more prominent in middle AER. However, myogenic responses complicate interpretation of these results.

REFERENCE

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MONDINI'S DEAFNESS A review of Histopathology

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Department of Otolaryngology
University of Minnesota
Minneapolis, Minnesota

Introduction

Next to Scheibe's deafness, Mondini's deafness is probably the most common form of congenital genetic deafness. Mondini's deafness has in recent years been more frequently diagnosed largely because of polytomographic studies which are available in most clinics, especially since 1969, when Valvasori described the application of polytomographic radiography. Since that time, diagnostic studies using polytomographic methods have been described by Illum 2 (1972), Jensen 3 (1974), Everberg and Jensen 4 (1976), Som et al 5 (1977), Subotic and Schuster 6 (1978), Valvasorri and Clemis 7 (1978), and Ibrahim and Linthicum 8 (1979). Even such quantitative radiological studies can be misleading. For example labyrinthitis ossificans can not be differentiated from osseous labyrinthine aplastic changes radiologically. There is a great need for histopathological studies of human material to substantiate such diagnoses in patients and in turn appropriate management should result.

The mechanisms for sensorineural hearing loss in Mondini's deformity has not been well established, perhaps because there are so few histopathological studies in the literature. These studies generally concentrate on Mondini's deformities rather than pathogenesis of Mondini's osseous anomaly is not necessarily associated with hearing loss. Polvogt and Crowe 9 in 1937, described cases with normal hearing in which Mondini's bony cochlear anomalies existed. Vestibular labyrinthine anomalies are less frequently described although, as this study will show, such changes can occur. The literature on this subject is characterized by individual case reports. Following Mondini's original description of gross findings in 1791, Alexander (10) was first to describe the microscopic features. In 1950, Altmann (11) cited earlier described cases of Mondini's deafness. He also stated that the "extent of the changes of the stria vascularis, organ of Corti, spiral ganglion cells and the other parts of the cochlear system determined the degree of hearing loss, and that clinically malformation of the Mondini's deafness. He also stated that the "extent of the changes of the stria vascularis, organ of Corti, spiral ganglion cells and the other parts of the cochlear system determined the degree of hearing loss, and that clinically malformation of the Mondini-type might therefore, show complete deafness or only partial loss of hearing." Since then cases have been described by Murakami and Schuknecht 12, Gussen 13, Paparella and Elifky 14 and Lindsay 15.

This report contains a general survey of 12 human temporal bones (9 plus the 3 originally described) of Mondini's anomalies and deafness with a discussion of pathogenesis of hearing loss and vestibular findings.

DISCUSSION

Of the 12 cases assessed the following interpretation of summarized aggregate findings include: absent vestibular labyrinth (semicircular canals and vestibule) with absent associated neural elements (5 cases); $1\frac{1}{2}$ or fewer cochlear turns (11 cases); large endolymphatic duct and sac (6 cases); organ of corti lesions sufficient to explain sensorineural hearing loss (7 cases); middle ear changes sufficient to cause conductive or "sensorineural" hearing losses (8 cases).

It was surprising to see total aplasia of the vestibular labyrinth (pars superior) and nerves in so many cases (5 out of 12). It is well known that the pars superior (semicircular canals and utricle) are phylogenetically older than the pars inferior (sacculle and cochlear duct). These findings are at variance with the time tested rule that embryology mirrors phylogeny or that the older a structure is phylo-genetically the more resistant it is to developmental defects. What we commonly find are cochlear congenital lesions with preservation of vestibular function. Moreover, these unusual cases of aplasia of the vestibular labyrinth provide a unique opportunity for vestibular physiologists to study equilibrium problems or lack thereof in such patients. Enlarged semicircular canals were seen in other patients, another

(Cont. on page 11)

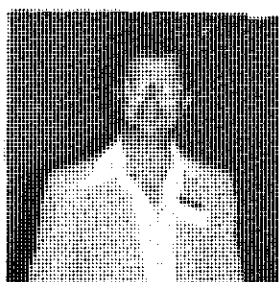
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Otitis Media Conference

Vanderb



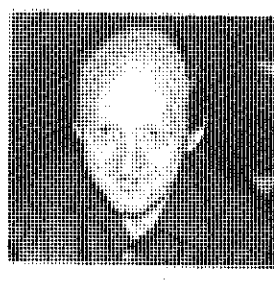
Sven Ingelstedt, Guest of Honor from Sweden was given accolades at the banquet.



Doug Webster presented new evidence of central nervous system effects of conductive loss in mice.



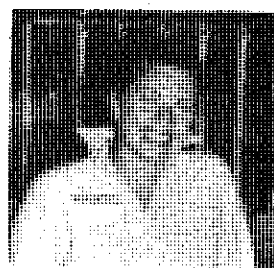
Earl Harford



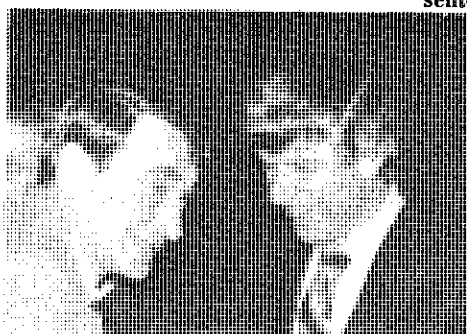
Aage Moller, Pittsburgh, Editor of the new journal, chaired O.M. Screening panel.



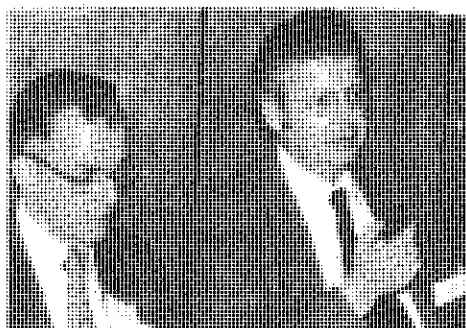
Taina Palva and Jack Paradise. Palva represented Finland.



Marilyn Willhoit in charge of Lisbon charter trip.



Joseph Sade of Israel and Mike Papparella, Minneapolis. Papparella defined and classified O.M. and Sade described pathogenesis.



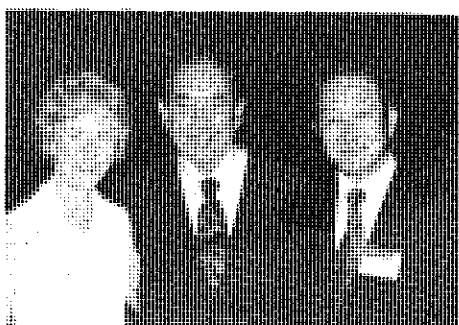
Jerry Klein and Robert Rubin. Rubin headed panel of Sequelae of Otitis Media.



Ethyl Mussen and Buckminster Ranney. Ranney gave keynote address to the Otitis Media Research group.



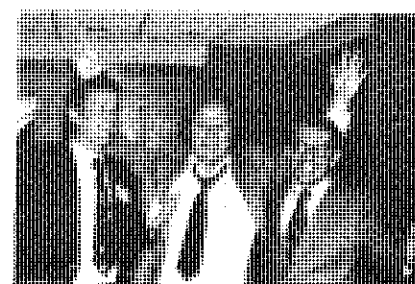
Bill Melnick and Quinter Beery. Melnick was Co-hospitality Committee.



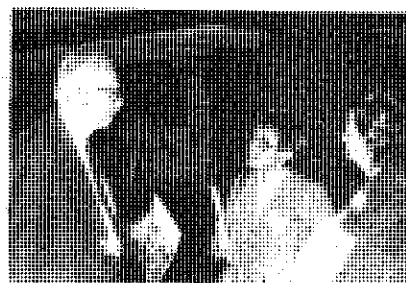
Joan and Imre Friedman from London with Dr. Juhn, Univ. of Minn.



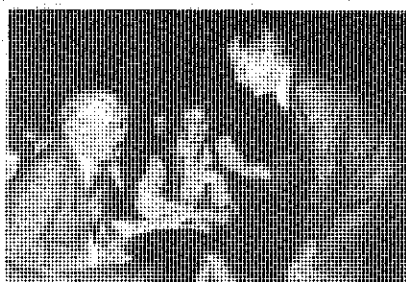
David Lim, one of the organizers of the MEE Symposium with his charming wife Young Sook.



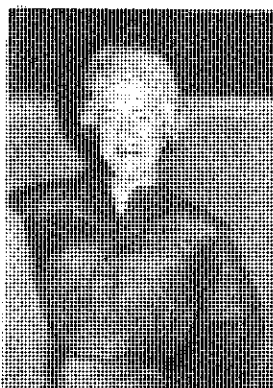
The three planners celebrate the conclusion of the Symposium: Barry Freeman, Fred Bess and Steve Sinclair.



Sam Lybarger detailed aerosol measurements to his audience.



Dan Ling argues a point with Eric Wedenberg.



Ann Sidden chairs a session.



Alan Carran enjoys his address on the faculty.



Dan Ling was one of the most popular speakers.

Gloria Los Angeles



Eric Wedenberg



Ann Sidden and Noel Math. Town program



Mark Ross amplification

and others at

Conference



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gram.



and listeners.



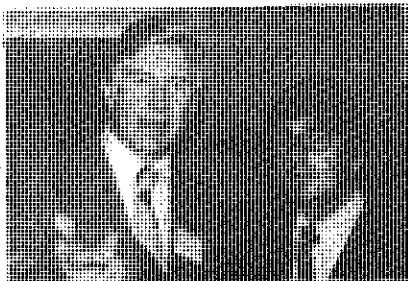
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Bob McLaughlin was an
avid listener.



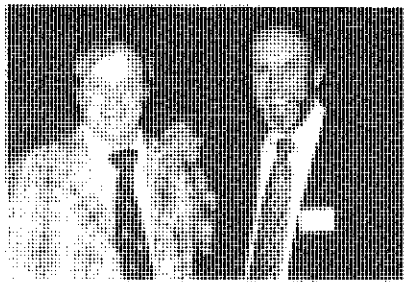
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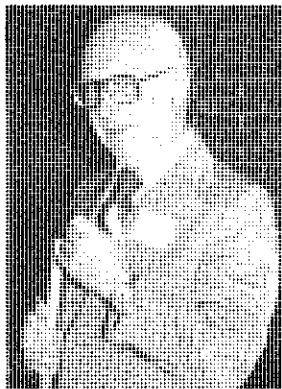
Dan Long and Derek Sanders, two distin-
guished speakers.



Gene Vaughn with Birmingham
cohorts.



Fred Hess and Naomi Mathis.

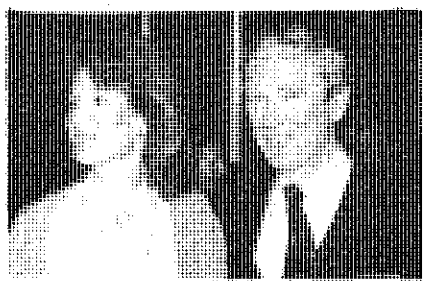


Freeman MacConnell, the
grandfather of the Sympos-
ium.

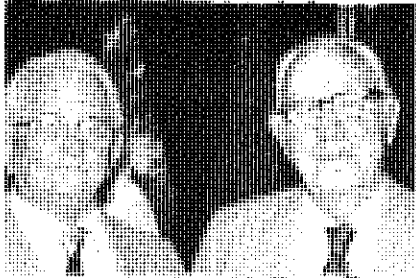


Bill Ely of Alaska spoke on
electronics.

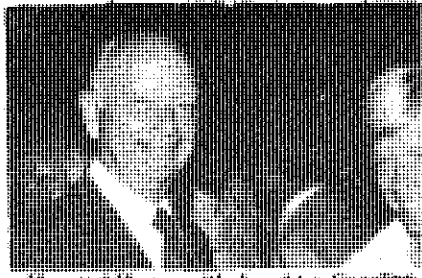
Deafness Research Foundation



Dr. and Mrs. John Shea of Memphis.



J. Brown Parrier with Harry Heum-
wasser.



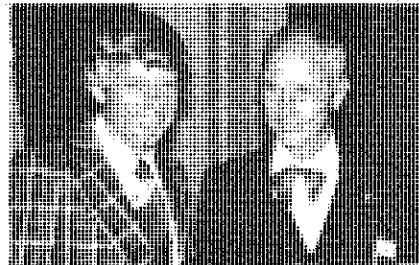
Howard Houton with daughter Carolyn.



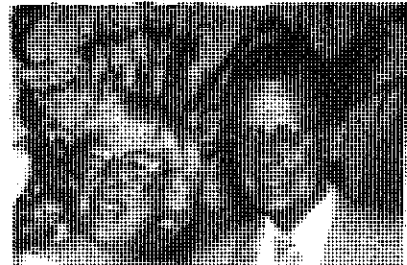
David Lim of Columbus,
one of DRF's researchers.



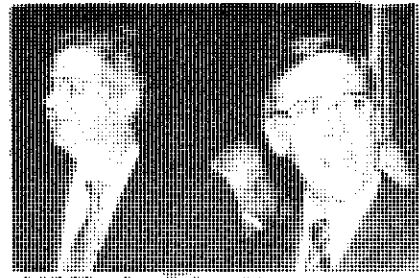
AAS Board Member Marie
Lawrence.



New Coordinator, DRF President Mike
Papparella with Wesley Huggins of
DRF.

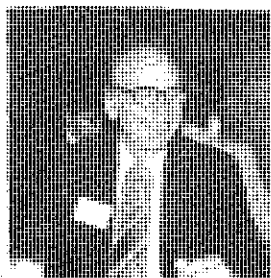


Jean and Fred Lindstrom at DRF. Jean
is head of the women auxiliary group,
DRFA.

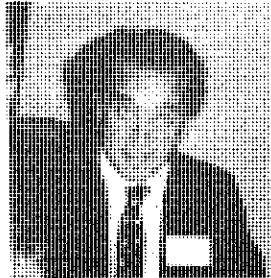


AAS Member Bob Hahn and Editor of
new journal attends DRF meeting with
Bobby Alford, Archives Editor.

CHABA



Wayne Rodman, former
CHABA chairman,
Tracor Vice President.



Bill Rodman



George Meschegian,
Head of Callier Center.



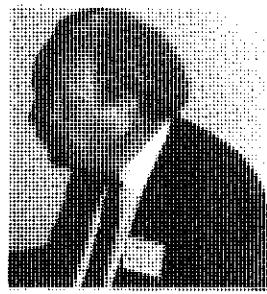
Dan Schwartz of Walter
Reed.



Don Worthington of Boys'
Town in Omaha gave talk
on testing procedures.



Lois Elliot, Director at Northwestern's program,
and AAS former president Dix Ward.



Gil Tolhurst

Minutes of the Executive Committee of the American Auditory Society

Applicants for

Membership

1979

DATE: October 7, 1979
PLACE: Dallas, Texas
TIME: 4:30 P.M.
MEMBERS PRESENT:
Charlie D. Anderson (Non Voting)
Susan Conway-Fithian (Non Voting)
Marion P. Downs (Non Voting)
Bruce Graham
Gilbert Herer
Susanne Kos
Sam Lybarger
Ralph Naunton (Non Voting)
Ross Roeser
Hiroshi Shimizu
Blair Simmons

MEMBERS ABSENT:
James T. Benitez
David Dolowitz
Earl Harford
Norma Hopkinson
Merle Lawrence
Fred Linthicum
W. Dixon Ward
Laura Ann Wilber
J. Donald Harris

- President Lybarger opened the meeting at 4:30 p.m.
- The minutes from the 1978 Executive Committee Meeting, held in San Francisco, California, were presented and approved without change.
- The income and disbursement statement from the period January 1 through August 31, 1979 was presented, discussed, and approved.
- A list of 91 persons who had submitted applications for membership during 1979 was presented. The list included applicants' names, highest degree held, city and state of residence, and the names of the members sponsoring the applicant. The applicants were approved for membership, with the exception of one whose application was incomplete. Upon obtaining the sponsorship of one more member, the applicant who was not approved will be admitted to membership. The names of those accepted as members will be published in the next issue of Corti's Organ.
- The meeting site for the 1980 annual meeting of the Society was changed from Los Angeles (it was to be held in conjunction with the winter meeting of the Acoustical Society of America) to Detroit, preceeding the annual meeting of the American Speech and Hearing Association. It was felt that because the largest portion of our membersip does attend the ASHA conference, consideration be given to having the annual meeting alternate between ASHA and another group.
- Bruce Graham was appointed as the Program Chairman for the 1980 Annual Meeting. He will solicit help from two additional members of the Society, one an otolaryngologist, and the other a representative from the hearing aid industry.
- A discussion was held regarding the possibility of the Society sponsoring a national meeting. Bruce Graham and Norma Hopkinson were appointed co-chairment of a committee to explore the possibility of such a meeting. The possibility of having a meeting in conjunction with the Academy for Research in Otolaryngology in St. Petersburg, Florida in 1981 will be explored. the Committee will report to the Executive Committee at a future date on this possibility.
- After discussing the Carhart Memorial Lectureship, a motion was made that a committee be formed consisting of the President, immediate Past-President, and President-Elect to develop a list of three possible candidates and present the list for vote by the Executive Committee prior to December 31, 1979.
- Ross J. Roeser was appointed Secretary/Treasurer for 1980 and 1981.
- Suzanne Kos was appointed Assistant Secretary/Treasurer for 1980 and 1981.
- Ralph Naunton was appointed Vice-President/President-Elect for 1980-81.
- President Lybarger discussed the implementaton of a membership drive. At present the Society has only minimal recruitment activities. In order to keep the membership dues at a minimum and support the journal the membership should grow substantially in the next 2-3 years. Several alternatives were discussed and following this discussion a committee was

appointed consisting of Charlie Anderson, Susan Conway-Fithian, Malcolm Graham, and Hiroshi Shimizu (Chairman).

13. The Executive Committee voted unanimously that a letter of commendation be prepared and sent to Dr. J. Donald Harris for his outstanding efforts in developing the Journal of the American Auditory Society.

14. Discussion was held regarding the new journal, Ear and Hearing. Ross Roeser has been appointed Editor-In-Chief. He stated that the entire format of the journal will change and reviewed the specific changes that will occur.

The new journal will be designed principally for the practicing clinician/physician/educator who is dealing with the assessment, diagnosis and management of auditory disorders. The journal will take on a "clinical" theme, and will be in direct harmony with the aims of the American Auditory Society.

Featured in the new publication will be submitted manuscripts on clinically-relevant topics, as well as regular sections that will be edited by the folowing persons: Phillip A. Bellefleur (Secion on Auditory Education and Rehabilitation), Henry M. Carder (Resident and Audiology Fellow Section), J. Donald Harris (Original Articles Section), Robert W. Keith (Clinical Notes Section), Todd Porter and Eugene C. Sheeley (Book Review), F. Blair Simmons (New Developments in Otology Section), John C. Sinclair (Techniques and Applications of Hearing Aids), and W. Dixon Ward (Foreign Translations Section). Invited papers will also be requested from well known authorities on specific topics and will appear in the Original Articles Section. The invited paper will be sent to selected reviewers for their comments, and the comments on the manuscript will be published along with the manuscript. A rebuttal regarding the comments will also appear if the authors of the manuscript wish to submit one.

15. Marion Downs gave a report on Corti's Organ. The Executive Committee commended her for the publication and had no suggestions for revision or addition.

16. It was suggested that the Executive Committee give consideration to opening another class of membership in the Society. Specifically, an Associate Membership category was discussed. The Associate Member would not be required to have a Bachelor's degree, and would not have voting privileges. It was also suggested that the signature requirements be waived for Associate Members.

It was recommended that a committee for changing the Bylaws be formed to study the Associate Membership category and a motion be prepared for a revision that will be circulated to the Executive Committee for vote. Dix Ward was appointed chairman of the committee.

17. There being no other business, the Executive Committee adjourned at 7:48 p.m.

Sam Lybarger, President

Ross J. Roeser, Secretary/Treasurer

Jack Adams	Camille S. Klein
William M. Aldrich	Sandy Kuprenas
I. Kaufman Arenberg	Janna Smith Lang
David L. Asher	Dimitra J. Loomos
Janice E. Badger	Linda H. Lucyshyn
Ashley H. Baker	James A. Lyons
Marilyn Seidner Batshaw	Howard T. Mango
Franklin Bialostozky	Judith Soper May
Patricia A.	Patricia McCarthy
Blomstrom-Clees	Robert M. McLaughlin
Roy M. Bordenick	Gale W. Miller
Kristie J. Brown	Marilyn Miller
Caroline M. Buck	Wynette Monekka
H.B. Calder	Vernon R. Morgan
Joan Braverman Callahan	Martha R. Mundy
Alfred N. Carr	Judith Murphy
Cruz A. Cancel	Carolyn R. Musket
Peter A. Charuhas	Igor V. Nabelek
Kathleen M. Coats	Judi K. Pederson
Dennis Aldo Colucci	Edward S. Porubsky
Gladys B. Compton	Deborah Price
M.C. Culbertson	Lawrence J. Putz
Alan D. Danz	Kenneth J. Randolph
Donelle Ehritt	Patricia F. Reisen
Martha Anne Ellis	Alan M. Richards
Mary Powers Evans	Connie Sakai
Joseph R. Ferrito, Jr.	Ruth Sargent
Constance Fiero	Thomas L. Schroder
Lynn M. Firestone	W. Stephen Seipp
Brian D. Forquer	George E. Shambaugh
Jennifer L. Fox	Karen Shock
Gregory Frazer	David Smith
Elose J. Furiga	Terry Stark
Lt. Col. Donald C. Gasaway	Leon Stein
Alan B. Gertner	John R. Stram
Vic S. Gladstone	Charles Tait
Barbara Goldstein	Jean Ann Tebinka
Clarissa Green	Gail M.N. Traul
Janice Green	Debra M. VanOrtf
Everlene G. Grimes	Kathryn Biles Voges
Joseph A. Guillory	CPT Thomas M. Watkins
Mary Lynn Hackleman	Deborah C. Walker
Jay Hans	Loren L. Webb
David Hill	Frank J. Wledele
Anne Forrest Josey	J. William Wright, III
Barbara H. Kinney	Ann M. Yelich

AMERICAN AUDITORY SOCIETY

Income and Disbursement Statement

For Period

January 1, 1979 - August 31, 1979

Income Disbursements

Cash on Hand-Checking Account 1/1/79	\$978.49	Publication Costs-JAAS	14,795.50
Cash on Hand-Savings Account 1/1/79	18,205.03	Publication Costs-Corti's Organ	2,890.59
Membership Dues	10,123.07	Bookkeeping & Audit	211.88
JAAS Allowance	1,500.00	Contract Service-Office	635.63
Interest on Savings Account	280.46	Contract Service- Corti's Organ	703.79
Sale of Advertising to Corti's Organ	675.00	Convention Expense	551.61
Convention Registration	224.00	JAAS Income Allowance	1,500.00
	12,302.53	Supplies & Equipment- Corti's Organ	267.65
TOTAL INCOME	31,986.05	Allowance for Sec/Treas	350.00
Supplies	373.43	Travel Expense for Sec/Treas	35.90
Postage-Office	375.93		24,383.36
Postage- Corti's Organ	1,230.46		
Duplicating Costs	46.14		
Telephone	414.85		

CASH ON HAND at 8/31/79 7,602.69

* Checking Account \$ 507.20
Savings Account 7,095.49

(Cont. from pg 7)

subject for further observation and study.

Characteristically, Mondini's patients demonstrate a shorter cochlear duct that is $1\frac{1}{2}$ instead of $2\frac{1}{2}$ turns. 10 out of 12 cases showed such a shortened cochlear duct. 2 out of 12 contained a missing bony interscalar septum which could have been misdiagnosed as Mondini's deafness by polytomography whereas Schiebe's deafness was found to explain the hearing loss. Two of these cases (11 and 12) contained no cochlear turns but an even more rudimentary single common cochlear space. Surely this genetic lesion was more profoundly initiated earlier in the first trimester.

In this series, end organ cochlear lesions and associated neuronal deficiencies interpreted as being sufficient to account for a serious sensorineural hearing loss were seen in 7 cases. However, 2 of these (9 and 10) were Schiebe's deafness with which a full compliment of cochlear turns was seen histologically. Thus 5 cases out of 10 with a shortened cochlear duct contained end organ lesions or there were 5 cases where the cochlear labyrinth otherwise appeared normal. In these later cases, many speculations or interesting questions can be raised relative to inner ear hydrodynamics, traveling wave phenomenon, frequency range, pitch perception, etc. If other temporal bone anatomical and physiological conditions were normal, would these cochleae function normally? Abnormally? Why and how? Unfortunately, as this study demonstrates, middle ear pathological factors can complicate inner ear transmission and function. Otherwise, these cases provide an interesting model for auditory physiologists to study. One further thought is that these patients properly selected and screened may become excellent cochlear implant candidates in the future.

In these patients in whom organ of Corti lesions were found the characteristic finding was aplasia of part or all of the organ of Corti more apparent towards the basal turns. Lesions in the upper turns were also seen. These lesions were usually accompanied by absence of neural elements (ganglion cells and nerves). The stria vascularis and spiral ligament generally appeared normal as did the position of Reissner's membrane.

In Mondini's deafness middle ear pathology can affect inner ear function and may appear as profound sensorineural hearing loss audiologically. A Mondini deformity may be associated with absence of the oval and round window along with other aplastic lesions of the middle ear (e.g. cases 1,2,6&7). Such loss of preferential sound conduction to and phase differential at the windows could be expected to result in a sensorineural hearing loss although, the sensory structures of the cochlea appear normal.

As this study and other studies have shown a large endolymphatic duct and sac are often seen in Mondini's cases. As we see in this series this can be true even in the absence of a vestibular labyrinth whereas the opposite might be expected. The utricle-endolymphatic valve is usually deficient or missing and there often exists a direct and large communication between the endolymphatic sac and the scala media. Endolymphatic hydrops or Reissner's collapse were not seen in this study and the stria vascularis generally appeared intact. So in spite of these, in some instances grossly abnormal findings, conditions appear suitable for an operational longitudinal flow theory as regards endolymph.

METABOLIC MAPPING OF COTICAL AUDITORY ACTIVITY IN MAN: A PRELIMINARY REPORT

William F. Rintelmann
Joel Greenberg
Abass Alavi
Martin Reivich
James B. Snow
David Christman
Joanna Fowler
Alfred P. Wolf

From the Cerebrovascular Research Center, and University of Pennsylvania School of Medicine, Philadelphia, PA;

Using the recently developed 18 F-fluorodeoxyglucose technique for the measurement of local cerebral glucose metabolism (Reivich et al., *Circulation Res.*, 1979) in conjunction with a positron emission tomographic scanner (PETT III), it has been possible to determine which areas of the brain are activated by a specific sensory stimulus thus enabling neural pathways to be mapped in vivo in man. Following a bolus injection the fluorodeoxyglucose in the plasma is transported into the brain tissue in a manner similar to that of glucose. Once in the tissue, it is phosphorylated to (18 F)-2-fluoro-deoxyglucose-6-phosphate which is essentially trapped in the tissue over the time course of the measurement. The tissue activity of FDG-6-P was measured using the PETT III tomographic scanner and the arterial time course of FDG was determined. With these data and knowledge of certain constants it is possible to calculate local cerebral glucose metabolism for any region of the brain with a resolution of 1.7cm (Reivich et al., *Circulation Res.*, 1979).

The auditory system was studied in young right handed male adults with normal hearing. The subject listened to tape recorded connected discourse consisting of a factual story read by a male talker. To reduce ambient noise in the test

environment both ears of the subject were covered by TDH 39 earphones housed in Maico Audiocup enclosures; however, the auditory stimulus was presented only to one ear at 75 dB sound pressure level (re 20 μ N/m²). Attentiveness to the story was assessed by testing the subject's recall at the end of the story. The subjects were blindfolded to avoid contamination of the findings by visual stimuli.

The auditory stimulus was initiated approximately two minutes prior to the administration of 5-10mCi (18F)-2-fluoro-deoxyglucose as an intravenous bolus injection. The stimulus was continued for 60 minutes following the injection. Arterial plasma samples were drawn from a radial arterial catheter inserted prior to the study period and analyzed for (18 F)-FDG activity as well as glucose concentration as required by the model for quantification of metabolic rates. Section scans were started 30 minutes after the FDG injection. Each scan took 10-14 minutes depending on the count rate, and 6-8 section scans were obtained at 1cm levels through the region of interest of the brain. The subject's head was positioned such that the scan plane was parallel to the orbital-meatal (OM) line. Cerebral metabolic rate is correlated with density such that light areas in the tomograph correspond to areas of high glucose utilization resulting from neuronal activity in the brain.

In this investigation connected discourse was presented to six experimental subjects: three via the right ear and three via the left. Two control subjects wore the headset but did not receive the auditory signal. The results for all six experimental subjects demonstrated greater tomograph density in the right hemisphere temporal cortex compared to the left hemisphere at OM + 4cm. Also, measurements of metabolic rate for glucose ranged from 15 to 32% greater for the right temporal cortex compared to the homologous region of the left hemisphere. The most striking hemisphere differences, however, were seen in the tomograph scans whereby the entire right temporal cortex displayed greater metabolic activity in contrast to the left. The tomographic scans for the control subjects displayed essentially symmetrical temporal cortex activity in contrast to the experimental group.

The findings of this investigation are discussed as they relate to other recent evidence concerning the receptive linguistic capability of the right cerebral hemisphere.

"PERCENT HEARING LOSS: WHAT YOU SEE AIN'T WHAT YOU GET" By Neil Ver Hoef

Allan Heffler authored an article called "Workmen's Compensation for Hearing Loss//Pandora's Box?" in the July/August issue of Occupational Health and Safety. He presented an excellent review of the legal aspects of compensable hearing loss. I'm going to refer you to that article and concentrate this presentation on various methods used in calculating percent hearing loss, impairment, disability or handicap. For a comprehensive definition of those terms, see the May 11, 1979 issue of the Journal of the American Medical Association.

Since the invention of the so-called "electric audiometer", and the first published audiogram in 1922, percent hearing loss has been studied and reported; in fact, the first audiograms were rated as percent of dynamic range by frequency. With the adoption of the decibel notation, Fletcher proposed a "point eight" rule for conversion to percentage in 1929. By 1942 and 1947 the studies by Sabine and Fowler were adopted as guidelines for estimating hearing loss in percent by the A.M.A. Suggestions for change to a simplified formula were made as early as 1951, and by 1959, the so-called AAOO formula was adopted and has remained as the most popular scheme until last May.

1) For those who have forgotten, those who weren't around, a quick look at the 1947 Fowler-Sabine scale as published in the JAMA. For each of the test frequencies of 512, 1024, 2048, and 4096 Hertz, or cycles-per-second, a percent value was placed on hearing levels at five decibel increments. After finding the thresholds for each ear, the scaled percent values were extrapolated to a table on the side of the graph for cumulation of the total percent hearing loss for each ear. Youngsters will note that the left ear threshold was marked with a circle and the right ear with a cross in those days.

2) The scheme encompassed two important concepts: (1) test frequencies were of different relative importance to the hearing and understanding of speech, and (2) the total percent loss of hearing is the sum of each of the values.

3) The sampling strategy, simply stated, was to measure hearing thresholds in the middle of each of four octaves bounded by 362 Hertz at the low frequency end and by 5792 Hertz at the high frequency end. The center frequencies corresponded to the audiometric test frequencies available on standard audiometers of the time.

4) The boundaries are shown on this log-scale audiogram which has been converted to ANSI values.

5) The AAOO formula, published in 1959,

6) Includes the frequencies 500, 1000, and 2000 Hertz; thresholds are averaged, a "low fence", or level of beginning of impairment of 25 decibels is subtracted, and the excess is multiplied times a 1.5% factor.

7) The band-width, if the test frequencies are considered as the center frequencies of each octave, extends from 353 to 2828Hz,

8) Shown here in comparison with the 1947 scale.

9) Here is an audiogram which would be commonly associated with a noise-induced hearing loss; the steeply sloping high frequency loss averages 25 decibels for 500, 1000, and 2000 Hz - right on the "low fence" -- thus, no excess or percent hearing loss. It is difficult to tell the patient in one breath to try hearing aids and in the next, tell him he has no compensable hearing loss.

10) The fallacy, of course, is the absurd notion that the good hearing above the low fence at 500 Hz somehow compensates for the poor hearing below the low fence at 2000 Hz.

11) Retrospective eyeglasses which I wear, results in 20/20 hindsight and reveals the problem as inappropriate averaging of decibel hearing levels.

12) While over simplified, we see the importance of different ranges for different speech-hearing functions.

13) Schemes for modification of the basic formula add to the distortion of the illegitimate average.

14) A proposal in 1971, a modification by subtracting the low fence from each test frequency then averaging the excess was adopted by the Office of Worker Compensation Federal Dept. of Labor.

15) Using the same numbers from the sample audiogram, there is somewhat of a percent hearing loss using this modification.

16) An even greater percent loss is obtained if one uses the legitimate averaging process of converting the decibels to ratios, averaging the ratios, then converting back to decibels.

17) The National Institute of Occupational Safety and Health, in 1972, proposed that the average hearing

18) Levels for 1000, 2000, and 3000 Hz is a better criterion for hearing impairment caused by noise, and suggested those frequencies be used in the basic AAOO formula.

19) The test frequencies are not of equal band-width; 3000 Hz samples a 42% band, 2000 Hz samples 51%, and 1000 Hz samples 70%, or an octave. The AAO 1979 formula adds another octave on the low end.

20) Schemes for evaluating efficiency of test booths demand equal weight to each test frequency,

21) As do formulas for calculating attenuation of hearing protection devices.

22) Applying the same reasoning to hearing loss, here is what we have come to call the Iowa Method for determining percent hearing loss for worker compensation purposes.

23) The important portion of the speech range is divided into three equal octaves. Each contributes one-third to the total percent loss. The low frequency octave covers 400 to 800 Hz, the mid-frequency octave from 800 to 1600 Hz, and the high frequency octave from 1600 to 3200 Hz. The corresponding center frequencies are 565, 1130, and 2260 respectively.

24) Next, you can see that each octave can be sampled by two standard audiometric test frequencies, each 32% or one-half octave wide. Average hearing level of the band is the average of the two test frequencies.

25) For the low frequency band, 500 and 750 Hz are used, and a low fence of 25 decibels is subtracted from the average to find any excess; a percent factor of .5% is multiplied times the excess to determine the percent loss for the band.

26) For the mid frequency band, tests at 1000 and 1500 are used to find the average, and the same procedure is followed to determine the percent for the band;

27) And for the high frequency band, 2000 and 3000 Hz test frequencies are used in the same manner.

28) Again, referring to the sample audiogram, for the right ear

29) The low frequency band nets zero percent,
30) The mid-frequency band shows a 5% loss, and
31) The high-frequency band shows a 15% loss

32) Which, when added together,
33) As in this worksheet, totals 20% loss for the right ear.

34) Here is our patients audiogram again...what you see.

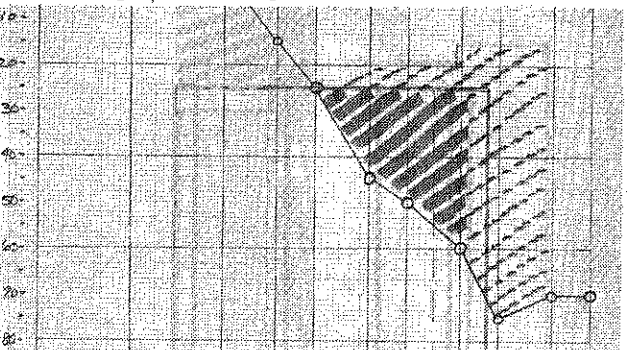
35) Here is how it looks on the log-scale audiogram as the sloping loss cuts through the various frequency ranges.

36) The range above the low fence is really no bonus, and is probably a liability; the hash marks show the area lost in the Iowa Method, and the broken lines indicate the area of loss for the Sabine-Fowler, AMA 1947 scale.

37) Here's what you get: AAOO, 0%

AAO 13.125%
Iowa 20%
NIOSH 30%
AMA-1947 37.3%

For what it is worth, I think we may be on the right track to consider ranges by band-width of equal value, sampled by more than one test frequency, and a sum of the bands rather than an illegitimate average.



A Eulogy to Philip E. Rosenberg

May 22, 1979

SOME OF OUR RICHEST DAYS ARE THOSE IN WHICH NO SUN SHINES OUTWARDLY, BUT SO MUCH MORE SHINES INWARDLY. THIS IS ONE OF THOSE DAYS, FOR OUR MUCH LOVED FRIEND AND RESPECTED COLLEAGUE IS GONE. MY FRIEND OF THIRTY YEARS HAS PASSED THROUGH THE DOOR SERENELY AND WITH DIGNITY ON STILL ANOTHER NEW EXPERIENCE WHICH SOMEDAY HE WILL SHARE IN HIS SPECIAL WAY WITH ALL OF US. HE HAS LEFT US ALL WITH MEMORIES --THOSE WONDERFUL THINGS THAT BRIGHTEN OUR LIVES.

I REMEMBER HOW HE NESTLED LOVINGLY IN THIS WORLD; HOW HE CLIMBED ITS MOUNTAINS, ROAMED ITS FORESTS, SAILED ITS WATERS, CROSSED ITS DESERTS; HOW HE FELT THE STING OF ITS FROSTS, THE OPPRESSION OF ITS HEATS, THE DRENCH OF ITS RAINS, THE FURY OF ITS WINDS; HOW HE TASTED ITS PLEASURES AND ITS SORROWS, AND I REMEMBER HOW HE SAW HUMOR IN EVERYTHING.

PHIL FIRST TOUCHED MY LIFE IN 1949 GENTLY AND INDELIBLY AS WAS HIS MANNER EVEN THEN. ONE OF MY EARLY MEMORIES OF HIM WAS AS A BLACK-FACED GANGSTER IN THE UNIVERSITY OF MARYLAND THEATER PRODUCTION OF "PETRIFIED FOREST". THERE ARE OTHERS OF YOU HERE WHO WILL REMEMBER THOSE LONG AGO THEATER DAYS, AND PERHAPS YOU CAN RECALL AS I CAN THAT EVEN FIERCE THEATER MAKE-UP COULD NOT DULL THE GENTLENESS IN HIS EYES. HE LOVED THE THEATER WITH ITS MAKE-BELIEVE, BUT HE LOVED REALITY MORE, AND HE LIVED HIS LIFE REAL AND TO THE FULLEST.

HE BECAME MY CAMPUS FRIEND, MY SAGE, MY CONFIDANTE -- AS HE DID TO SO MANY IN THE YEARS THAT FOLLOWED. I REMEMBER WE LAUGHED A LOT EVEN IN THOSE EARLY YEARS AND LAUGHTER BECAME THE HALLMARK OF OUR RELATIONSHIP.

WE SPENT TIME TOGETHER AT THE ARMY AUDIOLOGY AND SPEECH CENTER OF WALTER REED -- PHIL AS A SOLDIER AND A GRADUATE STUDENT, AND I AS A CIVILIAN AND AN AUDIOLOGY TRAINEE. I REMEMBER THE SIGHT OF HIM AT EARLY MORNING ROLL CALL, A MIXTURE OF OBEDIENCE AND MISCHIEF WITH HIS GREAT ARMY OVERCOAT PULLED TIGHTLY ABOUT HIS CHIN TO HIDE THE COLLAR OF HIS PAJAMAS STILL WORN UNDERNEATH, -- STILL WARM FROM SLEEP. A CIVILIAN SOLDIER WE CALLED HIM, OUR SECRET WEAPON IN COMEDY DISGUISE. WE LAUGHED ABOUT IT THEN -- I SMILE AT THE MEMORY EVEN NOW.

WE COLLECTED AUDIOMETRIC DATA ON HUNDREDS OF TUBERCULAR PATIENTS AT THE OLD GALLINGER MUNICIPAL HOSPITAL IN WASHINGTON, D.C., AND BEHIND THE PROTECTIVE MASKS WE WORE IN THAT CONTAGIOUS WARD WE LAUGHED AT THE SIGHT OF US IN ILL-FITTING HOSPITAL GOWNS. WE DRANK TOGETHER IN THOSE DAYS, WE DOUBLE-DATED IN A 1947 PLYMOUTH. WE FREQUENTED PLACES IN THE NATION'S CAPITOL LONG SINCE REPLACED BY THE METAPHORS OF PROGRESS, AND FROM IT ALL I HAVE THE MEMORY OF A TIME MADE BETTER BY THE FRIENDSHIP OF A GENTLE MAN.

WE LEARNED MUCH TOGETHER IN THOSE EARLY YEARS ABOUT THE DISCIPLINES OF A PROFESSION, THE ORDERLY PROCESSES OF SCIENCE, AND ABOUT OUR GOALS. AND AS SO OFTEN HAPPENS GOALS DRAW CLOSE FRIENDS TO DIFFERENT GEOGRAPHIES, TO NEW EXPERIENCES. AND SO IT WAS WITH US. BUT HIS LETTERS WERE BRIGHT SPOTS. SERIOUS, YET COMICAL WHEN THE OCCASION WARRANTED. HE USED THE VOCABULARY OF OUR FIELD PRECISELY AND THE LANGUAGE OF OUR LAND EXQUISITELY.

WHEN INNER TURMOIL TORMENTED HIM HIS OUTWARD COUNTENANCE WAS ONE OF PEACE, HIS VOICE FIRM AND CONFIDENT. THOSE OF YOU WHO VISITED OR SPOKE WITH PHIL DURING THESE PAST 2½ MONTHS CAN SHARE THE WONDER OF THAT RECENT MEMORY WITH ME.

A FEW SHORT WEEKS AGO, I SAT WITH PHIL IN HIS LIVING-ROOM SOON AFTER HE HAD BEEN TOLD THE SERIOUSNESS OF HIS ILLNESS. THE VISIT SEEMED SOMEHOW EASIER FOR HIM THAN ME AMONG THE TALK OF MIRACLES AND REALISMS WE HIT UPON AN INCIDENT INVOLVING THE GENTLEMAN WHO IS PHIL'S FATHER-IN-LAW. AS THE DETAILS OF THE DETECTIVE AND THE TEENAGED OFFENDER UNFOLDED WITH SURPRISE AND LAUGHTER IN THAT LIVING-ROOM, THE BRIGHTNESS OF ENJOYMENT SPARKLED IN PHIL'S EYES. IN THE MIDST OF HIS OWN LIFE-TAKING NEWS HE SAID, "THAT'S THE MOST INCREDIBLE THING I'VE EVER HEARD," AND HE GAVE THAT FUNNY LAUGH OF THIRTY YEARS AGO.

A CLOSE AND DEAR FRIEND WHO VISITED WITH HIM A FEW WEEKS AGO SHARED WITH ME SOME OF HIS CONVERSATION. HE SPOKE OF HOW MUCH HE HAD LEARNED ABOUT HIMSELF AND ABOUT OTHER PEOPLE DURING HIS ILLNESS -- ABOUT ACTIONS AND REACTIONS TO KNOWING DEATH IS NEAR. HIS DIGNITY AND CLASS CAME THROUGH. HE SAID, "I WOULDN'T HAVE MISSED IT FOR THE WORLD."

HE TOUCHED THE LIVES OF US ALL, GENTLY AND INDELIBLY, AND SOME OF OUR RICHEST DAYS ARE THOSE IN WHICH NO SUN SHINES OUTWARDLY, BUT BECAUSE OF HIM SO MUCH MORE SHINES INWARDLY. I SENSE HIS PRESENCE -- HE WOULDN'T HAVE MISSED THIS FOR THE WORLD. AND I SENSE, TOO, THAT ONE DAY I SHALL LAUGH ONCE MORE WITH MY FRIEND.

David Resnick

BOOK REVIEW

Continued report on Acoustic Tumors by William F. House and Charles M. Luetje

by Robert Mischke
Denver, Colorado

Volume II: Management

This volume begins with anesthetic considerations, discussing preoperative, intraoperative and postoperative management. Out of 251 patients, 5.6% suffered some postoperative pulmonary difficulty. Controlled ventilation is preferred. Large doses of narcotics should be avoided. Closed observations continues for 6 to 8 hours postoperatively.

The middle cranial fossa approach to tumors is used for removal of small acoustic tumors in an attempt to preserve hearing. In an only-hearing ear, tumors large enough to extend outside of the internal auditory canal may also be approached through the middle fossa. The technique is beautifully illustrated and discussed.

The translabyrinthine approach is preferred for tumors outside the internal auditory canal, including larger tumors, reasoning that a higher percentage of facial function is preserved with this approach. The supine position is preferred for surgical access as well as reducing hazard of air embolism. Two-staged removal is used primarily just when necessary due to vital signs changes. The surgical technique of tumor removal using the translabyrinthine approach is discussed and illustrated in great detail.

Presentation of facial functions was studied through patient questionnaires, allowing the patient to be critical of any weakness. 229 of 444 (51.6%) responding indicated some weakness for one year or more postoperatively. This represented 20.8% of small tumors, 44.5% of medium tumors, and 69.6% of large tumors.

Complete facial paralysis was present in 13.5% with 0% of small tumors, 10.4% of medium tumors, and 21.4% of large tumors.

Hypoglossal facial anastomosis was required in 22 of 500 cases. If the facial nerve has been interrupted surgically, the anastomosis should not be done for at least one year. The technique is described.

Eye problems associated with facial paralysis are discussed for both temporary prolonged situations. Medical and surgical management is recommended.

Preoperative and postoperative medical evaluation is outlined as well as nursing instructions and nursing care.

The psychology of surgery is reviewed and the point is made that the patients do better if they are given realistic information prior to surgery.

Long term effects of hearing loss is discussed including the use of a CROS hearing aid when appropriate. The long term follow-up of vestibular effects revealed that compensation for the deficit is never complete, although the subjects consider themselves normal.

The operative mortality was 2.6% for the 500 cases. The cases are reviewed. All but one of these cases were large tumors.

Partial removal is considered in some patients, such as with severe cardiorespiratory disease, change in vital signs, or advanced age. However total removal should be strived for because residual tumor and repeat operation is hazardous if the patient lives more than 6 years.

In summary, both volume I and volume II of Acoustic Tumors represent the most comprehensive discourse on diagnosis and management of this malady. Dr's. House and Luetje are congratulated.

The New ACO Criteria for Industrial Audiometry

The American Council of Otolaryngology (ACO) have developed new criteria and procedures for audiometry and occupational hearing conservation programs to clarify the kinds of problems that should be referred to otolaryngologists.

According to the new regulations, workers whose audiograms show a change of more than 15 dB at 500, 1000 or 2000 Hz more than 20 dB at 3000 Hz and more 30 dB for 6000 Hz should be referred to a specialist for examination. When comparing previous or baseline audiogram with a monitoring audiogram the elapsed time between testing should be no more than two years.

Referral should also be made to a specialist when the average hearing level is greater than 30 dB at 500, 1000, 2000, 3000 Hz, when there is a single frequency loss greater than 5 dB at 3000 Hz or greater than 30 dB at 500, 1000 or 2000 Hz; when there is a difference in average hearing level between the better and poorer of more than 15 dB at 500, 1000, and 2000 Hz or more than 30 dB at 3000, 4000 and 6000 Hz, and unusual hearing loss curves or inconsistent responses. The Council recommends that testing should be performed by a certified audiologist using equipment that meets ANSI standards and fills ANSI requirements for the proper environment.

Direct referrals should be made to an otolaryngologist in the presence of persistent ear pain, drainage, dizziness, severe persistent tinnitus, fullness or discomfort in either or both ears, or a history of any of these problems in the past year.

Also, visible evidence of cerumen accumulation or a foreign body in the ear canal requires direct referral. Whenever a worker develops ear pain, drainage, dizziness, or severe persistent tinnitus, or shows a significant change in the hearing levels he should be reexamined. Complete copies of these new ACO rulings may be obtained from: American Council of Otolaryngology, Suite 602, 1100 17th Street, N.W. Washington, D.C. 20036.

(Cont. from pg 11)

RECOVERY OF SUPRATHRESHOLD AUDITORY TEST
FUNCTION AFTER REMOVAL OF C.P.A. TUMOR

Thomas M. Watkins
Fort Gordon, Georgia
G. Richard Holt
Milton G. Yoder
John McCloskey

Recovery of eighth nerve function after C.P.A. tumor removal has been reported by other authors, but none have utilized the pre-and post-therapy diagnostic battery of suprathreshold auditory testing. Two cases are presented, one a medulloblastoma, and the other an acoustic schwannoma in which there was recovery of function in a variety of threshold and suprathreshold tests.

Case #1: A twenty-six-year-old male presented with a right sided hearing loss and signs and symptoms of a right C.P.A. tumor. CAT scan revealed a 5 cm mass in the right C.P.A. At craniotomy, a malignant medulloblastoma was found and subtotally resected. Suprathreshold audiometric special test procedures were monitored sequentially before surgery, after surgery, during radiotherapy, and following radiotherapy. The auditory procedures of choice include a Suprathreshold Adaptability Test (STAT), Performance Intensity of Phonetically Balanced Words (PIPB), Crossed Acoustic Reflexes (CAR), Bekesy Comfortable Loudness Tracings (BCL), and Synthetic Sentence Identification (SMI-CCM-ICM). Auditory Brain Stem Evoked Response Measures (ABSER) were auditory parameters demonstrating retrocochlear indications preoperatively and postoperatively during radiotherapy to the whole head, spine and posterior fossa. However, these results reversed to cochlear indications two months following the initiation of radiotherapy. The treatments consisted of 4,000 rads to the whole head, 1,000 rads to the posterior fossa, and 3,200 rads to the spine. Pure tone thresholds remained relatively unchanged regardless of conditions. The patient continued to manifest a mild sensorineural hearing loss bilaterally, the involved ear being slightly worse than the noninvolved ear. Those special tests which demonstrated recovery include STAT, CAR, PIPB and BCL. ABSER measures obtained three months and ten months post-treatment revealed clearly defined wave I-V with normal latencies from monaural stimulation of the non-involved ear. Monaural stimulation from broad band click stimuli presented to the involved ear resulted in the appearance of waves I and II at normal latencies. No measurable activity following wave II was present, either three months or ten months post-treatment. In adult medulloblastoma, the prognosis is poor, with a 30% chance of five-year survival. The biochemical or mechanical mechanisms underlying the recovery of auditory parameters are speculative. The tumor mass may have created pressure on the eighth nerve trunk causing nerve edema interfering with the first order neuron transmission and producing retrocochlear manifestations. Surgical decompression of the nerve combined with irradiation of the tumor-surrounded (or invaded) nerve probably served as the mechanism to restore partial acoustic function.

Case #2: A twenty-one-year-old male was referred for dizziness, ataxia, and hearing loss. He had no demonstrable hearing in the right ear and decreased hearing in the left ear. CAT scan revealed an 8 cm tumor on the right side. A craniotomy was performed and a large, right acoustic schwannoma to the pathology. Special audiometric suprathreshold test procedures were monitored on the contralateral to the pathology. Special audiometric suprathreshold test procedures were monitored on the ear contralateral to the alateral to the pathology. Special audiometric suprathreshold test procedures were monitored on the ear contralateral to the pathology. Special audiometric suprathreshold test procedures were monitored on the ear contralateral to the pathology. Test procedures included STAT, PIPB, CAR, and ABSER. All test procedures were obtained before surgery and two months following surgery. ABSER was available after surgery only. Two procedures indicating possible retrocochlear pathology demonstrated some degree of recovery postoperatively. Low frequency pure tone thresholds improved postoperatively. Performance Intensity of Phonetically Balanced Words also improved postoperatively although PIPB rollover index remained abnormal. ABSER obtained four and six months postoperatively revealed no measurable response on the ipsilateral ear and the appearance of wave I only from monaural stimulation of the contralateral ear. The mechanism underlying the recovery of pure thresholds and PIPB on the contralateral ear are speculative in this case. There was no evidence of other pathology in the contralateral ear other than displacement of the brain stem from the relatively large tumor mass. This displacement could have affected the contralateral cochlear nuclei and eighth nerve, producing an abnormal rollover index and low frequency sensorineural hearing loss. The release of pressure from the brain stem and contralateral eighth nerve may be the mechanism underlying the recovery of certain auditory parameters.

(Cont. on pg 15)

All You Wanted To Know About Hearing Dogs

Hearing Dog, Inc., whose staff was formerly with American Humane Association's Hearing Dog Program, is a non-profit organization solely devoted to training dogs for the deaf. Although it costs Hearing Dog, Inc. \$2500 to train and place a dog, the dogs are free of charge to the deaf.

Agnes McGrath, master trainer, is the originator of training methods used today. She did a feasibility study in 1975 through the Minnesota Society for the Prevention of Cruelty and has been involved with the training of hearing dogs since that time. Martha Foss, master trainer, has been involved with all methods of dog training including search and rescue, and has added her expertise in training of hearing dogs for the last three years. Sandi Kilstrup, who was taught training methods by Agnes and Martha, is an audiologist who has worked in clinical rehabilitation and research with the hearing-impaired. She has trained hearing dogs for the past two years.

The staff also includes an R.N. who is the kennel manager, and a secretary whose background is in deaf education. All members of the staff manually communicate.

The training begins with the selection of dogs from animal shelters. The dogs must be healthy, happy, and intelligent...with a special ability to please and work for people. Over a period of three months, they are trained in auditory awareness and obedience. The sounds they are trained for include doorknock/doorbell, security buzzer, smoke alarm, alarm clock, telephone, baby cry, and unfamiliar sounds which may indicate danger or some other emergency to the deaf owner. Basic obedience is necessary as there are currently twenty-five states which allow the hearing dogs the same rights as dog guides for the blind.

Hearing dogs have been placed with deaf people from the ages of 17 to 84. Those who are not living with hearing people and who have no other dog, are of priority, as they have the greatest need.

Hearing Dog, Inc. relies solely on donations from the public to have the program continue. Agnes, Martha, and Sandi all have their own trained hearing dogs and will be glad to demonstrate how a hearing dog works. Also available is a slide presentation which shows the facilities of Hearing Dog, Inc., and the dogs in action. Those interested in donating, applying for a hearing dog, or wishing a demonstration, please write to Hearing Dog Inc. 5901 E. 89th Ave.

Henderson, Colorado 80640 or call (303) 287-EARS (voice or TTY)



One of the Hearing Dogs alerting his owner to a telephone ring.



Movie star June Lockhart with her Hearing Dog.

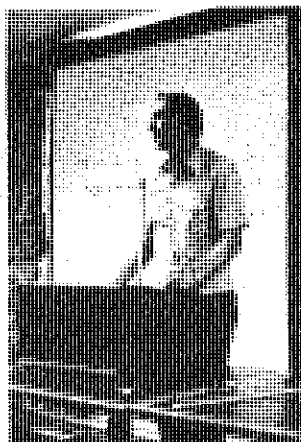


The trainers for Hearing Dog, Inc. On the right is Sandi Kilstrup, an audiologist who went into the Hearing Dog program.

Aspen-Snowmass Conference a Grand Success



Charles P. Lebo, M.D.



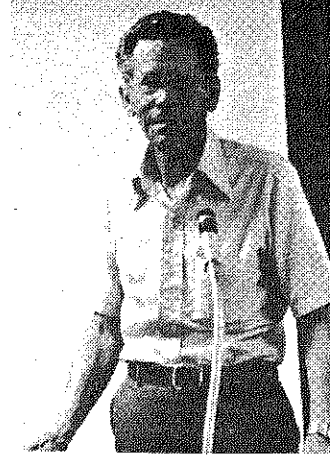
Darrel L. Teter, Ph.D.



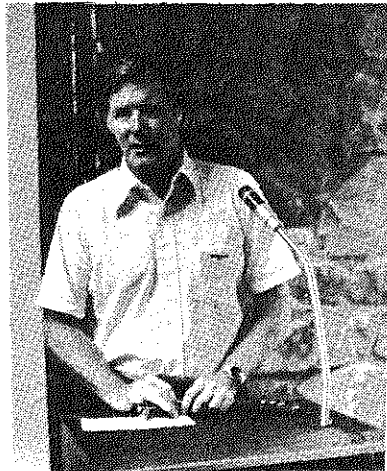
Guest of Honor Prof. L.B.W. Jongkees of Amsterdam, Netherlands visits with James W. (Wally) Wolfe, Ph.D.



F. Owen Black, M.D.



Frederick H. Linthicum, Jr. M.D.



Donald B. Kamerer, M.D.



David N. Resnick, Ph.D.



Dennis G. Pappas, M.D.

An enthusiastic group of over 100 otolaryngologists and audiologists took part in the Aspen-Snowmass Conference on Vestibular Disorders the week of August 20th in Snowmass, Colorado.

The conference, organized by Darrel L. Teter, Ph.D., of Denver, Colorado, in conjunction with Tracoustics, Inc. in Austin, Texas, featured Professor L.B.W. Jongkees, M.D., and a distinguished faculty.

Professor Dr. L.B.W. Jongkees, whose wife accompanied him on the trip, from Amsterdam, Netherlands, was joined on

the faculty by Dennis G. Pappas, M.D., F. Owen Black, M.D., Jack D. Clemis, M.D., Charles W. Stockwell, Ph.D., Frederick H. Linthicum, Jr., M.D., James W. Wolfe, Ph.D., Buck C. Brown and David M. Resnick, Ph.D. Each member of the faculty made presentations on two topics and all joined in lively round table discussions of current techniques, application and research in treatment of disorders of the vestibular system.

Meetings were interspersed with activities such as a mountain hayride and cookout, trout fishing, hiking and

swimming, enhanced by beautiful summer weather in the Colorado Rockies.

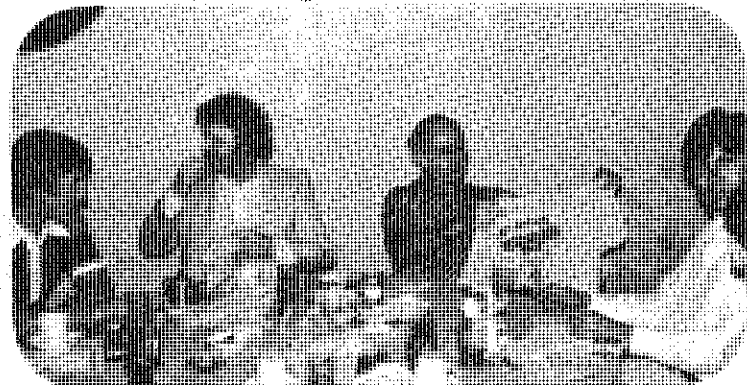
In response to inquiries following the Conference, the Coordinating Committee of Darrel L. Teter, Ph.D., Jerry Northern, Ph.D., and Charlie D. Anderson, President of Tracoustics, Inc., will announce dates for the 1980 Aspen-Snowmass Conference within the next few weeks.

The Conference will again be administered by Tracoustics, Inc., of Austin, Texas, and inquiries should be directed to the toll free number 1-800-531-5412.

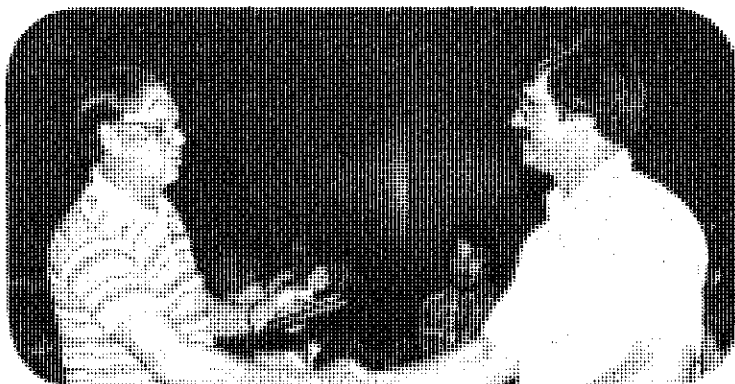
Tracoustics Holds Sales Meeting



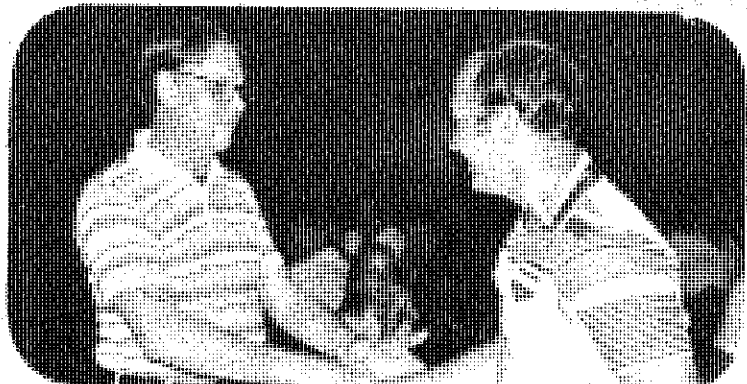
Tracoustics Second Annual Super Summer Sales Seminar...fun time.



Tracoustics Representative (left) and Karl Brandmaier of AudioMed, Inc. (right) admire the Summer Sales Meeting T-Shirt held by Charles Enz of Medacoustics. Kurt Trede of Tracoustics/Denver is otherwise engaged.



Tracoustics' Anderson (l) gives award for Highest Sales to Karl Brandmaier of AudioMed, Inc., Santa Fe Springs, CA.



Charlie D. Anderson, President of Tracoustics, congratulates award winner R. J. Baird of Raytown, MO.

TRACOUSTICS representatives from across the United States and Canada gathered in Austin, Texas October 5th through 6th for the Second Annual TRACOUSTICS Summer Sales Seminar. The seminars provide a continuing education program on new clinical developments and on Tracoustics new products for the hearing health care professions. They also serve as a forum for ideas and suggestions which continue to improve the company's products and service.

A group of 48 TRACOUSTICS representatives and staff

members gathered at the company's Austin office and manufacturing facility for a plant tour on Friday morning, and then adjourned to the Travelodge for day-long sessions which included a workshop on ENG techniques, discussions of current audiological assessment, and new developments in the audiometric room design.

The two days of extensive presentations ended with an informal Awards Banquet where Tracoustics President, Charlie D. Anderson, recognized Russ Baird of R.J. Baird and

Associates, Raytown, Missouri, as representative with sales most exceeding quota, based on population, and gave an award to AudioMed, Inc., of Santa Fe Springs for largest total sales volume. For the second consecutive year Karl Brandmaier of AudioMed accepted a plaque for this award.

Everyone was given a Tracoustics Sales Seminar T-shirt complete with armadillo design, which most wore on the chartered bus which took the group to Dallas for the American Academy of Otolaryngology Annual Meeting.

Cont. from pg. 13

EFFECTIVENESS OF RESCREENING IN A SCHOOL HEARING CONSERVATION PROGRAM FOR CONDUCTIVE HEARING LOSS

R.J. Pellerin
and

J.C. Cooper, Jr.
Division of Otorhinolaryngology
University of Texas Health Science Center
San Antonio, Texas

Impedance measures have demonstrated their value in detecting middle ear pathology. Because conductive hearing loss is a major threat to young children, a variety of reports have advocated the use of impedance screening in hearing conservation programs. However, such use has not been without criticism. A major problem has been over-referral and at least one report has proposed rescreening to reduce its magnitude. A second issue has emerged as a byproduct of the availability of a rapid, easily applied screening technique. That is the assertion that different racial groups have different rates of middle ear disorders. The following investigation had two purposes: 1. to shed light on screening criteria by examining the pattern of results on re-screening. 2. to compare black children to hispanic children in order to determine if there are any differences in the indicators of middle ear pathology between the two groups.

Information in this report was taken from ongoing screening program within the San Antonio Independent School District in which over 17,000 children were screened with impedance audiometry and a 4 k Hz pure tone at 25 dB HL during the 1978-79 school year.

Our findings reinforce, on a larger scale, the demonstration by Lewis, Dugdale, Canty and Jerger (1975) that single impedance measures are unlikely to give an efficient index of the probability of chronic, medically attendable middle ear dysfunction. At approximately the same time, we (Cooper, Gates, Owen and Dickson, 1975), cautioned those using impedance technique for screening that it was likely to result in a significant over referral rate. In both reports, premature referral would occur when initial screening produced a "C" tympanogram.

In conclusion, we feel that the present data permit the following two admonitions to be made to those employing impedance technique.

First, an accurate picture of middle ear condition is unlikely if based on a single measure when that measure suggests negative middle ear pressure. This is true in either an ongoing hearing conservation program or when purporting to describe the incidence of middle ear pathology.

Second, careful analysis of the relationship between degree of negative middle ear pressure and likelihood of spontaneous recovery is still needed before firm referral criteria can be developed for hearing conservation programs.

REFERENCES

- Cooper JC, Jr, Gates GA, Owen JH and Dickson HD: An abbreviated impedance screening technique for school screening. *J. Speech Hear. Disord.*, 40:260-269, 1975.
Lewis N, Dugdale A, Canty A and Jerger J: Open-ended tympanometric screening: a new concept. *Arch. Otolaryngol.*, 101:722-725, 1975.

Central Auditory Dysfunction conference announced

The University of Cincinnati Medical Center will sponsor a 3-day symposium on Diagnosis and Remediation of Central Auditory Dysfunction in Children. The course will be held at Stouffer's Inn in Cincinnati on May 28, 29, and 30, 1980. The purpose of the symposium is to provide a forum for the meaningful exchange of current information and ideas on the diagnosis of and therapy techniques for central auditory disorders in children. To accomplish this end, the conference will comprise formal presentations by invited faculty, including Norma Rees, Katharine Butler, Sylvia Richardson, and Robert W. Keith. Shorter papers submitted by participants, panel discussions, and workshops intended to promote audience participation, and exhibits by publishers and equipment manufacturers will also be incorporated. Persons wishing to present a paper should submit a 400-600 word summary. Application has been made for 16 credit hours in Category I of the Physicians Recognition Award of the American Medical Association. For further information about the symposium or details on submitting papers for presentation, contact:

Dorothy H. Air, Ph.D.
Division of Audiology and Speech Pathology
University of Cincinnati Medical Center
Mail Location #528
Cincinnati, Ohio 45267
Telephone: (513) 872-4241



FIGURE LEGEND

Standing Left to Right: Allen Harrell, Sales Mgr./TRACOUSTICS Medical Division, Jan Zarnoch, M.S., Jerry Northern, Ph.D., both of University of Colorado Medical Center. Seated Marion Downs, M.S., University of Colorado Medical Center.

Tracoustics delivers first Program III audiometer

The first production model PROGRAM III Clinical Audiometer, manufactured by TRACOUSTICS, Inc., was recently delivered to the University of Colorado Medical Center in Denver, Colorado. Marion Downs, M.A. and Jerry Northern, Ph.D., whose suggestions helped to shape the design and programming of the audiometer, accepted delivery of the instrument at the Department of Audiology.

TRACOUSTICS elicited suggestions from leaders in the field of clinical audiology as to what characteristics are most important for current clinical procedures. Frederick N. Martin, Ph.D., and Darrel L. Teter, Ph.D. were also among

those whose comments influenced the instrument design. Buck C. Brown, head of TRACOUSTICS Instrument Division, was responsible for incorporating these clinical criteria into electronic design and computer programming of the microprocessor-based audiometer.

Among the facilities which will receive early production-model PROGRAM III audiometers are Topeka Public Schools - Department of Public Services, Louisiana State University, Gunderson Clinic, VA Medical Center - Jackson, Mississippi, and Brigham Young University, along with a number of private Otolaryngology practices.



"I really shouldn't be here. I should be out trying to get funded."

PROGRAM SET FOR ANNUAL AAS MEETING

A. Bruce Graham, program chairman, announced the appointment of Michael Papparella and Bill Ely as co-chairmen of the 1980 annual meeting of AAS to be held on November 20th at the Henry Ford Hospital in Detroit, Mich. The theme of this year's meeting is "The Hearing Impaired: Rehabilitation Roots", and a full day of invited and solicited papers is being planned. Further details of the meeting will appear in the Spring issue of Corti's Organ.

CALENDAR OF EVENTS

1980
JANUARY 19-20

ADVANCED ELECTRONYSTAGMOGRAPHY, Orlando, FL. 16 hours, Category II AMA Credit. A course designed to sharpen the technical and interpretative skills of the experienced electronystagmographer by reviewing test procedure, nystagmus quantification and tracing interpretation. Contact: Life-Tech Instruments, Inc., P.O. Box 36221, Houston, TX 77036, 713-783-6490.

FEBRUARY 9-16

FOURTH ANNUAL MID-WINTER SYMPOSIUM ON PRACTICAL OTOTOLOGY, Snowmass (Aspen), Colorado. Sponsored by: American Hearing Research Foundation. Contact: Jack D. Clemis, M.D., Program Chairman, American Hearing Research Foundation, 55 East Washington Street, Suite 2105, Chicago, Illinois 60602.

MARCH 1-8

14TH ANNUAL COLORADO OTOTOLOGY-AUDIOLOGY WORKSHOP, Vail, Colorado. Contact: 14th Colorado Otolaryngology-Audiology Workshop, Box B210, 4200 E. 9th Avenue, Denver, CO 80262 or call toll-free 800-323-0639.

JUNE 21-25

REHABILITATION THROUGH AMPLIFICATION WORKSHOP, Chicago, IL. Sponsor: American Hearing Research Foundation, AMA Category I credit. Contact: Jack D. Clemis, M.D., Program Chairman, American Hearing Research Foundation, 55 East Washington Street, Suite 2105, Chicago, Illinois 60602. Phone: (312) 726-9670.

22-27

14TH WORLD CONGRESS OF REHABILITATION INTERNATIONAL, Winnipeg, Canada.

JULY 9-16

TENTH INTERNATIONAL CONGRESS ON ACOUSTICS, Sydney, Australia. The Congress will explore the future of acoustics in its many aspects. Contact: 10 ICA Congress Secretariat, GPO Box 2609, Sydney, NSW, Australia 2001.

AUGUST 4-7

18TH CONGRESS OF THE INTERNATIONAL ASSOCIATION OF LOGOPEDICS AND PHONIATRICS, Washington, D.C. Contact: Frances J. Johnston, Ph.D., IALP Congress, 10 Rockville Pike, Rockville, MD 20852, 301-897-5700.

4-8

INTERNATIONAL CONGRESS ON EDUCATION OF THE DEAF, Hamburg, West Germany. Contact: S. Richard Silverman, Ph.D., Central Institute for the Deaf, 818 S. Euclid, St. Louis, MO 63110.

SEPTEMBER 2-6

XV INTERNATIONAL CONGRESS OF AUDIOLOGY, Krakow, Poland. To submit papers or register, write to: Andrzej R. Halama, Kopernika 23a, 31-501 Krakow, Poland.

NOVEMBER 20

ANNUAL MEETING OF THE AMERICAN AUDITORY SOCIETY, Detroit, Mich. Contact: A. Bruce Graham, Program Chairman, Henry Ford Hospital, Detroit, Mich.

1981
JUNE 21-27

12TH WORLD CONGRESS OF OTOTOLOGY-PHONOLOGY, BUDAPEST, HUNGARY. Write to: Professor Dr. L. Surjan, P.O.B. 112, Budapest, Hungary H-1389.

AMERICAN ACADEMY OF OTOLARYNGOLOGY ELECTS 1980 OFFICERS

DALLAS.—New officers of the American Academy of Otolaryngology were elected at its 1979 Annual Meeting, which was held Oct 7-11 at the Dallas Convention Center. Over 3,000 attended scientific presentations and continuing education courses on the latest research in otolaryngology and head and neck surgery.

Jack R. Anderson, MD, of New Orleans will take office as President of the Academy on Jan. 1, 1980. The other elected officers are Bobby J. Alford, MD, of Houston, President-Elect; Paul H. Ward, MD, of Los Angeles, First Vice-President; Roger Boles, MD, of Stanford, California, Secretary of Program; D. Thane R. Cody, MD, PhD, of Rochester, Minnesota, Secretary of Instruction; George F. Reed, MD, of Syracuse, NY, Secretary of Continuing Education; Ralph J. Caparosa, MD, of Pittsburgh, Pennsylvania, Councillor (3-year term); and Loring W. Pratt, MD, of Waterville, Maine, Councillor (1-year term).

Wesley H. Bradley, MD, of Glenmont, NY, was approved as Executive Vice-President. He will serve as the Academy's primary administrative officer. A member of the Academy since 1953, Dr. Bradley is professor of Surgery (Otolaryngology) at Albany Medical College and chief of Otolaryngology Services at the Veterans Hospital, Albany, NY.

Dr. Anderson is clinical professor in the Department of Otolaryngology and Maxillofacial Surgery, Tulane University School of Medicine. Dr. Alford is chairman of the Department of Otorhinolaryngology and Communicative Sciences, Baylor College of Medicine. Dr. Ward is professor of Surgery and chief of the Division of Head and Neck Surgery (Otolaryngology), University of California at Los Angeles.

The American Academy of Otolaryngology is a postgraduate medical organization dedicated to advancement of the science and art of medicine as practiced by otolaryngologists. Its Headquarters are in Rochester, Minn. An otolaryngologist is a physician who specializes in the treatment and surgery of the ear, nose, and throat and related structures of the head and neck.

For Further Information, Contact:

Janny G. Tripp
Managing editor, PERCEIVER
American Academy of Otolaryngology
15 Second St SW
Rochester, MN 55901
(507) 288-7444

From those friendly Danes with that marvellous sense of quality.

If you are a small country like Denmark you can't afford to ask: "What does our insistence on quality cost us?" On the contrary we have learned to ask: "What would it cost us to send an inferior quality product on the world market?"

Thus we do not consider our rigid quality inspection an expense - but an investment.

Danavox dealers and service centers in 70 countries throughout the world know this perfectly well. It is, therefore, of more formal interest, that Danavox has extended its product warranty from one to two years.

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By Harold N. Williams
NAT Corp.
El Paso, Texas

CORTI'S ORGAN

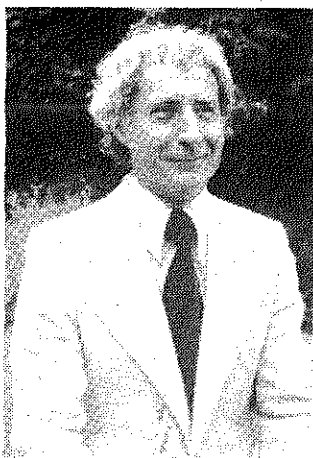
The Official House Organ of the American Auditory Society

Vol. 5, No. 1

Winter/Spring 1981

CHABA Study Director Describes Function

(Editor's Note: For the generation of young professionals who are not acquainted with the work of the Committee on Hearing and BioAcoustics and Biomechanics of the N.A.S., the following article has been prepared. Dr. Milton Whitcomb is National Academy of Sciences' (NAS) Study Director, who has kindly written the following article for Corti's Organ. CHABA's next meeting will feature Tinnitus, Hearing and Aging, and Sports-related Injuries. The meeting date will be announced in the upcoming issue of Corti's Organ.)



COMMITTEE ON HEARING, BIOACOUSTICS, AND BIOMECHANICS (CHABA)

The Committee on Hearing, Bioacoustics, and Biomechanics responds to problems concerning any aspect of hearing. These problems involve engineering and equipment, the physics of sounds, physiology of response, individual perception, and group or social response. While the Committee deals chiefly with problems submitted by their sponsoring agencies, it also works on problems it generates, particularly on those that would be likely to interest the sponsors.

The Committee concerns itself with any field of science or technology that it finds necessary in pursuit of its objectives. These fields may include pertinent aspects of biological science, behavioral science, physics, chemistry, mathematics, engineering and medicine.

Examples of specific areas of interest to the Committee include:

- a. Hearing
 - (1) Measurement and evaluation of hearing.
 - (2) Conservation of hearing.
 - (3) The ear and associated central nervous system, its functions and means of protection against intense sounds.
 - (4) Communications, particularly speech communication in the presence of noise.
- b. Bioacoustics
 - (1) Non-auditory effects of intense sound fields on man and means for protection.
 - (2) Physiological, psychological and social reaction of man exposed to sound, for example, noise produced by jet-planes, rockets, gunfire, weapons, and vehicles.
 - (3) Physical and engineering problems of the generation, measurement and control of acoustical energy.
- c. Biomechanics
 - (1) Specification of the mechanical properties of the human body or its component parts.

(Continued on p.3)

Highlights of the AAS Executive Committee Meeting

The Executive Committee of AAS met in Detroit on November 20, 1980; the complete minutes of the meeting are given on page 5. The significant decisions made at the meeting are as follows:

- No dues increase in 1982
- Associate membership category is approved by the membership
- 1981 meeting to be held in New Orleans
- Awards to be given for outstanding manuscripts published in *Ear and Hearing*

Members are encouraged to read the minutes and contact Executive Committee members with any questions or comments.

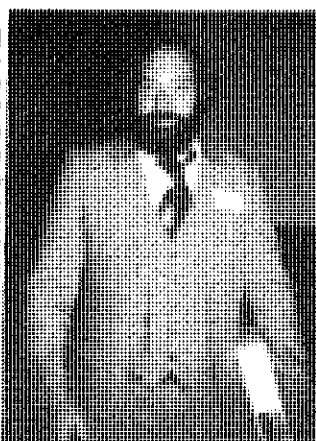
Seidemann Outlines Annual Program

Mike Seidemann, program chairman for the 1981 annual meeting, has selected the Program Committee and is in the initial stages of planning for the presentations and events surrounding the meeting. This year's meeting will be held in New Orleans, La., in conjunction with the annual meeting of the American Academy of Otolaryngology-Head and Neck Surgery. The meeting date has been set for Monday, September 21, and the program theme is "Surgical and Prosthetic Management in Auditory Rehabilitation."

This year's meeting will be scheduled for the entire day (8:30 a.m.-5:00 p.m.). During the morning session invited papers will be presented, followed by the Carhart Memorial Lecture to be given by Dr. Paul Ward. Dr. Ward will present a paper entitled, "Research in Communicative Disorders: A Projection for the Next Decade." The afternoon session will feature submitted papers; a short business session will conclude the meeting.

A highlight of this year's meeting will be a riverboat tour of the New Orleans historic river front, to begin about 6:00 p.m. Complimentary cocktails and hors d'oeuvres will be provided. The traditional dinner for the Carhart Memorial Lecturer will follow the riverboat ride, and also promises to be exceptional. This year the dinner will be held in conjunction with the Society for Ear Nose and Throat Advances in Children (SENTAC) annual dinner. The dinner will be held at the internationally famous Commander's Palace restaurant, and during the festivities a real down-to-earth Cajun comedian will enliven the evening.

A Call for Papers will be sent in the next two to three weeks, and advanced registration will be included in the Spring issue of *Corti's Organ*. Those planning to attend the meeting this year are being encouraged to register as soon as possible, as there is room for only 120 participants. Other members of the program committee are AAS members: Virginia Anderson, George Cire, and Gerald Miltenberger.



Mike Seidemann

The major regulations involving limits to noise exposure for the protection of employees over the past years has been a maximum 90 dBA SPL level for eight hours with a 5 dB tradeoff, this being supplemented with vague references to use of ear protectors and monitoring hearing as "administrative" procedures (3). In January of 1974, a new OSHA draft in regard to noise was published (4). This was supposedly a final draft and included "a maximum exposure of 90 dBA for 8 hours with a 5 dB trade off" and permitted continued use of personal protective devices. It further stipulated that "if a significant shift in hearing develops (10 dB in speech range, 15 dB at 3KHz, and 20 dB at 4 and 6KHz) the employee must be notified and given a copy of his audiogram and referred for appropriate medical evaluation (4)." (Not much new here.) To say the least, these recommendations were not received with wild acclaim; support and damnation came from all quarters. The individual members of the OSHA committee issued statements almost weekly and everyone from industrial barons to neophyte audiometric technicians offered opinions. Research teams from far and wide offered "proof" that noise levels of 85 dB over prolonged periods resulted in damage to hair cells. Others intimated that you could whistle Dixie for twenty years at a 90 dBA level and not sustain a significant loss of hearing. The troops were engaged.

Dr. Meyers, then Deputy Assistant Administrator of noise programs of the Environmental Protection Agency (EPA) sounded the call to arms on March 11, 1975, at Lexington, Kentucky (5). He raised the banner of an 85 dBA eight-hour working day exposure and 3 dB tradeoff, and stated "EPA believes that technology in some form or other is available to control virtually any noise source." Also, that "there is no dispute anywhere that more people will have a permanent hearing impairment if they are exposed to 90 dBA for eight hours over a working lifetime, than if they were protected at the level of 85 dBA."

President Ford then seemed to express the opposition's position when he asked on April 28, 1975, at the 63rd annual meeting of the U.S. Chamber of Commerce, "Is it worth as much as 30 billion a year of consumers' dollars to reduce the level of occupational noise exposure by approximately five decibels? (6)"

The debate continued from that point on from convention meeting floors, called sessions, professional journals and trade organs.

Then came the public hearings — I'll not bore you with all the reports and counter reports, nor the multitude of recommendations. The total circus was well summarized in the August 14, 1975, issue of "Washington Sounds" (20).

After hearing hundreds of witnesses, the Occupational Safety and Health Administration (OSHA) on July 30 concluded its public hearings on occupational noise standards. But don't expect a standard soon. The scenario, which could stretch into next year, runs something like this: The hearing record will remain open for forty-five days for additional comments; then an inflationary impact statement must be prepared by OSHA and submitted for the record, a process that will go beyond the first forty-five day period; then an additional forty-five days will be allowed for public comment on the inflationary impact statement; and finally, after the hearing record closes, the agency has sixty days to prepare a final regulation. Those are just the scheduled events.

Given the controversy around this issue and the frequent delays in even getting hearings underway, it's possible that other events could intervene and further delay the timetable.

How true the prediction. We went into September 1975 thinking that the issue might be resolved with a compromise of 90 dBA and 5 dB tradeoff, but with stringent monitoring of hearing. However, by mid-September EPA was still holding strongly to 85 and 5, and in a final fit of compassion stated that

(Continued on p.5)

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Editorial

ONE BRIDGE TOO FAR?

It was with mixed emotions that we received the following announcement in our mailbag recently:

Dear Colleague:

On September 4th, during the XV International Congress of Audiology in Krakow, a group of physicians in audiology decided to form an International Association of Audiological Physicians. Participants of the inaugural meeting were Drs. Hinchcliffe, Davies, Martin, Snashall, Stephens (United Kingdom), Bentzen (Denmark), Barr, Liden (Sweden), Jauhainen (Finland), Borkowska-Gaerting (Poland), Prasansuk (Thailand), and Niemeyer (Fed. Rep. Germany); apologized for not coming were Drs. Gannon (Canada), Glorig (USA) and Salomon. Dr. Stephens was elected secretary; Dr. Niemeyer, preliminary chairman was directed to organize the next meeting on the weekend of 1st/2nd November, 1980, in Germany (Marburg or Wiesbaden).

"Thus, after having arranged the priority tasks of organization, I have now the pleasure to invite you to participate in our formation assembly in Wiesbaden from Saturday, November 1st, to Sunday, Nov. 2nd.

The meeting was held to formulate a constitution following the model of already-established national Associations of Physicians in Audiology, e.g., in England, Denmark, etc. Its formation highlights the marked difference between Audiology in the U.S. and Audiology in Europe. Although England has begun to train a specific profession of Audiologists, and other countries such as Israel have followed the U.S. model of Audiology, most European countries have continued to follow a Physician-Audiologist model.

We question whether the attempt to be both Otolaryngologist and Audiologist may not reduce the quality of both performances. The physician-audiologist does not perform the actual day-to-day audiometry and hearing evaluation, leaving that to technicians with little academic training. The use of technicians presupposes a contempt for the skills of audiometric testing — skills which are the life-blood of audiology, without which the profession is emasculated.

We hold basic audiometric testing and interpretation in high esteem, and believe that a high degree of education is requisite to its adequate performance. Why are psychoacoustics, linguistics, psychology, child development, and related academic subjects included in the prerequisites for audiology? It is to establish a basic understanding of the complex interaction between the patient, the tester, and the instrument. It is to develop a confidence that the tester knows more than the machine — that the fundamental element is not the machine but the relationship between tester and subject. It is to recognize that linguistic development must be considered in making any evaluation of auditory function. These and many other considerations make the science of audiology a high art as well as a science. It can only be mastered in day-to-day testing experience, by a knowledgeable, insightful person.

What we are saying is that we like the American model, where the otologist is otologist and the audiologist is audiologist, but where they meet on the common ground of hearing function. To make that meeting ground more effective has been the goal of the American Auditory Society. We like that too.

MPD/RJR

Comments from the membership on this editorial are welcomed.

Eds.

Letter from England

Dear Editor of Corti's Organ,

This letter could be 'from Scotland' because I have just visited that beautiful historic city, Edinburgh. I had the honour of delivering the Second McBride Lecture entitled 'McBride and the Midfacial Granuloma Syndrome.'

Peter McBride (1854-1946) was the founder of otorhinolaryngology in Edinburgh and his 'department' consisted, in 1883, of one small room only. Dr. Kenneth McLay, one of his present successors, and his colleagues have a large modern department with nearly 100 beds. McBride has been credited with the first description in 1897 of the so-called 'midline granuloma,' an enigmatic (idiopathic) disease of the midfacial tissues. It has stimulated a vast literature and an exercise in terminological acrobatics (a complete list of the terms suggested might exhaust the space allotted to my letter).

Credit is due to another great Scottish otolaryngologist, J.P. Stewart (now 82 and going strong), whose review of the clinical findings of the disease in 1933 has remained a classic. I feel that the eponym I have suggested in 1955: 'Stewart's Granuloma,' is not only well merited but helpful. It was gratifying to find both pathologists and surgeons attending my lecture agreeing with my concept of 'Stewart's type granuloma.'

I have travelled by train to Scotland, an almost forgotten way of travelling, enjoying a renaissance. The train was the

'Aberdonian' and it reminded me of the pride of Scotsmen. When the Titanic sank an Aberdeen newspaper carried the headline — 'Aberdonian lost on high sea!'

I often wished that the big ships still crossed the Atlantic — perhaps we might not be rushing to and from so many symposia.

We have, as you know, attended in September a friendly meeting of the Collegium O.R.L.A.S. in San Francisco under the Presidency of our old friend Frank Sooy, the greatly respected Chancellor of the UC San Francisco. Afterwards we promptly flew to Los Angeles where, at the hospitable Ear Research Institute, a Symposium on Electron microscopy of the Ear has attracted a large and interested audience from all over the world. As always this great Institute provided a congenial atmosphere and their new EM-team under Dr. Frank Galey contributed greatly to the success of the Symposium.

I could only attend the Exhibition of the Academy in Anaheim. There was much 'pathology' of great interest among the exhibited cases.

I wish you and your readers many more happy reunions in your wonderful country and continued success in the New Year.

I. Friedmann

A.G. Bell Assn. Names President Elect



Dr. William E. Castle

Dr. William E. Castle, vice president of RIT and director of NTID, recently was elected the president-elect of the Alexander Graham Bell Association of the Deaf (AGBAD).

Dr. Castle serves as president-elect for two years beginning July 1, 1980, and will become president during AGBAD's 1982 international convention in Toronto. He will serve as president until 1984 and will continue to serve on the board of directors until 1986 as past president.

Dr. Castle has played a leading national role in bringing together the leaders of several major organizations serving deaf people in the United States. In 1979, he brought together the four respective leaders of the National Association of the Deaf (NAD), the International Association of Parents of the Deaf (IAPD), the Oral Deaf Adults Section (ODAS) of AGBAD, and the International Parents Organization (IPO) of AGBAD to discuss issues regarding deafness in the 1980s.

"I hope to see a further coming together of organizations serving the deaf," Dr. Castle says. "Our many organizations need to be able to arrive at an appropriate united front in the interests of deaf people without any one of the organizations losing its own rightful and historical identity."

"During our 1979 meeting, an important point of agreement among the four leaders was that the oral/aural components of 'total communication' must be restored by those who practice it. I'm really convinced that NAD, IAPD, ODAS, and IPO can readily establish a united front on many issues regarding deafness, including early identification, early intervention, the need for better quality education, and optimal implementation of Public Law 94-142 through the maintenance of all legitimate alternatives from which the deaf and their parents may choose."

Dr. Castle served as dean and director of NTID until September 1979, when he was promoted to vice president of RIT, NTID's host institution. He retained his NTID director's position. Dr. Castle also serves as NTID's chief institutional liaison with the executive and legislative branches of the federal government and with national and international constituencies related to deafness.

A native of Watertown, S.D., Dr. Castle obtained his undergraduate degree in 1951 from Northern State Teacher College in Aberdeen, S.D. He later earned a master's degree at the University of Iowa and his doctoral degree in speech pathology and audiology from Stanford University.

Dr. Castle had extensive teaching experience at the college level before coming to NTID in 1968 as assistant to the vice president and as director of NTID's Division of Instructional Affairs. He was named dean of NTID in 1969 and director in 1977.

(Reprinted with permission from NTID's FOCUS magazine.)

Verbo-Tonal Workshop Scheduled

A fifteen — day Verbo-Tonal workshop, July 27 — August 12. Certification can be earned, in teaching hearing impaired children and adults, foreign language, and speech correction of normal hearing. Sponsored by the Institute for Aural Rehabilitation. Write or call Carl W. Asp, Department of Audiology and Speech Pathology University of Tennessee, Knoxville 615-974-5017 37916

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Glorig Receives Honors



The highest honor of the International Audiology Society was presented to Aram Glorig in Cracow, Poland, in September. Glorig was one of the founders of the I.A.S. and served as Executive Committee member and President of the Society.

The award was given at an impressive ceremony in the State Museum at Cracow. Surrounded by awe-inspiring paintings representing Poland's turbulent history and preceded by a concert by the Cracow Symphony Orchestra, Glorig was given the honor at the hands of his good friend and president of the IAS, Dix Ward. Glorig and Ward were also 1st and 2nd presidents of the AAS.

The IAS biennial meeting was held in the midst of rumblings of Polish protest against the Russians, but the unrest was not felt in the great halls of the meeting. As usual, international friendships were made and renewed without regard for political boundaries. Scientific exchanges were lively, and members felt enriched by the exchanges.

Predoctoral Assistants Wanted

Predoctoral research assistantships are available in the Program in Communication Disorders for highly qualified applicants. Preference will be given to individuals with experience in animal psychophysics, auditory evoked potentials, single unit analysis, neuroanatomy, electrical brain stimulation and computer programming. Send transcript, summary of research interests, GRE and three letters of recommendation. EOAAE.

Drs. Don Henderson, Richard Salvi or George Gerken
University of Texas at Dallas
Callier Center for Communication Disorders
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Health Department

THE EAR

Injuries to the Ear, and How to Prevent Them

Among the causes of injury to the ear must unfortunately be reckoned bathing. Not that this healthful and important pleasure need, therefore, be in the least discouraged; but it should be wisely regulated. Staying too long in the water certainly tends to produce deafness as well as other evils; and it is a practice against which young persons of both sexes should be carefully on their guard. But independently of this, swimming and floating are attended with a certain danger from the difficulty of preventing the entrance of water into the ear in those positions. Now, no cold fluid should ever enter the ear; cold water is always more or less irritating, and if used for syringing, rapidly produces extreme giddiness. In the case of warm water, its entrance into the ear is less objectionable, but even this is not free from disadvantage. Often the water lodges in the ears and produces an uncomfortable sensation till it is removed; this should always be taken as a sign of danger. That the risk to hearing from unwise bathing is not a fancy is proved by the fact, well known to lovers of dogs, that those animals, if in the habit of jumping or being thrown into the water, so that their heads are covered, frequently become deaf. A knowledge of the danger is a sufficient guard. To be safe it is only necessary to keep the water from entering the ear. If this cannot be accomplished otherwise, the head may be covered. It should be added, however, that wet hair, whether from bathing or washing, may be a cause of deafness, if it be suffered to dry by itself. Whenever wetted, the hair should be wiped till it is fairly dry.

Nor ought the practice of moistening the hair with water, to make it curl, to pass without remonstrance. To leave wet hair about the ears is to run great risk of injuring them. In the washing of children, too, care should be taken that all the little folds of the outer ear are carefully and gently dried with a soft towel. But I come now to what is probably the most frequent way in which the ear is impaired; that is, by the attempt to clean it. It ought to be understood that the passage of the ear does not require cleaning by us. Nature undertakes that task, and, in the healthy state, fulfils it perfectly. Her means for cleansing the ear is the wax. Perhaps the reader has never wondered what becomes of ear-wax. I will tell him. It dries up into thin fine scales, and those peel off, one by one, from the surface of the passage, and fall out imperceptibly, leaving behind them a perfectly clean, smooth surface. In health the passage of the ear is never dirty; but, if we attempt to clean it, we infallibly make it so. Here — by a strange lack of justice, as it would seem, which, however, has, no doubt, a deep justice at the bottom — the best people, those who love cleanliness, suffer most, and good and careful nurses do a mischief negligent ones avoid. Washing the ear out with soap and water is bad; it keeps the wax moist when it ought to become dry and scaly, increases its quantity unduly, and makes it absorb the dust with which the air always abounds. But the most hurtful thing is introducing the corner of the towel, screwed up, and twisting it around. This does more harm to ears than all other mistakes together. It drives down the wax upon the membrane, much more than it gets it out. Let any one who doubts this make a tube like the passage, especially with the curve which it possesses; let him put a thin membrane at one end, smear its inner surface with a substance like the ear-wax, and then try to get it out so by a towel! But this plan does much more mischief than merely pressing down the wax. It irritates the passage, and makes it cast off small flakes of skin, which dry up and become extremely hard, and these also are pressed down upon the membrane. Often it is not only deafness which ensues, but pain and inflammation and then matter is formed which the hard mass prevents from escaping, and the membrane becomes diseased, and worse may follow. The ear should never be cleaned out with the screwed-up corner of a towel. Washing should extend only to the outer surface, as far as the finger can reach. — *The Popular Science Monthly* [From Godey's Lady's Book and Magazine (1873)]

CHABA

(From page 1)

(2) Effects of mechanical force fields (for example, vibration) upon human performance, health, and comfort.

(3) Protection of man from mechanical force fields.

(4) Physical and engineering problems of the generation, measurement and control of mechanical force fields.

As a general policy the Committee will undertake work in the above areas only when the required advisory services are not provided elsewhere.

At present, the Committee is supported by the three armed services and six civilian agencies: The Federal Aviation Administration, the National Aeronautics and Space Administration, the National Institute of Neurological and Communicative Disorders and Stroke, the National Institute for Occupational Safety and Health, the Office of Special Education, and the National Science Foundation. The Committee also cooperates with and gives advice and assistance to four international organizations: the North Atlantic Treaty Organization, the International Civil Aviation Organization, the Organization for Economic Cooperation and Development, and the International Organization for Standardization. These organizations are concerned with establishing standards for transportation noise and providing solutions to auditory problems related to aviation. The Committee is linked with about 40 foreign correspondents through whom an interchange of information in areas of mutual scientific and technological interest is maintained. In addition, the Committee currently maintains correspondence with about 300 scientists.

The Committee gives assistance to its sponsoring agencies in the following ways: (1) applying scientific and technical knowledge to the solution of problems; (2) planning research for meeting future problems; (3) bringing problems that concern supporting agencies to the attention of scientific and technical investigators; (4) promoting exchange of research information; and (5) identifying deficiencies in scientific knowledge and encouraging research designed to reduce them.

The Committee has ten members who have been carefully selected for demonstrated competence and to cover the wide range of specialties pertinent to the work of the Committee. The work requires competence in the biological, behavioral, and social sciences, physics, chemistry, mathematics, engineering, and medicine. Members are selected primarily from universities. Some, however, are selected from governmental, industrial, and private research organizations.

The Committee tries to respond as rapidly as possible to technical questions posed by the supporting agencies. When the Committee has already developed considered opinions or conducted studies on a question, answers can be provided immediately by the Committee's staff. If not, problems may still be handled with small delay through telephone consultations with knowledgeable Committee members. More difficult problems are handled by the Committee through specially appointed small working groups, whose work results in reports. Usually, the Committee has about ten active working groups.

Though a major identifiable product of the committee is the publications that result from Working Group activity, it is well to mention another less visible function of the Committee, namely, its service to those in CHABA's fields of interest. Because CHABA has been active for so many years, and has been relatively visible to those in the fields of hearing, bioacoustics, and biomechanics, it is not uncommon that the office will receive two or three calls daily from scientists around the country requesting information on a given problem, wishing to know who is working on certain problems, wishing to be referred to reports and articles, and asking for information about jobs that are available or submitting information about jobs that are available.

The ten members of the Committee meet twice a year to conduct the business of the Committee. They meet together with the nine representatives of the supporting federal agencies. They consider the problems that are brought to CHABA from the supporting sponsors and decide which would be appropriate for CHABA to work on, which already have answers, and which are inappropriate or should be handled by other organizations. Another function of the Committee is its review and approval of reports generated by Working Groups. In some respects the Committee operates in a manner similar to the board of a journal. They review reports for technical content. Review for major policy issues is considered as well but this concern is shared with members of the Assembly of Behavioral and Social Sciences who also review CHABA reports prior to publication.

CHABA maintains an active correspondence with approximately 200 advisors, about 150 of whom are advisors selected at large from among scientists around the country. They are selected with great care for their research competence and usually have a PhD plus at least five years of high quality publication. There is a group of somewhat less than 100 advisors that are nominated by the sponsors and with whom CHABA also maintains an active correspondence. In many cases, these are scientists who are qualified to be advisors-at-large were they not employed by one of the supporting sponsors. Others, for examples, may be nominated because of administrative interests. Most of the Working Groups are composed of members selected from these groups of advisors but the Committee can go outside its group of advisors to select scientists with special skills that are needed for a particular Working Group.

(Continued on p. 6)

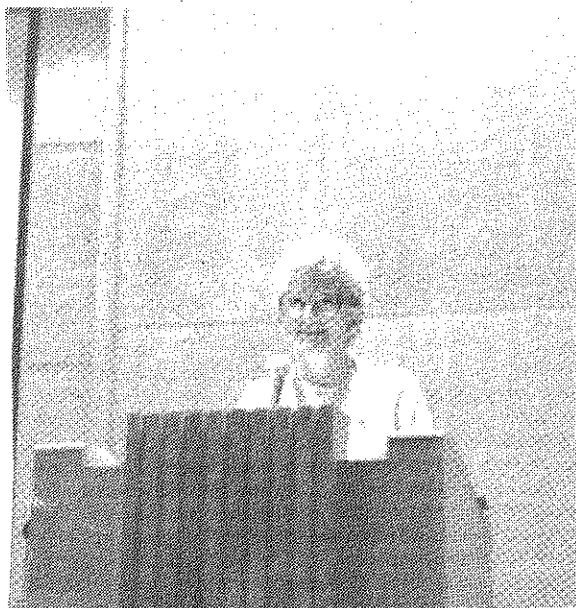
Abstracts and Summaries from Annual AAS Meeting

(Editors' Note: This and the next issue will contain summaries of the papers that were presented at the annual meeting.)

CARHART MEMORIAL LECTURE

THE INFANT AUDITORY SYSTEM: RE-PROGRAMMED FOR LANGUAGE?

By Marion P. Downs
University of Colorado Health Sciences Center
Denver, Colorado



Marion P. Downs

The new surge of inquiry into language development must assume a high priority with audiologists and otolaryngologists. We have a unique contribution to make to psycholinguistics — one which linguists and psychologists cannot offer — and that is the study of the degree to which the acoustic parameters of language learning in the infant are innate, pre-programmed processes, and how they influence language learning. Already there is research evidence demonstrating that there may be special, biologically predetermined processes of perception for the various acoustical dimensions of speech. It is the purpose of this paper to review what is known about the acoustics of language learning, and to propose contributions that can be made by our disciplines.

How well accepted is the hypothesis that humans are born with a genetic endowment for recognizing and formulating language? It has been proposed that genetic information for language may be coded into our nervous system — that we carry with us special DNA for syntax, special neurons for grammar, special deep structures for coding out the parts of speech. New linguistic theories (1) support a hypothesis that we are programmed to identify words and sentences and generate grammar, as an innate, preadaptive function. This ability evolved through millennia as an evolutionary process exclusive to man. And it developed through the medium of an evolved, articulated speech that impinged on evolved, differentiated hair cells.

For language has lived only through its transmitting mechanism, speech, which is dependent upon our spewing out acoustic energy in various measurable forms. Were it not for this acoustic energy being transformed by our miraculous ears into differentiated, neural patterns, we would still only be able to manipulate visual symbols laboriously and primitively. In lower animals the manipulation of visual symbols with some primitive syntax has been shown to be the limit of language usage. Some have claimed that an elementary, original, grammatic manipulation of visual symbols is proof of "language" in chimpanzees, but it has really no relation to human language.

For speech is the essence — the vehicle upon which language has been carried through eons of time, by all those orbicularis oris opening and shutting billions of mouths, and all those mobile tongues sliding and "ploding" and emitting the acoustic vibrations that became speech.

The vibrations of that speech became intelligible to ears that accordingly developed the most sensitive hearing at those frequencies carrying the specific information-bearing elements of the speech. Or was it the other way around? Did speech develop its specific optimal frequencies at 500-3000 Hz in order to adapt to the ears' most sensitive acuity range? If the ear had been most sensitive at 16,000 Hz would speech have accommodated by evolving its most optimal intelligibility range in the higher areas? Or if speech had arisen in the 16,000 Hz range how loud would it have had to have been in order for the ear to hear? Whichever way it was, evolution has left us with an effective quid-pro-quo.

Lieberman (2) has suggested that "Human speech shapes human language" — that speech and language are interdependent and that the evolution of the one affected that of the other. He shows that an animal is articulate to the degree that it can manufacture a range of formant frequencies corresponding to the vowel triangle a-e-u. Lieberman points out that the anatomical features possessed by man — a well developed pharynx with posterior 1/3 or so of the tongue forming its anterior wall — are optimal for the generation of the wide range of formant frequencies that facilitate speech. No animal other than man has this capacity; hence, man is the animal that has developed speech and its correlate, language.

It is only through what we may call the "mind's ear" that we can transform the acoustic energy generated by the speech mechanism into information, store that information up, and generate theories about life. When we hear some fact that fits a hypothesis our minds literally explode with ideas — neurons scurrying here and there to find other matches for the facts that are being generated. In other words, as Thomas (3) suggests, our minds are actively acting on the incoming material, shaping it, expanding it, giving it new life and form.

Active Auditory Learning

The infants' auditory learning is such a performance — actively influencing the incoming acoustic information as a reflexive activity, pre-programmed to go through this activity to form a basis for what has been called pre-linguistic training. Actually, perhaps there is no such a thing as a pre-linguistic acuity. All auditory acuity related to speech is linguistic, however elementary it may be.

What do we know about the development of auditory perceptions in infants? Most studies in this area point to the fact that the infant uses acoustic information in a reflexive, or innate, manner that lays the matrix for later language development. Perhaps it would be more appropriate to say that it is communication that is innate. For there is evidence that a great deal of non-verbal communication is actively carried out on an instinctive level.

For example, the smile of the infant appears, innately, by two months, as one of the means to attract the parent to him and ensure the infant's survival. The cooing, gurgling sounds that he makes also seduce the parents into loving him. At two weeks he can make these sounds, when the infant larynx has assumed a proper position. The babbling of the human infant up to five months is part of an innate communication activity, evidenced by the fact that a totally deaf infant will babble exactly like a hearing infant for the first five months of life. In these ways the infant acts reflexively upon his social environment in order to influence communication with his caretaker. It has been suggested that the acoustic stimuli that are heard by the developing organism are signals for these self-serving activities to be set off. (18) But when one considers the fact that deaf babies smile, coo and gurgle just as normal babies do, this hypothesis does not seem tenable. The infant needs no acoustic input to initiate the smiling and babbling activities. These activities are part of the innate beginning of communication.

How early does the infant perceive speech and act upon his acoustic environment? There is research evidence for the existence of preadaptive processes of perception for the acoustic dimensions of speech. At birth the infant is able to discriminate its mother's voice and to work to produce her voice in preference to the voice of another female. These capacities were demonstrated by DeCasper and Fifer (4) utilizing the classic sucking paradigm with infants shortly after delivery. Earphones were placed over the ears of the supine infant and a non-nutritive nipple was placed in its mouth. An assistant held the nipple loosely in place; the nipple was connected by way of a pressure transducer to solid state programming and recording equipment that produced only its or its mother's voice. For five randomly selected infants, sucking bursts produced first only the mother's voice on the tape for a predetermined interval, and then the voice of another infant's mother. For another five infants the conditions were reversed. A preference for the maternal voice was indicated if the infant produced it more often than the non-maternal voice. It was apparent that the infant soon learned to gain access to the mother's voice, since specific temporal properties of sucking were required to produce the maternal voice.

These data of DeCasper and Fifer show that newborns reared in group nurseries that allow minimal maternal contact can discriminate between their mothers' and others' speech, and moreover, will work to produce their mothers' voices in preference to those of other females. These authors postulated that prenatal, intrauterine influences may be a factor in this early learning.

Is there sufficient acoustic exposure in the uterus to permit such a precocious development? It may be. Bench (5) has shown that for a 72 dB signal there is the least attenuation of sound going into the uterus at 200 Hz (19 dB); slightly more at 500 Hz (24 dB); more at 1000 Hz (38 dB); and the most at 2000 and 4000 Hz (48 dB). The last two measures were not considered accurate since the strength of the applied signal was not sufficient to overcome the masking of the internal sounds that had been measured at 72 dB. Thus the frequencies of 1000 Hz and below contained the maternal voice may well be heard, if faintly, from the fifth month of gestation when, it has been shown, the fetal ear is capable of analyzing the sound.

The Bench study was not made inside the intact amniotic sac and of course did not deal strictly with the sounds available

to the fetus. But a study by Armitage et al. (6) measured the actual sound level inside the amniotic sac of pregnant ewes by means of hydrophones inside the sac, in the normal fluid environment of the fetus. These investigators found that although sounds from the maternal cardiovascular system were not perceived, the sounds of the mothers' eating, drinking, ruminating, breathing and of their muscular movements, were discernable, as were sounds from outside the mother. They found that the attenuation of sounds measured on a C-weighted scale reached a maximum of 37 dB just below 1000 Hz, but it was reduced below and above this frequency, with its higher frequencies attenuated at about 20 dB up to the highest recorded, 5000 Hz. The amount of attenuation fluctuated however: conversation at normal levels outside the animal could often but not always be understood when transmitted from inside. Raised voices were almost always distinct. If we make the leap from this animal model to the case of the human fetus, then the mother's and even the father's voices would be heard by the fetus. A study similar to the DeCasper and Fifer one, but utilizing the father's voice instead of the mother's would give even more definitive evidence for the fetal hearing of external voices.

Another animal model that is relevant is the study of Gries and Counter (7) who transmitted patterned acoustic signals to chick embryos through the egg shell and found that after birth the chicks clapped their beaks and vocalized more often to the patterned signals than did chicks in a non-exposed control group. The authors postulated that prenatal auditory "imprinting" had occurred.

The above studies lend weight to the hypothesis of DeCasper and Fifer that a great deal of auditory experience has preceded the abilities of the newborn to prefer the mother's voice to other voices. But before such early discriminations can be made the infant auditory system would have to be preadapted to various acoustic discriminations. Such discriminations have been shown to be present in the newborn, and assuming a functional ear and central nervous system the same capabilities would be present in the five month fetus. The innate discriminations that subserve the preference for the mother's voice require the auditory competencies of discriminating rhythm, intonation, frequency variation, stress (supra-segmental aspects of speech) and phonetic components of speech (linguistic aspects).

Supra-Segmental Speech Activity

Condon and Sander (8) reported that neonates move in precise and sustained segments of movements that are synchronous with the articulated structure of speech. Further perception of rhythm in two month old infants was demonstrated by Demany et al. (9) who utilized varied sequences of time bursts in a habituation paradigm relating duration of fixation on a visual figure. Infants were able to perceive intervals of time as subjective links between sounds. Spring and Dale (10) showed that one to four month old babies could discriminate linguistic stress as well as location, fundamental frequency, intensity, and duration. Thus the entire gamut of supra-segmental aspects of speech seem to be available to the infant at birth.

Kimura (11) has shown that the supra-segmental aspects of speech are handled by the right brain. The segmental, linguistic aspects are located in the left brain, according to Studdert-Kennedy and Shankweiler (12). But this is not to deny the importance of the supra-segmental aspects of speech in learning its intelligibility. Language learning is not confined to the segmental aspects of speech. Rhythm, intonation, duration and stress are extremely important to understanding multiple meanings of words, as well as to the meanings of homophones. Many words and phrases contain multiple meanings that are made clear only by intonation, rhythm, duration and stress. This fact explains a part of the problem of a deaf child in understanding some of the subtle parameters of irony, satire, scorn, implied anger, or humor, that convey the sense of multi-meaning words or phrases. "You're tired," "You're tired?" are two different sentences depending on the intonation of the rising or falling fundamental frequency. "You drive me up the wall," "I can't bear it" — make for humorous misconceptions, but it is the kind of thing that is difficult for the concrete-minded deaf child who has not heard the stress and intonations that make the phrases meaningful.

Franklin (12) showed that there is useful consonant information in the low frequencies. Rosenthal (13) also showed that when a low frequency band is added to a 1100-2200 Hz high band, there is a significant increase in consonant recognition. So, to return to the pre-natal learning that may go on, whether the fetus hears low frequency sounds better than high or not may not matter to the early learning that goes on.

Segmental Aspect

Eimas (18) and others have given us evidence that the child is also able to discriminate segmental aspects of speech in a categorical and presumably linguistic manner. He chose to utilize differences in voice onset time (VOT). The categorical perception of VOT has been assumed to be a function of the special processing which the sounds of speech undergo and tends to be a special characteristic of perception in a speech or linguistic mode. Eimas (18) believed that there were special biologically determined processes of perception for this acoustic dimension. In one experiment with 26 infants one month old, he employed the classic sucking paradigm in discriminating the differences between the voiced stop /b/ and the voice-

(Cont. on page 10)

Minutes of the Executive Committee of the American Auditory Society

DATE: November 20, 1980

PLACE: Henry Ford Hospital
Detroit, Michigan

TIME: 12:30 p.m.

Members present: Marion Downs, Bruce Graham, Earl Harford, Suzanne Kos, Ed Johnson, Ross Roeser, Hiroshi Shimizu, Laura Wilber

Members absent: Charlie Anderson, Susan Conway-Fithian, Malcolm Graham, Merle Lawrence, Fred Linthicum, Samuel Lybarger, Ralph Naunton, John Sinclair, Dixon Ward

1. President Wilber opened the meeting at 12:30 p.m.
2. The minutes from the 1979 Executive Committee meeting held in Dallas, Texas, were presented and approved without revision.
3. The income and disbursements for the period January 1, 1980, through August 31, 1980, were reviewed, discussed and approved.
4. A list of 182 applicants for membership during 1979 was presented. Of this number 144 were approved for membership, 37 had incomplete applications as they did not have the necessary signatures, and 1 was disapproved for membership due to lack of the minimum educational and experience requirements.
5. The results of the ballot to amend the AAS bylaws were presented. Three hundred sixteen votes approved the adoption of both the associate membership and liquidation amendments. Two voted to adopt only the associate member-

ship amendment, 60 voted to adopt only the liquidation amendment, and 5 voted no change. The final result was that both the amendments were adopted.

6. A discussion was held regarding consideration of a dues increase for 1982. Although it was realized that increased costs will eventually cause an increase in dues, after the discussion it was decided that dues not be increased for 1982.

7. The 1981 meeting will take place in New Orleans, Louisiana, in conjunction with the American Academy of Otolaryngology.

8. The program chairman for the 1981 meeting will be Dr. Michael Seidemann.

9. A discussion was held regarding future meeting sites. Following the discussion a motion was made and approved that AAS meet alternately with the American Speech-Language Hearing Association and the American Academy of Otolaryngology.

10. President Naunton was appointed the chairman of the 1981 Carhart Memorial lectureship award. He is charged with generating the list of candidates for the award. After the candidates are identified, each member of the Executive Committee will vote on the candidates. It was recommended that the list of the previous committee (chaired by Lybarger) be shared with him.

11. Ross J. Roeser was appointed secretary/treasurer for 1982.

12. Suzanne Kos was appointed assistant secretary/treasurer for 1982.

13. Charlie D. Anderson was appointed Vice President/President Elect for 1981.

14. It was agreed that American Auditory Society would forward the name of Dr. Howard House as a candidate for the CRS Amplifon Award.

15. Dr. Harford brought up the possibility of publishing a separate membership directory. After discussion it was decided that the secretary/treasurer would explore the costs of offset printing for such a directory. In addition, the future directories should be published in *Corti's Organ* in a clip-out format.

16. Drs. Shimizu and Johnson were appointed as the nominating committee for 1981 elections for the Executive Committee. Those members whose terms expire in 1981 are: Bruce Graham, Earl Harford, Suzanne Kos, Merle Lawrence, Fred Linthicum, Samuel Lybarger, and Dixon Ward.

In order to continue to maintain a balance of interests on the Executive Committee, 4 audiologists, 2 otolaryngologists, and 1 individual representing the hearing aid industry must be nominated for election.

17. A discussion was held on the status of Ear and Hearing, and the following points were resolved:

A) \$1,000.00 would be transferred from the American Auditory Society account to the Ear and Hearing account.

B) Annual awards will be given for outstanding papers published in the journal. These would consist of a first place award of \$300.00, second place award of \$100.00, and honorable mentions having no cash awards. These awards will be initiated for volume 2 (1981), and would be presented at the 1982 annual meeting. The editorial board would nominate articles for first and second prizes and for honorable mentions. These nominations would be reviewed and approved by the Executive Committee.

18. After discussion a motion was made that members should be prohibited from using the name of the society in personal advertising. This motion passed. Earl Harford and Marion Downs were appointed by President Wilber to provide guidelines on this matter.

There being no other business, the meeting adjourned at 2:05 p.m.

Decibel (From p.1)

"a time weighed average exposure level of 80 dBA with a 3 dB trading factor is necessary to assure that no employee will suffer material hearing impairment over his working lifetime" (7).

In October 1975, just to keep everyone on their toes, EPA identified 80 dBA as safe, but makes no recommendation to OSHA; and then continues, "in order to take into account the fact that susceptibility to noise-induced hearing impairment varies widely among the population, OSHA must select a maximum permissible exposure level adequately protective on a basis of at least the 90th percentile" (7).

Further — into October and from "Noise Report" (9)

Pressure is building to permit continued use of hearing protectors, yet consumers union evaluated thirty-two types and concluded none of the tested devices can offer absolute protection.

And finally another intriguing note,

OSHA figures that medium-sized business (between 100 and 249 employees) are most often cited for noise violations (10).

Nineteen seventy-six was now upon us and still no final draft. A favorite tune of the noisy new year was "may 90 dB not be forgot and days of ear protection." And sure enough, they were not! More hearings, more reports, more "damnation" between the groups involved.

The "Inter-Industry Noise Study" that was heralded as the true revealer of cause and effect was going ahead full steam, and promised final factual information on the effect of noise on workers. Environmental groups, labor organizations, insurance companies, EPA and OSHA officers, and the American Speech and Hearing Association issued statements bi-weekly. Industry and management counteracted with vigor. But still no final draft, although public hearings had ended.

December of 1976 was distinguished by a memorandum prepared by Leon Billings, staff director of the Senate Public Works Subcommittee on Environmental Pollution, on scheduling environmental legislation for 1977 which indicated that three days of on-site hearings on implementation of the Act (Noise Control Act of 1972) will probably be conducted during 1977 in preparation for amendments in 1978 (11). Therefore, 1977 looked like "more of the same."

Sure enough, New Year announcements clearly indicated that our poor decibel was still in a battle. Dr. Morton Corn, still Assistant Secretary of Labor for OSHA, told Dr. Raymond Yerg, Chairman of the Inter-Industry Noise Study Steering Committee (IINS), that he did not plan to hold a post-hearing comment period open specifically for the purpose of receiving the results of the IINS's study, but would put it on his schedule of a final noise standard in February 1977. He (further) noted

that revisions to the occupational noise rule had been in the works since 1972, and that further delay was "unthinkable" (12). He then turned in his resignation.

OSHA quietly followed Dr. Corn's resignation with the news that it was reopening the docket for limited comment on additional data on the economic impact statement that was prepared by Bolt, Beranett and Newman Inc. and that limited comments would be accepted until February 28th (13). This announcement was followed by a notice that IINS intended to use the reopened docket to submit results of its three-year research project on the effects of continuous exposure to workplace noise.

The rest of 1977 passed with noticeable "quietness." As a matter of fact little noise was heard from 1977 through 1979 except from the Research Report of the long-awaited Inter-Industry Noise Study that was published on May 7, 1978 (21); the field investigation of noise reduction afforded by insert-type hearing protectors in November 1978 (1); and finally the 1979 mandatory requirement of standardized reporting of "Hearing Protector Noise Reduction" by manufacturers (14).

The year 1980 brought the battle of the decibel back (if you will excuse the expression) with a bang. The April 18th Federal Register (15) contained the explosive news that

Occupational Safety and Health Administration (has) reopened its rulemaking record on its proposed revision to the occupational noise standard in order to include material that has been submitted to the agency since 1977, when the record was closed, and to introduce some undated cost information on the proposed revisions. OSHA will also be accepting written comments on the new material for inclusion in the record.

It was a hot summer to be sure. In July various industrial groups and individuals including such giants as Owens-Illinois Inc., Fiber Box Association, and American Paper Institute issued a statement on personal hearing protection that asked for it to be "elevated to the same status as engineering and administrative control" (16). Further, that

For OSHA to ignore the importance of hearing conservation programs in its regulatory process is a serious deficiency. API believes that OSHA should carefully consider its previous testimony on the priority of hearing conservation programs (16).

Fall 1980 — the battle has yet to end and the poor decibel struggles on. Why does the battle rage? Primarily because of what we do and do not know. Let's start with what we do know; knowledge that provides armament for the battle.

One of the biggest arguments against lowering the acceptable noise level is that the employee can be adequately protected from the effects of noise exposure by the simple use of EAR PROTECTORS. Further, everyone knows they do not cost much. A good argument; however, "it ain't necessarily so."

We who have evaluated the effectiveness of ear protectors are fully aware of the fact that there is a substantial difference

in the amount of protection one type of ear plug, and even ear muff, will provide one individual over another. Our own research shows a maximum difference of 40 dB between individuals using the same make of ear plug; and in one case, it increased hearing acuity at certain frequencies. Contributing factors to this variance included size of ear, shape of ears, difference between one individual's two ears, and shape of head when ear muffs were utilized.

Until 1979 there were no national standards for ear protectors. It took until September 12, 1979, for the Federal Environmental Protection Agency to issue a final rule that would require manufacturers to place labels on every hearing protector. In addition, one year from the issue of the standard all manufacturers "will be required to test all categories of protectors offered for sale according to the procedures specified by the American Standards Institute" (14). Unfortunately — or typically — EPA started granting "Relief" on hearing protector labels by February 1980 (17).

The most important study that dealt with the complexity of ear protector use was the Field Investigation of Noise Reduction afforded by insert-type hearing protectors, published in November 1978 (1). We herein quote from the abstract:

Results indicate that, on the average, workers were receiving noise protection ranging from a minimum of about 6 dB at 125Hz to a maximum of approximately 20 dB at 3150Hz. (Test frequency range was 125 to 8000Hz.) Comparison of these results to corresponding data established in the laboratory, and reported by the earplug manufacturers, shows that half of the workers tested were receiving less than 1/3 of the potential attenuation of the hearing protectors in terms of noise reduction in dBA. Additional special testing demonstrated that this reduced performance probably was due to the workers using the wrong size for their ear canals and/or improperly inserting the earplugs. The degree of protection was not found to depend significantly upon intensity of workplace noise level, earplug design or company policy regarding earplug usage; however, a significant difference was found between the attenuation received in the first test of all workers and in the four subsequent tests. A slight difference was also demonstrated between workers having an "active" job task compared to those with a more "passive" job activity.

The enforcement of protector use has also caused considerable concern. This is typified by the following "Standard" issued by OSHRC in July of 1980 (18).

WEARING OF HEARING PROTECTION IS "IMPOSSIBLE TO ENFORCE," OSHRC SAYS. An employer should not be cited or fined for the failure of one employee to wear hearing protection, Occupational Safety and Health Review Commis-

(Continued on p. 11)

Hearing Aid Workshop

SECOND ANNUAL HEARING AID PRESCRIPTION WORKSHOP

New Directions and Practical Applications to Hearing Aid Selection and Fittings

Objective: To present an intensive one-day learning program designed to improve the effectiveness of your hearing aid fittings. State of the art techniques to insure better client satisfaction in less time. Scenario for success in the 1980s.

Some of the urgent questions to be addressed:

- Are our present hearing aid selection procedures adequate for the 1980s?
- Are we ignoring state of the art research that could significantly benefit our hearing impaired clients?
- Is the speech test based approach sensitive enough to choose the most appropriate amplifier? If not, what are the alternatives?
- Is there an ideal frequency response with wide application for many of the hearing impaired?
- Is the 2 cc coupler appropriate for our needs?
- How important is sound quality in hearing aid selection?
- Why the Killion technology is vital in achieving client satisfaction.
- Is it time to assume binaural superiority for most bilateral impaired clients?
- Are our sound field measurements accurate and valid?

Time: Saturday, April 11, 1981, 8:45 a.m. to 4:30 p.m.

Place: Franklin Plaza Hotel, Philadelphia, Pa.

Fee: \$95.00 including lunch and all workshop materials.
\$75.00 student fee

Enrollment limited

Address communications to:

E. Robert Libby,
Hearing Aid Prescription Workshop Chairman
6796 Market Street,
Upper Darby, Pa. 19082

Phone (215) 352-8383
(215) 528-5222

The Unnatural Laws of Academe

THE GOLDEN RULE OF ARTS AND SCIENCES
Whoever has the gold makes the rules.

BOREN'S FIRST LAW
When in doubt, mumble.

BARTH'S DISTINCTION
There are two types of people: those who divide people into two types, and those who don't.

SEGAL'S LAW
A man with one watch knows what time it is. A man with two watches is never sure.

NINETY-NINETY RULE OF PROJECT SCHEDULES
The first 90% of the task takes 90% of the time, and the last 10% takes the other 90%.

HOWE'S LAW
Every man has a scheme that will not work.

SKINNER'S CONSTANT (FLANNAGAN'S FINAGLING FACTOR)
That quantity which, when multiplied by, divided by, added to, or subtracted from the answer you get, gives you the answer you should have gotten.

CHABA (from p.3)

HISTORY OF CHABA

CHABA was constituted in 1956 as the Committee on Hearing and Bioacoustics and operated out of a secretariat at the Central Institute for the Deaf at St. Louis, MO. At this time it was funded by the Army, Navy, and Air Force. However, it has its roots in a Committee on Hearing that had functioned from 1943 until 1952. Interestingly the Committee on Vision had a similar early beginning in World War II as the Vision Committee. Then, later, was reformed as the Committee on Vision and was operated by a secretariat at the University of California and later at the University of Florida. In 1959 the Committees were combined and the secretariat was brought to Washington to function here with the National Research Council. This permitted a full-time professional who divided responsibilities between the two committees. Later, as the activities of the two committees continued to grow, it became necessary to add a second professional, one responsible primarily for the Committee on Vision, and the other for the Committee on Hearing, Bioacoustics and Biomechanics.

Recently CHABA has changed its interests. In the audiometric area, for example, CHABA has shifted somewhat from military problems dealing with the measurement and care of the hearing of healthy young males, for whom a certain amount of hearing risk is often permitted because of operational necessity, to a concern with protecting the hearing of the public at large from any audiometric loss at all. This change has, in part, resulted from the sponsorship of CHABA having changed from being purely military to include federal agencies that are concerned with health. CHABA has also become more concerned with noise produced by aircraft and the control of such noise sources because of the addition of sponsorship from the Federal Aviation Administration and the National Aeronautics and Space Administration. A third change in CHABA's interest areas has come about because of the inclusion of biomechanics. This has encouraged activity in areas such as O and multiple G, tolerance to vibration, impact injury (both head and whole-body impact), acceleration, spin and rotation.

If one categorizes CHABA activity during the past years into areas such as audiometry and hearing conservation, airport noise and attitude surveys, relation of hearing loss to noise exposure, biomechanics, speech perception, non-auditory effects of noise exposure, and finally, noise control (either through quieting of the source or through ear protection), a few trends may be noticed which are of interest. First, the activity of CHABA in the area of noise control has decreased. This is unfortunate because the engineering control of noise holds forth perhaps more promise for ultimate alleviation of noise as a pollutant or hazard than almost any of the other areas in which CHABA might participate. It might be well to consider entering this area again. Secondly, the activity in audiometry and hearing conservation, airport noise surveys and the relationship of hearing loss to noise exposure has maintained almost a constant level neither increasing nor decreasing. It might, however, be interesting to note that the level of activity within CHABA for audiometry and hearing has always been double the activity in any of the other general categories. Thirdly, the CHABA activity level for biomechanics, speech perception, and non-auditory effects of noise has increased during the past few years.

If for no other reason, simply because of its long life of some thirty years, CHABA has an excellent image nationally. Its reports are referred to repeatedly in open journal publications. Many of its reports have been adopted by the American Standards Association and now the American National Standards Institute, without modification, as national standards. The Committee is almost as well known internationally as it is nationally, since many of the journals published in this country are read by researchers in other countries. CHABA's International Correspondents also contribute to this image in that they are recipients of all of the reports of CHABA and thus tend to disseminate throughout many of the countries of Europe information that has been published by CHABA. In fact, at meetings of the International Standards Organization the U.S. delegates on acoustical committees are often asked by foreign delegates about CHABA's posture on an issue.

STATUS OF CURRENT PROJECTS

Working Group 61 — Hearing Retirement Standards for Speech Testing in Noise

This Working Group is to develop a test of speech reception in noise. This test should be suitable as a partial determinant of whether military personnel should be retained on duty or retired with compensation for their hearing impairment. The Working Group supervised the development of a set of speech materials in noise at various speech-to-noise ratios and has administered that test both to normal and hearing impaired populations of varying ages. This test also has been interrelated with a battery of other selected speech reception tests and, of course, pure tone audiometry. These data have been combined into a final report which is presently under revision. It is estimated that this report will go into review by ABASS in October 1980.

Working Group 73 — A National Standard Fire Alarm

This group was to recommend the most desirable two or three audible signals that are maximally detectable, relative to other audible signals, when presented indoors where large numbers of people are gathered (apartments, hotels, motels, schools, hospitals, stores, factories and offices) for consideration as a national standard fire alarm. This Working Group met only once and agreed to the most desirable audible alarm signal for use as a national standard fire alarm. Its report was

published in the Journal of the Acoustical Society of America in 1975. The reason the group is still in existence is to monitor the efforts of an American National Standards Institute (ANSI) Working Group and an International Standards Organization (ISO) Working Group, both of whom are attempting to develop a national standard fire alarm and an international standard fire alarm, respectively. These two Working Groups are in close cooperation. The Study Director of CHABA is serving on the national group as an advisor and is the chairman of the international group. It might be of interest to note that the international group met in June 1980 in New York City and voted unanimously to adopt the CHABA signal. There is no reason to believe that the ANSI group will not follow suit. Currently, member nations of ISO are checking to see if any organizations within each of the nations might be opposed to the CHABA signal. This survey will be concluded by December 31, 1980. It is possible that the CHABA signal, as reported in 1975, will become an international standard in 1981.

Working Group 81 — The Effects of Long-term Exposure to Noise upon Human Health

This Working Group was asked to conduct a critical review of the literature in this area particularly emphasizing the recent literature that has accumulated since CHABA published its report on this topic in 1971. The report has been drafted, approved by the Working Group, approved by CHABA, and is now being reviewed by ABASS.

Working Group 83 — The Effects of Intermittent Noise on Speech Intelligibility Indoors

This Working Group was asked to review the literature concerning the effects of intermittent noise on speech intelligibility indoors. Recommendations are to be generated concerning minimal sign-to-noise ratios below which communication is disrupted. Additional guidance may be given concerning sound treatment. The Working Group has prepared and approved its final report, it has been approved by CHABA, and with the exception of a few minor corrections that will be dealt with on a conference telephone call scheduled for September 3rd, the manuscript should be available for review by ABASS by September 10, 1980.

Working Group 84 — Human Response to Impulse Noise

This group was asked to consider the human response, particularly of annoyance and sleep interference, to impulse noises ranging from 90 to 140 dB peak pressure with pulse durations ranging from 40 to 1000 milliseconds. The literature is to be reviewed and criteria are to be suggested, below which annoyance and sleep interference will not present a problem to the public. The Working Group has been asked by the Environmental Protection Agency to await a table being developed by the agency which might be appropriate for inclusion in the final report of the Working Group. Following that, the group is ready to draft the final report and it should be available for review by CHABA about November 1980.

Working Group 85 — The Effects of Noise Exposure on the Human Fetus

The Working Group was asked to assess the potential hazard to the human fetus resulting from noise exposure of pregnant women and to propose limiting noise exposure conditions, as well as to recommend specific research efforts that might resolve unanswered questions. The final report of this Working Group is being drafted by Dr. William Neff and should be available for Working Group approval in October 1980, following which it will be submitted for approval by CHABA and eventually by ABASS.

Working Group 87 — Feasibility of a National Biomechanics Data Bank

This Working Group was asked to examine the feasibility of collecting biomechanical data originating from various technical programs, conducted or sponsored by various federal agencies and private sources, into one integrated data bank. The Working Group has completed its final report and approved it. CHABA has approved the report and it is now being reviewed by ABASS.

Two reports were published during the past year:
The Effects of Whole-Body Vibration on Health. Working Group 79. Henning E. Von Gierke, Chairman, March 1979.

The Multiple Position Letter Sorting Machine: An Evaluation of Visual, Auditory, and Human Factor Problems. Working Group 88. J.W. Gebhard, Chairman. 1979.

Six reports are in the final stages of editing.

FUTURE PLANS

A proposed Working Group, number 89, on Tinnitus is being submitted to ABASS for approval at the next meeting. The group will be asked to review and evaluate critically the existing literature on tinnitus. Topics to be included are (1) experimental and clinical reports concerning the causes of tinnitus, (2) the advantages and disadvantages of the various procedures for measuring tinnitus, and (3) the relative efficacy of current techniques for treating tinnitus (including biofeedback, drug therapy, surgery, and direct electrical stimulation). Pertaining to tinnitus maskers specifically, the Working Group will try to evaluate (4) their reported long- and short-term effectiveness, (5) the potential hazards associated with their prolonged use (e.g., additional hearing loss), and (6) whether there are at present sufficient experimental and clinical data to permit issuance of specifications for optimal acous-

(Continued on p.10)

Audiology Update

A new series of continuing education programs, "Audiology Update," got off to a successful start in 1980, and plans are well under way for the 1981 program.

Sponsors of the Audiology Update series are SUNY Upstate Medical Center in Syracuse, N.Y., and the University of Nebraska Medical Center in Omaha. Program directors are Alan Feldman, Ph.D., professor of otolaryngology and communication sciences at SUNY, and T. Wellington Norris, Ph.D., professor and director of the Division of Audiology and Speech Pathology at Nebraska.

The 1980 program, held in Itasca, IL, focused on hearing aid dispensing, with emphasis on practical aspects, and on language and language processing. A review of language as a tool in audiologic evaluation of impairment in auditory processing was supplemented by an overview of the status of auditory evoked potentials in the evaluation of the central auditory system.

Faculty, in addition to Feldman and Norris, were Robyn Cox, Ph.D., Memphis State University; Julia Davis, Ph.D., University of Iowa; David Goldstein, Ph.D., Purdue University; C. Thomas Grimes, Ph.D., SUNY Upstate Medical Center; Stephen D. Kasden, M.S., Providence, R.I.; George Lynn, Ph.D., Wayne State University; Jane Madell, Ph.D., New York League for the Hard of Hearing; Lynne Marshall, Ph.D., University of Nebraska Medical Center; Norma Rees, Ph.D., City University of New York; Paul Skinner, Ph.D., University of Arizona; and Jack Willeford, Ph.D., Colorado State University.

The 1981 Audiology Update will be held June 24-27 at the Viking Motor Hotel and Newport Convention Center, Newport, RI. Topic of this program is "Protocol for Audiologic Diagnostic in the '80s."

Sessions will cover idiopathic hearing loss, evaluation and management of tinnitus, audiologic evaluation of middle ear function, ENG as an audiology service, brainstem audiometry, and evaluation of sensorineural hearing loss. Practicums will be offered on acoustic immittance and interpretation of ENG records.

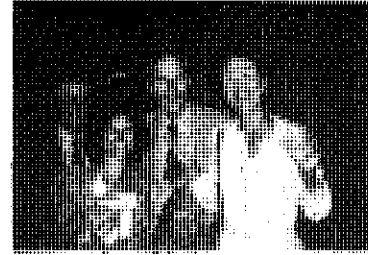
Faculty will include Robert G. Turner, Ph.D., James F. Jerger, Ph.D., Robert H. Margolis, Ph.D., Stephen D. Kasden, M.S., Robert J. Ruben, M.D., Alan S. Feldman, Ph.D., C. Thomas Grimes, Ph.D., Charles Parkins, M.D., Lytt Gardner, M.D., T. Wellington Norris, Ph.D., and Lynne Marshall, Ph.D.

Further information on Audiology Update 1981 is available from:

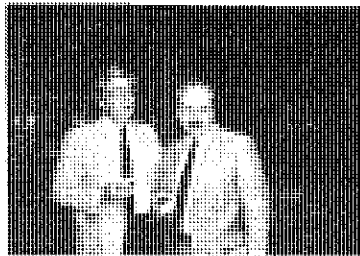
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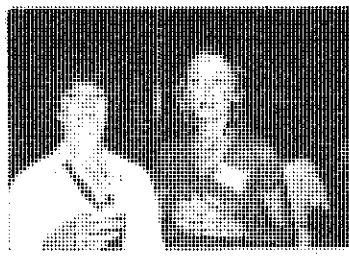
Left to right: Alan Feldman, Sue Shiftman



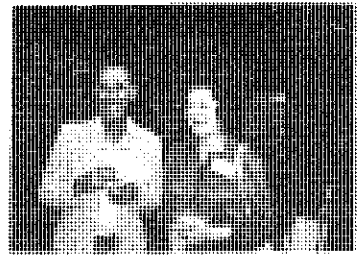
Left to right: Jack Willeford, Barbara Cass, Tom Grimes, Lynne Marshall



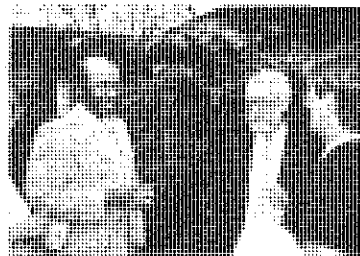
Left to right: Robert Balas, Richard Strand



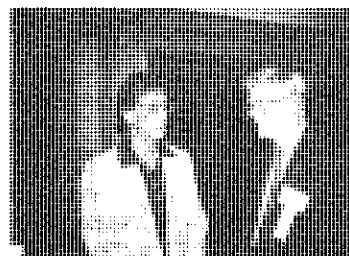
Left to right: Julie Davis, Marilyn Solana



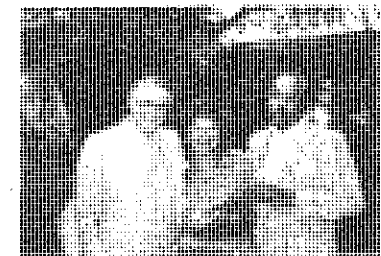
Left to right: George Lynn, Mary Rastatter



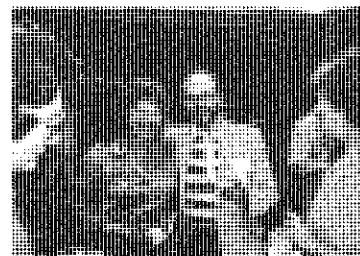
Left to right: Aaron Favors, John Peterson



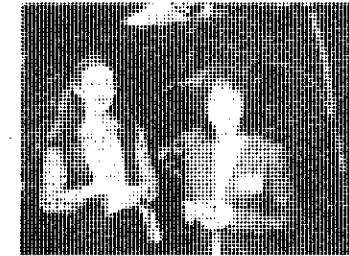
Left to right: Paul Skinner, Jack Willeford



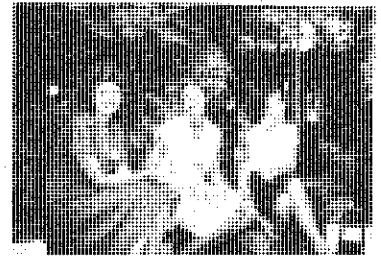
Left to right: Alan Feldman, Norma Rees, Aaron Favors



Left to right: Norma Rees, David Goldstein



Left to right: Carol Clobridge, Laurie DeWine



Left to right: Cynthia Ellison, Mary Van Cleave, Karen Van Doorne

AAS Papers

(Cont. from page 4)

Special Amplification for the Mentally Retarded: A Helmet-Mounted Hearing Aid

David A. Klodd, Leslie J. Block,
Jeff Higenbotham, and Terry Griffing.

ABSTRACT:

Diagnosing hearing loss and providing appropriate amplification for the mentally retarded is a problem encountered by audiologists. Amplification has generally been considered impractical for those individuals with self-abusive behavior. The paper gave a case report of the utilization of brainstem auditory evoked potentials for the diagnosis of hearing loss, and the development of a helmet-mounted hearing aid. Findings revealed an increased awareness to sound by the child and a reduction of his self-abusive behavior.

Children's Speech Discrimination in Noise

BRIAN M. SHAW and HOWARD M. GUTNICK
BOWLING GREEN STATE UNIVERSITY
BOWLING GREEN, OHIO 43403

Tests of speech discrimination, in a background of noise, have been investigated extensively in adults. Some recent investigations have shown that children who have learning or reading problems may show poor figure-ground ability. For example, one study showed that many learning-disabled children required better signal-to-noise ratios to achieve a speech reception threshold than did normal-hearing children.

Although normal children who are older than 6½ years have discrimination scores in quiet equal to those of adults, a significant difference may become apparent when the speech is combined with ipsilateral noise. Data for discrimination in noise of normal children using the CID W-22 word lists are not available. The purpose of this study, then, was to fill that gap.

The children were selected from an elementary school located in Bowling Green, Ohio. Ten children were selected from each of three age groups, 7, 9, and 11 years. Each child was within six months of his or her yearly age. Five of the children from each age group were boys and five were girls. All of the children had negative histories of hearing loss or middle-

ear problems as determined by a questionnaire sent home to the parents. When doubts arose, the parents were called to obtain more detailed information. Each child had thresholds which were at most 10 dB Hearing Level from 500 to 4000 Hz, type A tympanograms, and a crossed acoustic-reflex response to a 1000 Hz tone at 100 dB Hearing Level. All of the children passed the Goldman-Fristoe Test of Articulation.

The testing was done in a quiet room within the school, the same room in which the hearing screening was completed. An Auditec of St. Louis cassette tape recording of the CID W-22 word lists was used. The recorded lists were mixed with white noise that was generated by a Grason Stadler Model 162 speech audiometer and then fed to a TDH-39 earphone. The word lists were presented at 70 dB sound pressure level and the noise was varied accordingly to obtain signal-to-noise ratios of -9, 0, +9, and +18 dB. The order of presentation of the experimental conditions was randomized. The children were asked to repeat each word, even if they had to guess. Before testing, each child listened to 10 words, at a signal-to-noise ratio of +20 dB, in order to familiarize them with the task.

The data were analyzed statistically with a three-way repeated-measured analysis of variance. In order to make the variance homogeneous, the proportional scores were submitted to an arcsin transformation, and the ANOVA was done on the transformed scores.

The performances in percent correct of the 7, 9, and 11 year old boys and girls are plotted here as a function of signal-to-noise ratio. Please note that although the statistical analyses were done on arcsin-transformed data, we will present our graphs and tables in terms of percent correct, a more familiar and tractable unit. Several results are noteworthy. There were no significant differences due to the children's age. That is, the older children did not do better than the younger children as we had expected. Possibly for this task, the children's ability has matured by 7 years of age. In addition, the test may not have probed the children's semantic-closure skills, which have been linked to language skills and therefore expected to display maturational trends.

Oddly enough, we did note a significant main effect due to sex. The boys did better at each signal-to-noise ratio by about 4 percent. Although this was a statistically significant difference, we concluded that the difference was too small to be considered clinically relevant.

This is the growth function of the means and standard deviation, collapsed across age and sex. The function rises monotonically with a slope of 2.63 percent per dB. The 50

percent point of discrimination is at a signal-to-noise ratio of 7 dB, an interpolated value.

The data you saw on the previous slide are presented here in tabular form. The mean scores of 6 percent at -9 dB and 22 percent at 0 dB imply that the task was very difficult at these signal-to-noise ratios, and therefore, probably not of clinical value. The mean scores of 58 percent at +9 dB and 78 percent at +18 dB appear to be more appropriate in that they allow the child to perform well enough to stay interested. We recommend that clinicians select signal-to-noise ratios greater than +9 dB for this task.

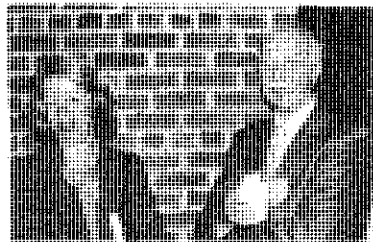
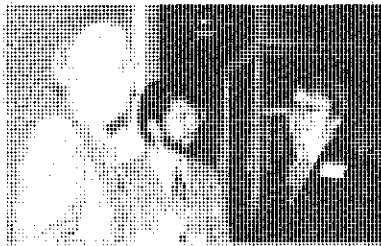
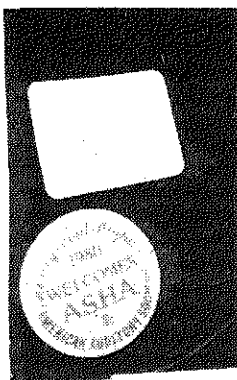
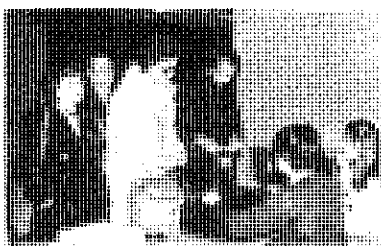
In line with this, expected scores at other often-used signal-to-noise ratios are presented in this table. These are interpolated or extrapolated values. Therefore, at +10 dB, we could expect a performance of approximately 62 percent; at 15 dB, 72 percent, and at 20 dB, 82 percent.

Thorton and Raffin, in 1978, proposed that the performance of open-response tests of speech discrimination can be modeled as a binomial variable. Although their model was devised to estimate an individual's true score from one equivalent list to another under different conditions, the model may be useful in this application. If the mean scores we measured are assumed to reflect the expected scores of normal-hearing children, then the model can be used to predict if a score measured on a client is significantly different than the score expected of normal-hearing children. For example, the overall mean performance was 58 percent at a signal-to-noise ratio of 9 dB. According to the model, the 95 percent confidence interval of the true score is from 40 to 76 percent. Therefore, one can say that a child who scores less than 40 percent for this condition has performed significantly below his or her peers. Of course, additional data using this test must be collected on children with learning disabilities, central auditory dysfunction or peripheral hearing loss in order to determine if their performance is significantly poorer than normal-hearing children and if that difference is clinically meaningful.

In summary, this study provides an articulation function of the Auditec of St. Louis version of the CID W-22 word lists in a background of white noise at various signal-to-noise ratios for normal-hearing children. The scores we obtained can be used as norms to compare the performance of children with learning or reading disabilities, central auditory dysfunction, or peripheral hearing loss. Until additional research is done, it is suggested that an extension of a binomial model, as used by Thorton and Raffin, in conjunction with the norms provided, can aid the clinician in making valid clinical judgments.

AAS Members and Others at the Annual Meeting

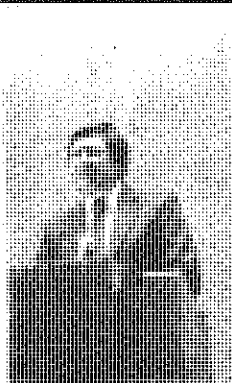
At Registration



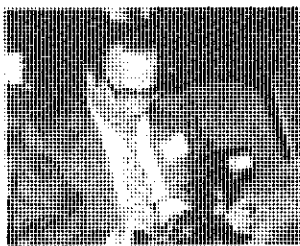
Speakers & Participants



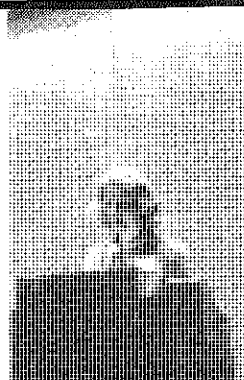
Program chairman Bruce Graham



Norm Charnick



Donald Radcliffe, editor of Hearing Aid Journal



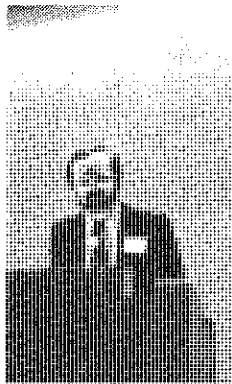
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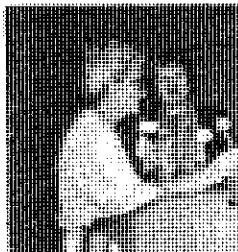
Wayne Straub



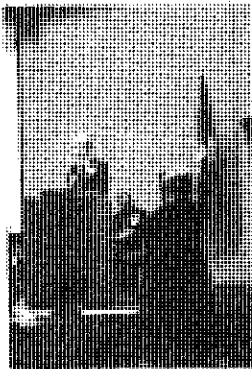
Barbara Franklin



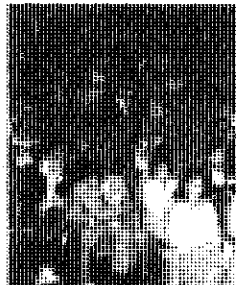
M.W. Valerio



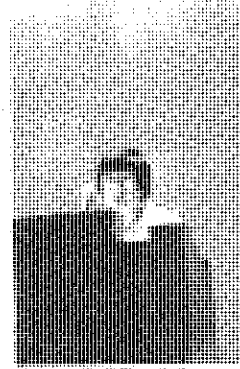
Marion Downs and President Wilber



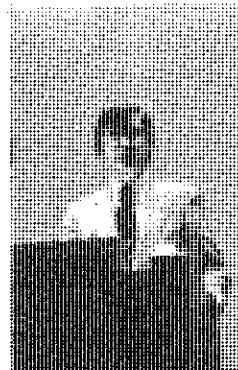
Irvin Gerling



Five participants



Gladis Friedman



Steven White

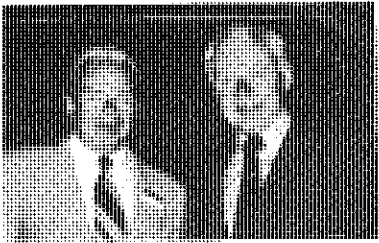
The Executive Committee



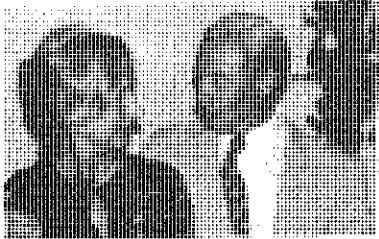
At Dinner



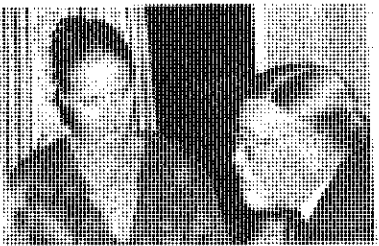
At the International Audiology Society Meeting



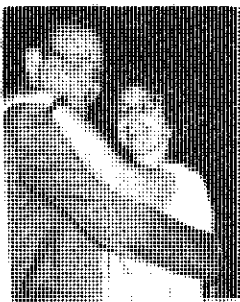
America's Jo Zwislowski with the Congress President, Jan Sekula of Cracow



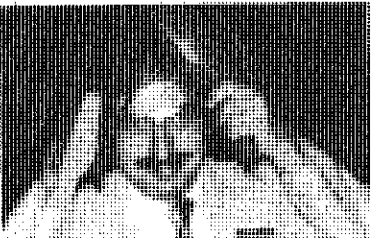
Jo Zwislowski, USA, with Polish otolaryngologist



Organizer Sandy Gerber at International Symposium on Management of Hearing Loss in Cracow



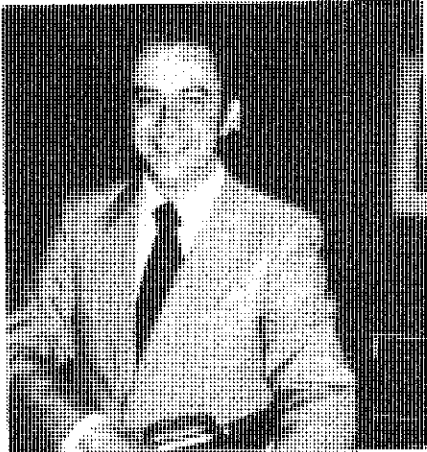
Co-organizer of Winnipeg conference, George Moucher, with wife Lenore, at Cracow



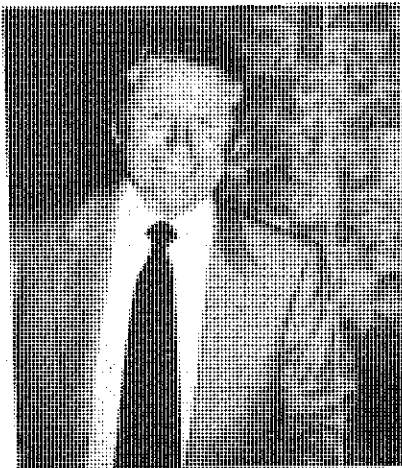
Organizer Sandy Gerber at International Symposium on Management of Hearing Loss in Cracow



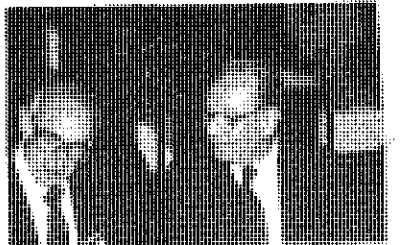
Sweden's Gonnar Liden at Cracow



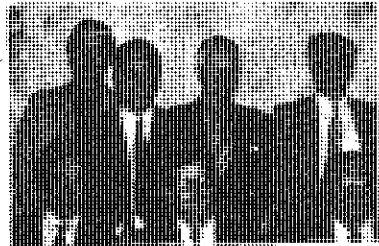
Mexico's Pedro Berruecos



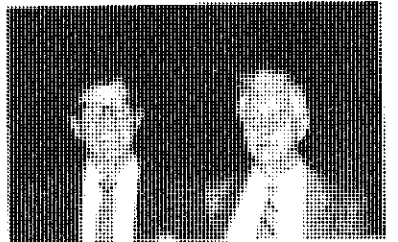
Switzerland's Ernest Koenig, editor of the journal



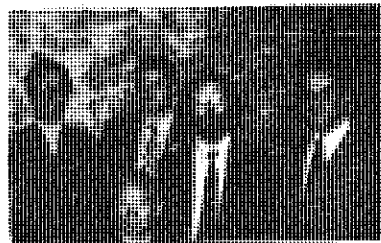
Moe Bergman of Israel with Bruce Siegenthaler, USA



Part of the Executive Committee. Dix Ward, president, is at lower right



Germany's Wolf Niemeyer and Denmark's Ole Bentzen, vice president

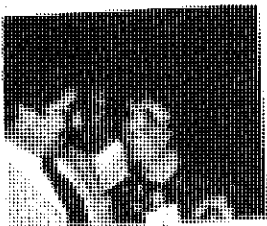


Part of the Executive Committee

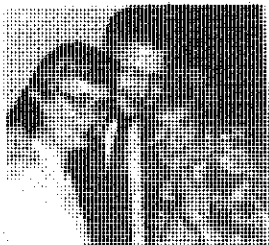


Society President Dixon Ward with Congress President Jan Sekula

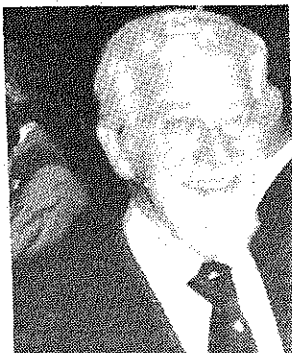
At the SENTAC Meeting



Sandy Gerber and Pat Hefferman, SENTAC



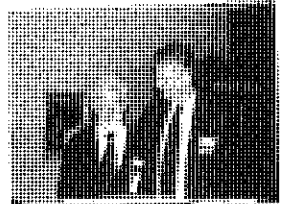
Bob Ruben with LaVonne Bergstrom and Marion Downs at SENTAC



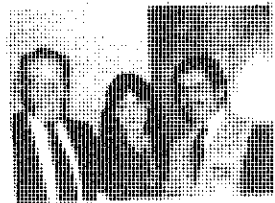
Dr. Goodhill spoke on the history of otitis media at the SENTAC meeting in Anaheim



Robin Cotton and Cuo Cuiberson at SENTAC



Victor Goodhill, guest speaker, with Robert Rubin at SENTAC



Garth Hemenway, Susan Grey and Sandy Gerber at SENTAC in Anaheim

Infant Auditory System (cont.)

less stop /p/ combined with the vowel (a). His results indicated that infants as young as 1 month of age are not only responsive to speech and able to make rather fine discriminations but that they are capable of perceiving voicing distinctions in a manner approximating categorical perceptions.

Later studies by Morse (14) confirmed the fact that infants as young as two months were able to process or perceive distinctions in a linguistically relevant manner, showing that categorical perception is present in infants before the onset of speech production. Morse investigated 2 month old infants' abilities to differentiate the voiced stops (b) and (g) in a speech context from the same second and third-formant transitions in a non-speech context. (The non-speech context was achieved by eliminating the entire first formant and the steady-state portions of the second and third formants.) Using the sucking paradigm he demonstrated that the experimental infants discriminated the speech sounds by increased sucking. They also recovered differentially from the control group who had heard the synthetic patterns. This, he felt, confirmed the linguistic relevance of their distinctions.

The theoretical considerations of the infant's ability to process a segmental unit of speech have occasioned a great deal of speculation. The arguments revolve around the fact that speech is a very complex code; transformation of the acoustic energy signaling speech to the perceptual event may not be a simple conversion mediated by an auditory decoder. Lieberman (2) states "The acoustic cues for successive phonemes are intermixed in the sound stream to such an extent that definable segments of sound do not correspond to segments at the phoneme level. Moreover, the same phoneme is most commonly represented in different phonemic environments by sounds that are vastly different. There is, in short, a marked lack of correspondence between sound and perceived phoneme. This is a central fact of speech perception." Lieberman believes that the perception of speech signals is mediated in some manner by central neural events, because infants have had no experience in the consistent articulation of phonetic distinctions. Therefore the ability must be a part of the native endowment of the human organism.

Other theories have been advanced by Stevens and Hale (16) and Stevens and House, (17) who presented an analysis-by-synthesis model presupposing that an internalized or computed auditory pattern is generated and compared with the stored pattern. But for this theory also the premise is that "perception requires knowledge of phonological rules that can map abstract features into articulatory events" (Eimas). So all theories lead to the inescapable conclusion that the infant enters this world with considerable knowledge of the phonological component of language.

Eimas points out that when one compares the degree of categorical perception of the VOT in infants with that of adults the degree does not appear to be age-related and therefore is unaffected by experience with language of either a perceptual or a productive nature. Eimas explains the infant's ability to differentially discriminate VOT differences by assuming these detectors are operative shortly after birth, and may be made functional by merely experiencing speech.

Whether the infants' detectors are activated shortly after birth as Eimas has suggested or whether they have become functional during inter-uterine life may be a relevant question to his theory. Four months of listening practice might facilitate in a way the categorical perceptions that are evident at birth. However, we suspect that if the same kinds of experiments could be made on the unborn fetus at five or six months gestational age categorical perception would be present and would demonstrate that detectors need only be activated by hearing speech in order to be fully functional. It remains for some zealous researcher to attempt to replicate these studies during inter-uterine life.

The fact that the infant is able to discriminate the acoustic features of speech means that he can segment an almost continuous acoustic input into discrete elements. This ability to process language into discrete elements is a basis for full language competence. The infant's ability to do this at the very beginning of language acquisition means that he does not have to learn that language is formed by discrete elements. The result is a facilitation of the language acquisition process and indeed the ability to break down discrete elementary language may even be requisite to its formation. The audiologist should note that the capacity to process language in discrete units would not be possible were it not for the damping effect of the structures of the cochlea. Were speech sounds — and indeed, any sounds — allowed to reverberate without hindrance in the ear the hair cells would not be able to discriminate the discrete frequency components of the speech sounds in a manner necessary to language perception.

Reflexive Rehearsal Activities

There appear to be a number of rehearsal activities that the infant is programmed to carry out. Meltzoff and Moore, (19) and Reddy and Rao (20) have described both manual and facial imitations in newborn infants — abilities which disappear shortly and reappear again at about a year of age. These researchers show such imitative movements as pursing the lips, opening the mouth, and even sticking out the tongue — all of which seem to be precursors of later speech and articulatory movements. The infant seems to be going through these imitative movements as a kind of rehearsal for later more consciously controlled speech activities.

Bower reviewed a number of early skills that are retrieved when they are required by the infant at a later time. He hypothesized that the reason that sensori-motor abilities disappear is that they are not exercised. He tested this hypothesis by

administering a selection of various tasks to infants only days or weeks old and gave them intensive practice in performing the tasks as soon as their abilities appeared. However, he found for example that the practice of ear-hand coordination in what he called Phase 1 actually accelerated the disappearance of the coordination and retarded its reappearance in Phase 2 (around a year old).

Bower attempted to explain this phenomenon in terms either of lack of motivation of the infant, or of the passivity of the auditory system. He maintained that although the infant can turn off its visual system by closing its eyes, it cannot turn off its auditory system even at night, but must listen to sounds 24 hours a day. Bower was obviously unfamiliar with the efferent fibers of Rasmussen (22) and the studies showing the ability of these efferent fibers to turn off the auditory receptors.

Another "rehearsal" function may well be the cooing and babbling activity that even deaf babies produce. Normally-hearing babies stop babbling at about 6 months of age, as do deaf babies. However, the normal baby again picks up vocalization around a year of age, and as any parent knows, never stops vocalizing from then on.

A more logical explanation of such abilities which appear, disappear, and then reappear would be that the Phase 1 appearance of the skill is a pre-programmed rehearsal of the activity or one might even say a "warm-up" of the system that allows the organism to be prepared for the later, more conscious reappearance of the skill. It is as if nature provides for a reflexive involuntary animation — a flexing of the linguistic muscles — in order to warm up the functions that will then lie dormant until the time comes for them to be put into permanent use.

Summary

There appear to be speech processing mechanisms available to the infant at birth and probably well before birth. The mechanisms require only the hearing of acoustic signals that have speech dimensionality to be activated. From an acoustic point of view these actions are reflexive, and possibly audiologists may be able to demonstrate that they comprise some sort of acoustic preadaptive signal-response activity. If so, they are the basis for the infant's utilization of its innate knowledge of language.

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CHABA (From p.6)

tical characteristics for tinnitus masking devices. A consequence of this review and evaluation should be the identification of areas in which future research will prove illuminating.

Additional projects which are planned in the immediate future are to develop working groups on presbycusis, techniques for aiding those with a hearing handicap, human response to the sonic boom, and development of a hearing compensation formula.

Starting fiscal year 1981, which commences December 1980, there will be two new sponsors of CHABA and the Committee on Vision, the Food and Drug Administration and the National Institute on Aging.

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Federal Building 31, Room 1C14
Bethesda, MD 20205
(301) 496-5061

NASA Representative:
Dr. Walton L. Jones
Director, Office of Occupational Medicine
NASA Headquarters, Code NIH-34
Washington, D.C. 20546
(202) 755-2206

(Continued on p.11)

CHABA (From p.10)

Army Representative:
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Research Psychologist
Department of the Army
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Fort Detrick, Frederick, MD 21701
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Office of Naval Research, Code 440
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CHABA PROJECTS SUPPORTED BY OUTSIDE FUNDS

Occasionally a sponsor (or, now and then, a federal agency that is not currently a sponsor) will request an activity of CHABA that cannot be conducted within the fiscal constraints of the core funding. Whenever this happens an independent committee is usually established with its own study director for the purpose of satisfying the request. Some examples of this in the past are the Committee on the Evaluation of Sound Spectrograms. This committee was established at the request and sponsorship of the Federal Bureau of Investigation. They were concerned with the validity and reliability of voiceprints. It was clear to CHABA that this activity would go far beyond the usual working group constraints in both time and cost, so an independent committee was established with its own study director. This led to the publication of a report entitled "On the Theory and Practice of Voice Identification." On another occasion, the Environmental Protection Agency asked for assistance concerning transportation noise and its societal consequences. Again a Committee was established entitled the Committee on Appraisal of Societal Consequences of Noise Abatement and developed a report entitled "Noise Abatement: Policy Alternatives for Transportation." Similarly, the Federal Aviation Administration came to CHABA and asked for assistance in evaluating the community response to the Concorde as it first flew into Dulles Airport. Again a committee was established with its own study director. It was the Committee on Community Reactions to the Concorde and it published a report entitled "Community Reaction to the Concorde: An Assessment of the Trial Period at Dulles Airport."

On other occasions CHABA has seen fit to work with an independent established Committee of the National Research Council and provide what inputs they can to that Committee. A good example of this would be the Committee on SST-Sonic Boom. CHABA staffed the Subcommittee that was concerned with human response to the sonic boom.

Other segments of the Committee considered problems such as response of buildings and structures to the boom, the possibility of alleviating the boom through aerodynamic modifica-

tion, the insurance risks involved, the financial problems in federal funding of the prototype development of the supersonic transport, etc. Early on, CHABA answered a question concerning whether the sonic boom would damage hearing by stating flatly that it was two orders of magnitude lower than the level of an impulse required to damage hearing. In this case CHABA came out in what might be considered a favorable posture toward the aircraft industry and the development of the SST. A few months later when the research report on the FAA supersonic overflights of Oklahoma City was made available, CHABA members read this report with interest and stated that the Supersonic Transport, as designed with a 2.7 psf cruise boom, would not be tolerated by a large percentage of the population. Therefore, the SST should be considered only for transoceanic flights, not transcontinental. This position was held rigorously by the CHABA members on the sonic boom committee and it was only after three years that the parent committee agreed and the resulting statements by the committee, based in large part on the response of people, augmented the decision of the federal government not to fund the development of the prototype SST, since it would not be cost beneficial for transoceanic use alone.

On several occasions CHABA has accepted incremental funding from NASA of approximately \$20,000 per year to conduct a series of meetings that were held about every two years. These meetings led to publication of the First, Second, Third, Fourth, and Fifth Symposium on the Role of the Vestibular Organs in Space Exploration, a series still considered to be of great value.

As an example of another kind of non-core funding, CHABA accepted an additional \$20,000 from NINCDS for the purpose of funding a supervisory working group to guide an individual scientist who spent six months doing a comprehensive review entitled "Noise and Children: A Review of the Literature."

CHABA plans to continue such projects and cooperative efforts in the future.

Decibel (From p.5)

sion has ruled. OSHRC relieved Duriron, Inc., of responsibility for citation alleging a serious violation of the occupational noise standard because the company "made reasonable efforts to protect its employees from excessive sound levels" that could not be alleviated by engineering controls.

One can easily see that the proper selection, fitting, and use of ear protectors is not the simple task that many assume it to be. Further, we cannot accurately predict how much protection will be afforded a wearer unless he is properly evaluated with and without plugs in a sound field. Consequently, proper fitting could cost considerable money. This aspect of "Hearing Conservation" has not yet been subjected to cost analysis.

There is one other factor that makes many of us view blanket use of ear protectors with extreme caution. A number of us working in Industrial Hearing Conservation programs have seen an increase in outer ear infections in those industries that involve a dirty work environment and whose employees continuously use some type of ear plugs for protection; and for those who use ear muffs and work in hot environments. Furthermore, the wax buildup is becoming an ever-increasing problem for those who use ear insert protectors. The plugs seem to "push back" the wax in the canals and retard its normal movement to and elimination at the concha. Cautious use of ear protectors, cleanliness and a sterilization program would solve some of this problem. But again, at what cost and at what level of efficiency?

These are things we know about ear protectors, and we are learning more each day. We also know that continued exposure to noise will cause permanent loss of hearing acuity. What we don't know is actually how much noise, over what period of time, in what environment, what type of noise, and to whom it will cause damage. More ammunition for the battle!

We know some of the answers but even these are vague. One of the major problems in setting criteria for protection of the employee is that there is a tremendous difference between the susceptibility of one over another. Dr. Aram Glorig, who has been involved in Industrial Audiology longer than most of us, refers to "hard," "soft" and "normal" ears in regard to the damaging effect noise has on different people (2). There is also a tremendous difference in the noise one finds in industry and the way it affects different people.

One of the reasons we cannot state without hesitation what is damaging and to whom, is that we are restricted in experimenting with humans. The other primary handicap is that long range studies on large groups of workers are difficult because our population is mobile and prone to change jobs over prolonged periods of time. Hopefully the questions of who, what, where, when and why in regard to noise will be answered in the future, but it will be a long process.

The major study that many thought would answer some of these questions was the Inter-Industry Noise Study referred to earlier. Unfortunately it got underway at a time of recession and job instability. The results of the study were looked forward to by industry for it was speculated they would show that noise may not be as devastating a factor in employee health; or at least, would produce clean cut guidelines for solving our decibel dilemma. Yet now that the first part has been concluded rest assured that its reliability will be attacked with vigor. We quote from the summary of the study that appeared in the Journal of Occupational Medicine in May 1978 (20):

Within the range of 82 to 92 dBA, differences in noise intensity had no observable "effect" on hearing level. That is, the hearing levels of workers at the upper end of the noise intensity exposure were not observa-

bly different from the hearing levels of workers at the lower end of the noise exposure. Age was a more important factor than duration on the job in explaining differences in hearing level within any group. Comparison between experimental and control subjects were made on an age-adjustment basis.

Differences between females exposed to 82 to 92 dBA and their controls were small and were statistically significant at 500, 100, and 2000Hz. Levels in the noise-exposed group significantly exceeded those in the control group at 3000, 4000, and 6000Hz by approximately 6 to 9 dB. At 8000Hz, differences again became not significant.

There was no real evidence of a difference between noise-exposed workers and their controls with respect to the changes in hearing levels during the course of their follow-up one and two years after initial audiograms. Changes were negligible for both groups.

Interestingly enough the editorial by Robert B. O'Conner (19) that followed the study ended with:

The dispute continued as to whether the standard for control of noise to prevent hearing loss should be set at 90 dB or 85 dB. From this study it appears that 90 is as protective as 85, as far as women's hearing is concerned. In the case of men, if a small amount of hearing loss in frequencies that are well beyond the speech range is considered unacceptable, then this study supports a standard of 85 dB.

Only time will tell whether our decibel will be allowed to leave the battlefield. Unfortunately past experience indicates that the battle will be prolonged until we have more specific data on which to declare peace. Until then — let's at least try not to add to the din!

P.S. The Battle of the Decibel was ended on January 13, 1981, when the Occupational Safety and Health Administration approved the final requirements for hearing conservation. Historians will now devote their efforts to deciding who won and who lost.

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**AAS ANNUAL
MEETING
NEW ORLEANS
NOV 21st**

CALENDAR OF EVENTS

March 1981 22-27

2nd INTERNATIONAL CONFERENCE ON CHOLESTEATOMA AND MASTOID SURGERY, Hilton Hotel, Tel Aviv, ISRAEL. Sponsor: The Tel Aviv Univ., Sackler Sch. of Medicine, the Weizmann Inst. of Science and the Univ. of Minnesota, Dept. of Oto. Fee: \$280 U.S.; Residents/Fellows \$140; Extra Persons \$100. 22 hrs. AMA Category I credit. CONTACT: The Secretariat, 2nd International Conference on Cholesteatoma and Mastoid Surgery, P.O. Box 16271, Tel Aviv, ISRAEL/call 03/255367.

23-25

CURRENT CLINICAL CONCEPTS IN OTOLARYNGOLOGY 1981, Eden Roc Hotel, Miami Beach, FL. * Sponsor: University of Miami School of Medicine, Dept. of Otolaryngology. 15 hrs. AMA Category I credit. Chairman: James R. Chandler, M.D. CONTACT: Betty Howard, Univ. of Miami School of Medicine, Div. of CME D23-3, P.O. Box 016960, Miami, FL 33101/call 305-347-6716.

* (In conjunction with Pan-American Symposium on Trauma of the Head and Neck.)

27

COMMUNICATION DISORDERS, New York, NY. Sponsor: The Dept. of Otolaryngology and the Page and Wm. Black Post-Graduate School of Medicine. Asher Barr, Ph.D., and Guest Lecturers. Fee: \$35.00. 7 hrs. AMA Category I credit. CONTACT: Director, The Page and Wm. Black Post-Graduate School of Medicine, Mt. Sinai School of Medicine, One Gustave L. Levy Pl., New York, NY 10029/call 212-650-6737.

27

HEALTH CARE DELIVERY FOR DEAF PATIENTS, Washington, D.C. Co-sponsors: The Catholic University of America and Gallaudet College. CEU through The Catholic University of America School of Nursing. CONTACT: Connie H. Knight, or for Registration Information, Terri Baker, The National Academy of Gallaudet College, Kendall Green, Washington, D.C. 20002/call 202-651-5480.

29

1ST INTERNATIONAL SYMPOSIUM OF RECENT ADVANCES IN EAR SURGERY, Palestine Hotel, Alexandria, EGYPT. Sponsor: Alexandria School of Medicine. Chairman: A. Belal, Jr., Assoc. Prof., ORL Dept., Alexandria School of Medicine, Alexandria, Egypt/phone Alexandria 42845.

APRIL 1981

3-4

ENG INTERPRETATION, San Diego, CA. CONTACT: Marion Servos, Instrumentation and Control Systems, Inc., 520 Interstate Rd., Addison, IL 60101/call 312-543-6200.

25-May 3

DIVING MEDICINE IN DEPTH: AN ADVANCED PROGRAM, Flamingo Beach Hotel, Bonaire, Netherland Antilles. Prerequisite is attendance at Basic Program, 28 hrs. AMA Category I. Sponsor: Human Underwater Biology, Inc., and the Undersea Medical Society. Fees: \$350 for academic program; other rates vary. 30 hrs. AMA Category I credit. CONTACT: Program Coordinator, Dept. M-101, Human Underwater Biology, P.O. Box 5893, San Antonio, TX 78201/call 512-492-9395.

26-May 2

POSTGRADUATE COURSE IN EAR SURGERY, Nijmegen, the NETHERLANDS. Sponsor: Ear, Nose and Throat Dept. of the Univ. of Nijmegen. CONTACT: Prof. P. van den Broek, Philips van Leydenlaan 15, 6500 HB Nijmegen, the Netherlands.

MAY 1981

2-9

HEARING HEALTH CARE TEAM CONFERENCE, Caribbean Cruise from San Juan on the Sun Princess. Sponsor: Dept. of Speech Communication, Oregon State Univ. CME credit available. CONTACT: Paul J. Willoughby, Ph.D., Cruise Coordinator, 12389 N.W. Kearney, Portland, OR 97229/call 503-228-9497 or 646-8628.

8-15

COMBINED OTOLARYNGOLOGICAL SPRING MEETINGS, The Bayshore Inn, Vancouver, B.C., Canada. The following societies will be participating:

May 8 The American Society of Ophthalmologic & Otolaryngologic Allergy
May 8 The American Neurotology Society
May 9-10 The American Otological Society
May 10-11 The American Laryngological Association
May 11-12 The American Broncho-Esophagological Association
May 12-14 The Triological Society
May 13-15 The American Academy of Facial Plastic & Reconstructive Surgery
CONTACT: Harry W. McCurdy, M.D., COSM Coordinator, The American Council of Otolaryngology and Head & Neck Surgery, 1100-17th Street, N.W., Suite 602, Washington, D.C. 20036/call 202-659-4591.

15-16

NEW DEVELOPMENTS IN NEUROLOGY AND OTOLARYNGOLOGY, Springfield, IL. Sponsor: Div. of Oto., Dept. of Surgery, Southern Illinois University School of Medicine. 14 hrs. AMA Category I credit. CONTACT: Horst R. Konrad, M.D., Chairman, SIU School of Medicine, Dept. of Surgery, P.O. Box 3926, Springfield, IL 62708/call 217-782-5880.

23

HEALTH CARE DELIVERY FOR PATIENTS, Philadelphia, PA. Co-sponsors: The Catholic University of America and Gallaudet College. CEU through The Catholic University School of Nursing. CONTACT: Connie H. Knight, or for Registration Information Terri Baker, The National Academy of Gallaudet College, Kendall Green, Washington, D.C. 20002/call 202-651-5480.

25-26

CONTROVERSIES IN OTOLARYNGOLOGY, New York, NY. Sponsor: THE Dept. of Otolaryngology and The Page and Wm. Black Post-Graduate School of Medicine. Course Director: Frank E. Lucente, M.D. Fee: \$225; Residents and House Staff \$125. 14.5 hrs. AMA Category I credit. CONTACT: Director, The Page and Wm. Black Post-Graduate School of Medicine, Mt. Sinai School of Medicine, One Gustave L. Levy Pl., New York, NY 10029/call 212-650-6737.

JUNE 1981

10-13

THE 5TH ANNUAL FITZ-HUGH SYMPOSIUM: PEDIATRIC OTOLARYNGOLOGY. The Boar's Head Inn, Charlottesville, Va. CONTACT: University of Virginia School of Medicine, Box 368-Medical Center, Charlottesville, VA 22908.

11-13

PEDIATRIC OTOLARYNGOLOGY '81, Galveston, TX. Sponsor: Dept. of Oto., University of Texas Medical Branch, Galveston. Fee: \$180. 20 hrs. AMA Category I credit. Guest Faculty: Drs. Robin Cotton and Sylvan Stool. CONTACT: Chairman, John K. Jones, M.D., Dept. of Oto., Univ. of Texas Medical Branch, Galveston, TX 77550/call 713-765-3633.

AUGUST 1981

2-6

F.T. HILL 22ND ANNUAL SEMINAR IN OTOLARYNGOLOGY, Waterville, ME. Sponsor: Colby College and the Mid-Maine Medical Center. Fee: \$270. CONTACT: Colby College, Mayflower Hill, Waterville, ME 04901.

5-7

GREAT DEBATES IN OTOLARYNGOLOGY, Seattle, WA. Sponsor: Univ. of Washington in cooperation with Washington State Medical Association. CONTACT: Univ. of Washington, Div. of CME, SC-50, Seattle, WA 98195.

SEPTEMBER 1981

21

ANNUAL MEETING OF THE AMERICAN AUDITORY SOCIETY, New Orleans, La. (See Page 1 for details.)

20-23

AMERICAN ACADEMY OF OTOLARYNGOLOGY AND HEAD AND NECK SURGERY ANNUAL MEETING, New Orleans, LA. CONTACT: Ruth C. Enquist, Director of Meet-

ings and Membership, AAO, 15 Second St., Rochester, MN 55901/call 507-288-7444.

NOVEMBER 1981

20-23

AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION NATIONAL CONVENTION, Los Angeles, CA. CONTACT: Frances J. Johnston, Ph.D., Director, Convention and Meetings Div., American Speech-Language-Hearing Association, 10801 Rockville Pike, Rockville, MD 20852/call 301-897-5700.

MAY 1982

1-8

COMBINED OTOLARYNGOLOGICAL SPRING MEETINGS, The Breakers, Palm Beach, FL. CONTACT: Harry W. McCurdy, M.D., COSM Coordinator, American Council of Otolaryngology and Head and Neck Surgery, 1100-17th St., N.W., Suite 602, Washington, D.C. 20036/call 202-659-4591.

OCTOBER 1982

17-20

AMERICAN ACADEMY OF OTOLARYNGOLOGY AND HEAD AND NECK SURGERY ANNUAL MEETING, New Orleans, LA. CONTACT: Ruth C. Enquist, Director of Meetings and Membership, AAO, 15 Second St., Rochester, MN 55901/call 507-288-7444.

APRIL 1983

9-16

COMBINED OTOLARYNGOLOGICAL SPRING MEETINGS, The Fairmont, New Orleans, LA. CONTACT: Harry W. McCurdy, M.D., COSM Coordinator, American Council of Otolaryngology and Head and Neck Surgery, 1100-17th St., N.W., Suite 602, Washington, D.C. 20036/call 202-650-4591.

OCTOBER 1983

23-27

AMERICAN ACADEMY OF OTOLARYNGOLOGY AND HEAD AND NECK SURGERY ANNUAL MEETING, Anaheim, CA. CONTACT: Ruth C. Enquist, Director of Meetings and Membership, AAO, 15 Second St., Rochester, MN 55901/call 507-288-7444.

NOVEMBER 1983

18-21

AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION ANNUAL CONVENTION, Cincinnati, OH. CONTACT: Frances J. Johnston, Ph.D., Director, Convention and Meetings Div., American Speech-Language-Hearing Association, 10801 Rockville Pike, Rockville, MD 20852/call 301-897-5700.

MARCH 1984

5-9

7TH SHAMBAUGH WORKSHOP ON OTOMICROSURGERY AND THE 4TH SHEA FLUCUANT HEARING LOSS SYMPOSIUM, Northwestern University's Thorne Hall, Chicago, IL. CONTACT: National Hearing Assoc., 1010 Jorie Blvd., Suite 308, Oak Brook, IL 60521/call 312-323-7200.

MAY 1984

5-12

COMBINED OTOLARYNGOLOGICAL SPRING MEETINGS, The Breakers, Palm Beach, FL. CONTACT: Harry W. McCurdy, M.D., COSM Coordinator, American Council of Otolaryngology and Head and Neck Surgery, 1100-17th St., N.W., Suite 602, Washington, D.C. 20036/call 202-659-4591.

OCTOBER 1984

16-20

AMERICAN ACADEMY OF OTOLARYNGOLOGY AND HEAD AND NECK ANNUAL MEETING, Las Vegas, NV. CONTACT: Ruth C. Enquist, Director of Meetings and Membership, AAO, 15 Second St., Rochester, MN 55901/call 507-288-7444.

NOVEMBER 1984

16-19

AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION ANNUAL CONVENTION, San Francisco, CA. CONTACT: Frances J. Johnston, Ph.D., Director, Convention and Meetings Div., American Speech-Language-Hearing Association, 10801 Rockville Pike, Rockville, MD 20852/call 301-897-5700.

AAS ANNUAL MEETING — NOV. 21st

Abstracts and Papers
From The
Vail Workshop
On Pg. 3

1980 Directory
Complete
In This Issue
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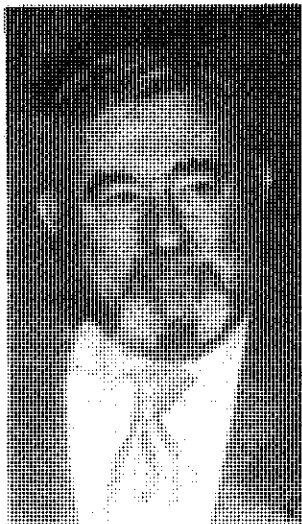
Vol. 5, No. 2

Spring, 1980

I Remember :

The International Audiology Society

By Aram Glorig



Aram Glorig

Since this is the year for the International Audiology Society to meet, it is appropriate that perhaps a short history of this society be published by the younger society known as the American Auditory Society.

When I first approached this task, I thought that it would be rather easy to do, but having written to quite a number of members of the society who were knowledgeable about its beginning, I find it is much more difficult than I expected, particularly if it is to be accompanied by photographs etc., which make the article much more interesting.

Consequently, in order to meet a deadline for the April

issue, Marion has asked me to write a short and brief history taken from my own memory and from a few suggestions here and there. You will probably all remember—that is, those of you who are gray haired enough—that audiology had its beginnings in the Army hospitals during World War II and certainly, shortly after World War II ceased. My first contact with any organized activity as far as audiology was concerned, was in 1946 when I became Director of the newly formed Walter Reed Army Hospital Audiology and Speech Correction Center. Shortly after this, as a matter of fact in 1948, the first conference on audiology was held in Stockholm in September. At that time there was no organized society, but quite a few well known individuals in the field of audiology gathered together for a conference under the immediate sponsorship of Gunnar Holmgren of the Karolinska Institute in Sotockhom, Sweden. The conference participants were men like Carhart, Canfield, Glorig, Homlgren, Johansen, and Bill Hardy. I believe Dick Silverman and Hal Davis were there also.

The year 1948 marks the beginning of the International Audiology Society, but it was not actually organized as a society until 1952. Prior to that there were conferences on audiology and courses in audiology.

Some of the material I have includes notes on some very interesting events. In 1948, under the initiative of Prof. Holmgren, 40 participants representing 16 countries attended the conference which I mentioned above. In 1959, it was decided that a committee which had been appointed in 1948 to study the problem of organizing audiology should be enlarged, but it was not thought at that time that the founding of a "great society" was yet appropriate. In 1951, again under the initiative of Prof. Holmgren, 40 teachers with 200 participants from 23 different countries attended a second course in Sweden. In 1950, the first executive committee of the society was chosen. The President at that time was Prof. Lüscher, Vice President was Prof. Tato, Prof. van Dishoeck, and Prof. Langenbeck.

(cont. on page 2)

Graham, et al Calls For Papers-Downs is Carhart Lecturer

The annual meeting of the American Auditory Society will be held from 9 to 5 on Thursday, November 20, 1980, in the Buerki Auditorium of Henry Ford Hospital in Detroit, just prior to the American Speech, Language and Hearing Association convention.

The theme is The Hearing Impaired: Rehabilitation Routes. Papers concerning possible medical, surgical, educational or amplification approaches to rehabilitation are hereby invited. Clinical research experiences, basic research studies, however remote, if they have long range implications for rehabilitation of the hearing impaired, including children or adults are solicited.

A strict 12 minute time period will be allotted for each presentation with a three minute discussion following. Please submit a 75 word abstract of the proposed presentation to:

A. Bruce Graham, Ph.D.
Division of Audiology, Speech and Language Pathology
Henry Ford Hospital
2799 West Grand Boulevard
Detroit, MI 48208

The other Program Committee members are Michael Paperella and William Ely. The original deadline for receipt of abstracts was May 20, 1980, but has been extended to June 10, 1980. Mrs. Marion Downs, professor of audiology at The University of Colorado Medical Center in Denver, and Editor of Corti's Organ has been chosen as this years Carhart Memorial Lecturer. Complete details and a preliminary program, will be published in the Summer/Fall issue of Corti's Organ.



Mrs. Marion Downs

When one enters a new decade, one tends to set back and look at where one has been and/or try to decide where one should go. Neither the American Auditory Society nor I happen to be at the end of our personal decades, however, it does seem as we begin the 1980's that as a Society we might look forward to some of the problems and some of the possibilities of the next decade.

Since my crystal ball is, as usual, underneath a pile of papers on my desk it is difficult to be sure what the future will hold. But a few thoughts come to mind which I would like to share with you. Your projections and prognostications may be different, but maybe our thoughts will overlap.

It seems to me that one problem which still faces us is lack of good communication. Clearly one of the aims of the American Auditory Society has been to draw together individuals from the various disciplines which are concerned with hearing and hearing impairment. Our society has provided a forum for (note alphabetical listing) audiologists, members of the hearing aid industry, and physicians (otologists, otolaryngologists and others) to talk together, to listen together and to learn together. In most instances it has seemed to me that communication has been facilitated and that the members of our society have been able to communicate openly and well with one another. Most of the sniping which has occurred among our disciplines has tended to occur outside of this society. It seems, therefore, that we should use our society as a place where members, regardless of discipline or background, can exchange information and ideas to better learn how to help the hearing impaired. It has been noteworthy that this society has tended to be more interested in scientific presentations, (along with skiing, travelling, and partying) than in territorial rights. I hope that state prevails during the next decade and beyond. The edge of my crystal ball (hiding under CORTI's Organ) suggests that will happen.

From a professional viewpoint, the next decade should be one in which we begin to make more and more breakthroughs in the area of rehabilitation. Tremendous advances have been made in the last two decades in the definition of hearing impairment and in medical and surgical treatment for hearing loss. No doubt advances in these areas will continue during the next decade. The precision with which the site of the hearing problem can now be identified, and the definition of that problem appears to be increasing geometrically. However, within the last decade we have again begun to pay more and more attention to the individual whose hearing loss cannot be treated medically or surgically with current techniques. Al-

(cont. on page 3)

SPECIAL PROMOTIONAL ISSUE

JOIN UP!

Become a member of the
American Auditory Society

Fill out the form on page 19
for application for membership

Tours of International Audiology Congress Details on pg. 23



Dr. Laura Wilber, new President of AAS and Head of the Program in Audiology and Hearing Impairment at Northwestern University.

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Editorial:

It's sad to think that a whole generation of audiologists and otologists has grown up without knowing about the early contributions of such organizations as the International Audiology Society and the Committee on Hearing and Bioacoustics of the National Academy of Sciences. In this issue Corti's Organ begins to remedy that gap in the education of the new generation, and will continue in the next edition.

What was mind-blowing to those who participated in early International Audiology Congresses was to learn to know personally some of the giants of early Audiology and Otolaryngology. The Americans: Glorig, Carhart, Davis, Silverman and Hirsh represented towers of intellect, innovation. The Europeans too were unique; most combined otology with audiology: the imposing patrician Dr. Lüscher of Switzerland, the jolly and immensely effective Dr. Van Disboeck of Holland; the august and dignified Dr. Wohlstein of Germany; the gentle, concerned Henk Huizing of Holland; (Huizing and E. König of Switzerland (Editor of Audiology) were the two physicists - turned - audiologists); the handsome and impressive Drs. Portmann from France, pere et fils et femme; the fun-loving, aristocratic Swedes, Drs. Barr, Holmgren and Wedenberg; the intellectual Dr. Werth of Israel who was the efficient medical officer in charge of health during the siege of Jerusalem; Drs. Berruocos of Mexico and Tato of Argentina, who furnished the Latin flavor; the charming, humane Dr. Edith Whetstone of England - and a host of other marvelous characters.

The International Congresses comprise a United Nations of Audiology - a forum where audiological activities in other countries are quickly assimilated, and the fellowship between nations bespeaks One World. It is worth attending at least once in a lifetime.

Who knows? World Fellowship may become addictive. Try it.
MPD/RJR



Letters from England

(The following letter was not able to be published in the fall issue, but is belatedly presented for interest)

Dear Editor,

The arrival of Corti's organ has remained a most pleasant occasion and the last issue was no exception. Profusely illustrated it revived some enjoyable memories of many friends and of the Columbus meeting I have reported on before. What a tragic loss that our Guest of Honour at that meeting the great, in every respect, Sven Ingelstedt has died and will no longer enliven our meetings. He will be sadly missed.

Mr. Ear, as you call Dr. Glorig adds lustre to any occasion and looks handsome and impressive in his photograph. Your Foreign Editor on the other hand in regard to his own picture, could not help recalling Oscar Wilde's comment: "I have no objection to the truth but I would have preferred a little flattery"...

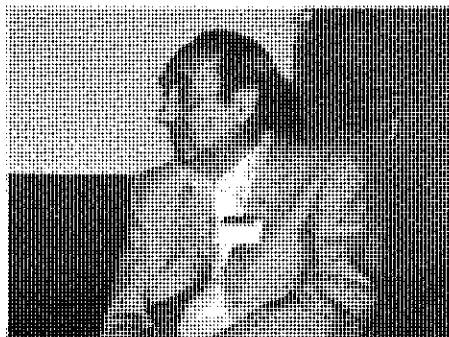
Incidentally there was a mistaken identity in your first photo showing in fact not Dr. Wilson but Berny Colman from Oxford. There was a stimulating Course organized by our Oxford colleagues in July before the most successful British Academy meeting in Birmingham. At the Oxford meeting Professor Taylor from Manchester University the world famous audiologist delivered the second LIVINGSTONE Memorial lecture. The late Gavin Livingstone, as you know, developed some new methods for the reconstruction of the closed or malformed external ear.

Talking of meetings we have just come back from a most enjoyable meeting of the Collegium Otolaryngologicum Amicitiae sacrum held in Budapest in September and attended by about 120 members but only few from the USA. Immunology and its role in otology was ably presented under the chairmanship of the President of the meeting Professor L. Surjan from Budapest and his team (including his son a pathologist). Professor Naumann from Munich and the prolific Professor Palva from Helsinki were other contributors to this important topic.

The fine weather and excellent organization contributed to the success of the conference in the splendid Hilton, and gave the opportunity for the renewal of old friendships, a most important function of the Collegium.

A highlight of the meeting was Don Harrison's description of the larynx of the Giraffe (a tall story?).

We shall be looking forward to the next meeting in San Francisco (if we can afford it) and the following Symposium in Electron microscopy of the ear to be held at my second alma mater the splendid Ear Research Institute in Los Angeles. The response to Bill House's call for papers has been excellent.



Imre Friedmann

I Remember...

The Secretary General was Dr. Trenque. Members of the committee were Michelle Arslan, Raymond Carhart, Terrance Cawthorne, Dr. Clere, Hollowell Davis, Harold Ewertsen, Aram Glorig and H.C. Huizing.

Similar notes that I have run across are very interesting. A few of these follow: Gunner Holmgren in 1950 stated that audiology is a new term, early used by W. Hargrove, Norton Canfield, Raymond Carhart and Hollowell Davis. In 1948, Norton Canfield said "Audiology considers everything that can be said to be of aid or detriment to life from sounds which can or should be heard." Again in 1950, Gunnar Holmgren said that "Audiology involves and presupposes team work between several different branches of science; anatomy and pathology, physiology and neurophysiology, physical acoustics, psychology and psychiatry, social sciences, and first and last, otology, the science of ear diseases which is the central and leading branch in this comprehensive team work." These things were said approximately 30 years ago and I do not think that the concept that they express has changed in principal over the 30 years.

The Journal of the International Audiology Society also has a very interesting beginning. In 1952, there were two volumes printed, in 1954 only one, three in 1955, one in 1956 and then in 1964 the journal was changed in terms of the editor who was Prof. van Dishoeck and published in Leiden, Holland. The new editor appointed was Ernest König and the new publisher was S. Karger located in Basel, Switzerland. I think that it would be safe to say that the journal has become an international

I have to end on a very sad news of the death of the Doyen of British audiology and otological pathology Dr. C. S. Hallpike. Others more competent than I will pay tribute to his great work. I have been encouraged by his great interest in the pathology of the inner ear and his entirely scientific approach to its problems.

That wonderful man Pope John Paul the Second has been speaking of peace and reconciliation everywhere. Why is it so difficult to achieve. Sacred friendship, the motto of the Collegium, should be our goal too.

I. Friedmann
London, Autumn 1979

My dear Editor,

A previous letter may not have reached you with my congratulations to Dr. Glorig's awards and honours, so well merited by his pioneering contributions to audiology and his continued research work at the Ear Research Institute. Ad multos annos!

The last issue of Corti's Organ brought back most pleasant memories of the Columbus Symposium marred only by the knowledge of the death of our great friend Sven Ingelstedt. His vitality and energy will be sadly missed at all our meetings.

Talking of meetings I have referred briefly to the stimulating conference of the Collegium in Budapest last September under the able Presidency of Dr. L. Surjan who will also be presiding over the next International Congress to be held in Budapest in 1981 which it is hoped all will be able to attend.

Otolaryngology has come a long way since my joining the racket and the list of meetings, workshops gets longer every year. Your workshop in Vail may rightly be called the 'original Winter meeting' which has stimulated various flattering imitations.

British otology has long been focused on the Royal Society of Medicine in London. Always well attended it is going to remain the centre of meetings. Nevertheless the enhanced interest in this field has encouraged the organization of a new Research Society and of several Courses e.g. the 2nd Cambridge Course in Advanced Otolaryngology in July, 1980 and Courses in Pathology at the Institute of Otolaryngology and in Manchester.

Credit in all this is due to the pioneers of British otology, prominent among them, Dr. Charles Skinner Hallpike, C.B.E., F.R.S., F.R.C.S., who died, aged 79, last year. He was an authority on hearing with an international reputation. As Director of the Medical Research Council's otological research unit he contributed greatly with his co-workers, Hood, who has succeeded him, and Margaret Dix, to the advancement of our knowledge of the pathology of the inner ear.

Pathologists have appreciated the high standard of historical technique demanded by Hallpike in the study of the temporal bone, and the illustrations of his paper e.g. on the pathology of Meniere's disease—incidentally the first description of endolymphatic hydrops in this condition—bear witness to this excellent work.

Our winter has not been too bad and we have been anxiously following the news of the awful weather, in of all places, Southern California. Weather or no weather the political climate has not improved but that is another story.

I. Friedmann
London

(Continued from pg 1)

standard as far as audiological publications are concerned.

Some of the early meetings were certainly interesting meetings and it was highly gratifying to see the audiological field developing as it did under the leadership of the men who are still known as the "Giants of Audiology." It is also interesting to note that the bulk of the leaders as far as the elderly beginnings of audiology are concerned were medically educated men who had an interest in hearing.

Let it also be noted that about 40% of the men who were involved in the beginnings of audiology were non-medically educated individuals, among those we all know were Carhart, Hardy, Silverman and L. Doerfler. I point this out merely to reiterate what has been said by many of us many times, that audiology is a medically related field and should be so considered by all of us.

One anecdote that I remember clearly occurred during the first or second meeting of the audiology conferences that were held in Sweden. I was teaching a group of about 20 or 25 individuals of mixed nationality. Among these were three Scandinavians, a Swede, a Norwegian and a Dane. Discussions which followed the session amazed me somewhat since I noticed that each of the Scandinavians were speaking in their own language and understanding each other quite well. I asked the Swede how he explained this and he stated that "Swedish is really the official Scandinavian language and Norwegian is a dialect of Swedish, but Danish is a disease of the throat."

(cont. on page 3)

Papers and Abstracts

from Otology-Audiology Conference



EFFECTS OF VIBROTACTILE STIMULATION ON THE SPEECH PRODUCTION OF THE DEAF AND DEAF-BLIND

Barbara Franklin, Ph.D.
San Francisco State University

The writer is currently directing a study designed to investigate whether there is an improvement in the speech of deaf and deaf-blind children with vibrotactile stimulation using a tactile belt, the Teleactor. This sensory aid, worn about the abdomen, displays speech sounds as dynamic patterns on a belt of electrocutaneous stimulators. Dr. Frank Saunders, Director of the Tactile Hearing Project at the Smith-Kettlewell Institute, Pacific Medical Center in San Francisco, developed the Teleactor and has previously tested the belt for comfort, reliability, safety, and to a limited extent, for speech recognition.

The subjects in this study are six children with severe to profound, bilateral, sensorineural hearing loss, three from the Marin County Deaf Program and three from the Deaf-Blind Department at the California School for the Blind in Berkeley. The children are presented with a series of consonant-vowel combinations using the vowels /a/, /i/, and /u/. The syllables are presented as 1) a 2-sec sustained utterance (to assess the child's ability to control articulators in sustaining a vowel), 2) a 2-sec 2 syllable utterance, and 3) a 3-syllable utterance, uttered at a 3/sec rate (approximating the rate of normal speech). The training stimuli are presented by videotape, and the children's responses are recorded under 2 conditions, one while wearing their hearing aids with the vibrotactile aid, and the other with hearing aids alone. An on-going comparison is being made of the responses of the children in each training session with and without the tactile belt.

A spectrographic analysis is made of selected suprasegmental and acoustic features, including:

1. Rhythm as measured by length of each syllable and entire utterance
2. Manner of articulation, such as plosive, nasality, affrication, etc.
3. Place of articulation, such as labial, alveolar, velar, etc.
4. Vowel formants

As a result of the field testing to date it has become apparent that the belt, in its present design, does not optimally reflect the acoustic properties of speech sounds. The intensity of the sensation at each of the 32 stimulators reflects the amount of energy present in each band, over a range of 30 dB. I have proposed that the sensitivity level of the stimulators be varied to reflect the energy present in the various frequency areas of the speech spectrum. A series of psychoacoustic experiments will be conducted to establish the equivalent of phon curves for the skin.

At the present time, the frequency range has been divided into 32 channels, at approximately $\frac{1}{4}$ octave intervals. However, this spacing does not reflect the distribution of speech information throughout the frequency range. I have proposed dividing the frequency range into approximately 18 channels representing areas of concentration of speech energy. A re-designed belt will be available Fall '80 for comparative field testing with the present belt.

I want to thank my doctoral students, Connie Schimmel and Deborah Bremer for their assistance in the data collection, and my masters students, J. J. Libbon, Ivy Braun, and Chris Atkinson for their assistance in the data analysis. This project is supported primarily by a two-year NIH grant awarded to Dr. Frank Saunders at the Pacific Medical Center in San Francisco, and in part by an NIH Biomedical Research Support Grant awarded to me at San Francisco State University.

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STONES, BONES & TEMPORAL BONES

LaVonne Bergstrom, M.D.

UCLA

In a number of disorders of connective tissues formation, calcium metabolism and renal disease there may be profound congenital or delayed effects on the function of the ear. In some of these entities temporal bone pathology, tomographic or surgical findings are known, although in many instances the number of published cases is small.

For the purposes of this presentation the available case material was classified into 1) systemic disorders of bone formation; 2) renal disorders resulting in stone formation; 3) absence of ear stones (otoconia); and 4) ectopic inner calcification.

Primary bone disorders were subclassified into these congenital ones which often result in softening of the bone or in fractures (osteogenesis imperfecta), osteopetrosis - benign and malignant forms; hypophosphatasia, hyperphosphatasia; those usually genetic disorders in which the base of the skull becomes densely overgrown with excessive bone which may fix ossicles or impinge on labyrinthine spaces or nerve canals (osteopetrosis, craniometaphyseal dysplasia, frontometaphyseal dysplasia, craniodiaphyseal dysplasia, sclerosteosis, hyperostosis corticalis generalisata, acromegaly); those causing disproportionate dwarfism (achondroplasia, diastrophic dwarfism, Kniest's, spondyloepiphyseal dysplasia, metaphyseal dysostosis and campeloc syndrome); those having progressive replacement of bone by abnormal tissue (Paget's, osteitis fibrosa cystica, fibrous dysplasia); those causing bony deformity (arthroopthalmopathy, osteodysplasty, Paget's) and bony disorders often localized to the temporal bone (otosclerosis, osteomas, exotoses).

An example of a biochemical disorder leading to kidney calcifications, renal disease, progressive hearing loss and ataxia is primary hyperuricemia.

Animal models and a human case recently reported show a combination of cutaneous hypopigmentation and absent otoconia.

Ectopic calcification in the cochlea, especially in or near the stria vascularis, occurs in a variety of disorders. Displaced otoconia may have been observed in a number of cases of Scheibe malformation.

(Note: some disorders are listed twice because they have more than one predominant characteristic.)

CONGENITAL HEARING LOSS—THE SECOND LOOK

LaVonne Bergstrom, M.D.

UCLA

This concept is borrowed from Wangenstein's surgical re-exploration of the operative site for recurrent abdominal

cancer. However, in the present context it refers in general to periodic re-evaluation of revision of diagnosis of the congenitally hearing-impaired child in whom the etiology of the hearing loss is uncertain or unknown at first presentation.

Specific reasons for re-evaluation or change in diagnosis include, but are not limited to: 1) repeat audiometry which may reveal progression of loss or unsuspected opposite ear involvement; 2) overlooked historical items; 3) overlooked physical findings; 4) suppressed family history; 5) false positive family history; 6) red herrings; 7) wrong initial diagnosis; 8) mental block phenomenon; 9) progressive concomitant disease; 10) to complete the workup; 11) second thoughts; 12) new information from a consultant; 13) new scientific knowledge; 14) new technology; 15) to determine how the child is doing.

Case examples of each of these were presented.

(Abstracts continued on Pg. 12)

I Remember

Cont. from pg 2

I would like to close this brief description of the beginnings with a quote from the Statues of the International Society of Audiology under Aims. "The aims of the Society are to facilitate the knowledge, protection and rehabilitation (in its theoretical aspects) of human hearing, and to this end it coordinates and disseminates information, particularly through the holding of regular international congresses and the publication of work of its members. The Society has no political or religious character and any incursion into these fields is expressly forbidden."

As I stated early in this brief exposition, I am gathering data with which to prepare a more lengthy and detailed history of the International Society of Audiology. I hope that you will bear with me in trying to meet the deadline that was imposed upon me by our charming editor of Corti's Organ. I promise to do better in a later article.

Presidents' Message

Cont. from pg. 1

though this group may also diminish during the next decade, it is clear that rehabilitation procedures should and will be enhanced. The hearing aid has shrunk from an object that might best be carried in a backpack to one that can be placed within the ear canal. Its frequency responses have been extended at both ends and flattened throughout until now we are presented with music and with environmental sounds to make listening technical breakthroughs, we can continue to improve our procedures for evaluating hearing aid performance with speech, with music and with environmental sounds to make listening pleasurable as well as intelligible.

The number of people who can be helped by amplification will increase during the next decade. It is to be hoped and believed that procedures for determining the ways to select appropriate instruments and perhaps even that elusive "best possible instrument" will be refined during this decade. Aural Rehabilitation no longer means a weekly course in lipreading supplemented by hearing aid orientation, but means maximizing use of residual hearing, optimizing ones listening environment and utilizing as much sensory input as possible for the understanding of speech and for adapting to ones environment. These techniques will improve during the next decade.

I have no doubt that the members of this society will continue to work together to provide answers to some of the questions which still remain about how the hearing mechanism works in the normal ear and non-normal ear; that they will work together to develop better and more reliable procedures for assessing hearing impairments, for determining its cause, and for remedying the problem through medicine, surgery, amplification and/or rehabilitation. This society provides a meeting place for members of the disciplines most closely involved with the hearing impaired and I hope that through this society many of the questions yet unanswered will find solutions. Although I suspect we will not find all the answers during my year as President, I certainly hope that we will find some.

Recently a class of students at our university prepared a script which had as its underlying thesis, the thought that hearing loss had been abolished (everyone wore their ear protectors, no one used ototoxic drugs, all the "bad" genes were identified, etc.) I wish that would be the outcome of the 1980's but since I don't believe it will, I hope that we will be able to work together to reduce the number of hearing impaired and to help those which remain, live the most productive lives possible.

In short, sometime I think we'll find a boring decade but I don't believe that 1980 will be it. Now, I don't know about you but I think I'm ready to get on with it. Let's do it together.

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AIR BONE GAP, DIPS AND NOTCHES EVALUATION OF COCHLEAR RESERVE IN OTOSCLEROSIS

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I. HISTORY

The prediction of the type of stapedial fixation thanks to the audiometric shape before stapedectomy can be useful, not only to foresee the eventual operative difficulties, but also to forecast the final prognosis of the post-operative functional result. Numerous authors have tried to find the relationship between the shape of the Air Bone Gap (ABG) and the remodelling of the niche encroaching the footplate, but most of them have not succeeded. DANIC and ELBAZ (25), GRISTWOOD (28), George SHAMBAUGH (39) admit that no parallelism can be found between the ABG and the importance of the stapedial fixation. We have also tried to solve the problem, but we only partially succeeded.

Rapidly, we found the reasons for our failure in this study, and so we changed our method. There are two main difficulties in the solution of the problem: first, the correlation of the ABG with the importance of the encroachment of the footplate;—second, the accurate evaluation of the bone conduction level. The first difficulty was relatively easy to solve, but the second one, of critical importance, was very deceiving. So, starting from an anatomical point of view, we had great difficulty in appraising the true cochlear reserve in the otospongiotic/otosclerotic disease. We would like to show you our data, our deductions, our arguments, and our doubts too, for we are still doubtful on some points.

Indeed, the problem in predicting the type of stapedial fixation from the ABG shape is less important now that we have the enormous possibilities of impedance-audiometry and X-Ray tomographies of the ossicles and of the niche for the diagnosis. Moreover, the present techniques of stapedectomy allow us to perform the operation safely, whatever the anatomical type encountered may be. But we have persued this idea in this lecture, because it leads to the research of the real value of bone conduction as a method of evaluation of the true cochlear reserve. And this last problem is of great interest in otospongiosis/otosclerosis.

But before going ahead, we would like to explain why we sometimes use the term "otospongiosis", sometimes the more common one "otosclerosis". The two nouns should be used according to the stages of the disease. "Otospongiosis" characterizes the first stage of destruction, the only typical one, whereas "otosclerosis" typifies the very common stage of pseudo-haversian rebuilding. In fact, otospongiosis represents the more important phase of the disease itself with very active microfoci, and otosclerosis is its most common surgical aspect. Consequently, "otospongiosis" should be the name

applied to the disease itself caused by very active microfoci, whereas "otosclerosis" should remain the term for stapedial fixation caused by the terminal second rebuilding state of the niche.

II. PATIENTS AND METHODS

All subjects were tested in a sound-proof test cabin with the audiologist and equipment in a separate control area, also strictly sound-proof. The two cabins are separated by a double sound-proof wall and windows with three glass plates insuring total safety from noise. The audiometers were standard diagnostic audiometers Peters AP5/6 and Madsen OB-70, with TDH.39 earphones and radio-ears B.70A bone conduction vibrators. The speech material was delivered by dissyllabic word lists tapes recorded to facilitate handling. Of course, complete calibration check-ups of the audiometers were made every two weeks, using an audiometer calibrator unit BRUEL and KJAER consisting of a sound level meter, a microphone calibrator with 6 cc cavity and an artificial mastoid 49/30 B.C. calibrator. The electrical voltage was controlled by a voltage stabilizer was controlled by a voltage stabilizer.

All the tested subjects were active otospongiotic and non progressive resultant otosclerotic patients, with two control groups (normal and sensorineural without middle ear pathology).

Starting first from the concept that an unknown relationship could exist between the ABG shape and the stapedial fixation, we studied the data collected in 580 consecutive otospongiotic/otosclerotic patients from September 19, 1977 through April 4, 1978. During this period of time, we gathered similar data on a control group of 36 non otosclerotic patients, operated on for another disease. (Tab. 1) The collected data included pre-operative audiometric air conduction and bone conduction testing and operative findings on stapedial fixation type and remodelling of the niche, by two surgeons operating on the middle ear with similar teflon-interposition technique.

As we did not find enough significant correlations between pre-operative ABG and footplate encroachment, we changed our technique of investigation of the possible relationship between audiometric and anatomical data encountered in stapedectomies. And this second study dealt with statistical computerized data collected from 1970 through 1980 on 13,682 patients and related to ABG shape (width, ascending or decreasing type), B. C. curves (chiefly dips and notches involving some defined frequencies), anatomical operative finds and, when possible, bony cochlea pathology by X-Ray investigations (comparative tomographies).

This complex and extensive study gave us interesting and valuable results, which we will analyze in the next chapter, but ended in the disappointing conclusion that it is very difficult to evaluate the accurate bone conduction threshold in pure tone audiometry, thus allowing us to know the real cochlear reserve. And yet, a precise bone conduction level is

the very basis of the shape of the A.B.G.

III. ANALYSIS OF THE RESULTS

1/The first comparative study of the data gathered on pre-operative ABG and operative findings in 580 consecutive patients operated on for otosclerosis by stapedectomy, allowed us to draw up to 6 types of ABG shapes, each corresponding to a special type of remodelling of the niche invading the footplate.

In fact, the average of 67% of exact correlations between the pre-operative ABG opening and the intra-operative anatomical findings concerning the footplate encroachment by the bony remodeling of the niche, appears significant, so far as the percentages of the correlations of ABG-stapedial fixation and those of ABG-remodelling of the niche are similar. The difference (6%) seems due to the mild remodeling of the niche, very difficult to see in the early stages. But these relationships are only of indicative value, because there remains more than 30% in which no correlations can be found.

These unsatisfactory results may be caused by the more or less important middle-ear contribution to bone conduction, for the B. C. occurs not only by the vibrations of the skull communicated to the cochlear fluids, but also by those of the ossicular chain of which the ossicles have a different vibration owing to their mass and inertia. Moreover, the opposition of the phases of the two windows must be taken into account. The bone conduction mechanism is very complex and has not yet been clarified.

2/Consequently, we undertook a second series of research on computerized data collected from 1970 through 1980 on 13,682 patients operated on, and related to ABG shape, B. C. curves and operative findings. This study was long, complex and difficult. It confirmed our previous results on relationship between the ABG shape and anatomical changes in the niche area in otosclerosis. But a close analysis of the bone conduction thresholds rapidly confirmed the notion that too many factors are involved in the B. C. hearing mechanism to allow a sure evaluation of the true cochlear reserve thanks to the B. C. curves in pure tone audiometry.

We found 4 types of notches in B. C. levels:

1/a dip at 500 Hz, which we had for a long time related to vascular factors acting on cochlear blood flow (10,11);

2/a dip at low-mid frequencies (250-500-1000 Hz), presented by JOHNSON, HAWKINS and LINTHICUM (30), as the result of a toxic factor diffusing from an active large anterior otospongiotic focus;

3/a "cookie-bite" curve in cochlear otospongiosis described by SHAMBAUGH (39) and some other authors (16, 41). This shape is now classical, but very often mistaken for genetic deafness and described as an isolated syndrom.

4/the classical CARHART notch, which we explained in 1965 in some papers (8,9), and chiefly in a film on the Teflon Inter-

position Technique. On the whole, this notch shows the middle ear contribution to the pre-operative B. C., but its disappearance seems the consequence of the changes in the labyrinthine fluids pressure after stapedectomy.

But according to post-operative functional results, obviously showing a considerable improvement of the B. C. in pure tone audiometry and the disappearance of the dips and notches immediately after stapedectomy, other factors must be found to explain the various shapes of the ABG, and particularly the B. C. levels.

IV DISCUSSION

We believe that the old concepts of the ABG value and of the B. C. thresholds as giving the true cochlear reserve, must be completed and some of them revised.

1. **ABG value:** the ABG shows the conductive component of hearing loss, but only on the condition that B. C. levels reflect the true cochlear reserve. The considerable improvement of B. C. curves immediately after stapedectomy for otosclerosis makes evident the fact that pre-operative B. C. threshold levels are not its real reflection.

Thus we will only discuss two points related to the mechanism of the opening of the ABG.

A/TYPE I: corresponding to narrow or questionable ABG at low frequencies, combined with diphasic impedance change (on-off effect) in impedance audiometry. Its elicitation allows a very early diagnosis of the otosclerotic stapedial fixation, much better than tympanometry. We have given a mechanical explanation (based on anatomical operative findings, that is the presence of bony spiculae at the anterior third of the oval window rim, and on the mathematical analysis, that is the same response of an elastic system to a deformation, but with a different mechanism for the two inverse peaks, due to a different mass and thus to a different inertia (2, 11, 12, 18).

Our mechanical concept called for numerous criticisms. We have no time to summarize them here. The most interesting is that expressed by LOVE and STREAM (32) in their explanation of this perspective. Their concept does not conflict with our's as they seem to base their opinion on an erroneous interpretation of our schemas. On the contrary, our concept perfectly completes their's, since the respective responses of stapedius and tensor tympani muscles help and amplify the responses of the elastic tympano-ligament-ossicular systems to the disturbance caused by the intense sound stimulus (1, 18). Moreover, the diphasic impedance change does not precise the diagnosis of the otosclerotic disease itself, but only the type of stapedial fixation, without prejudging its origin. But owing to the very frequent coexistence of otospongiotic bony spiculae, already described, and of an on-off effect, it appears as a considerable sign for the presumption of stapedial otospongiotic involvement (in about 90% of cases) (2, 18).

B/TYPE VI: ABG open on the "cookie-bite" B. C. curves chiefly depends on the B. C. threshold levels. The problem of its explanation is half conductive, half perceptive. The conductive mechanism is easily explained by the change in impedance of the middle ear after stapedectomy; so a relative B. C. level is changed in a true B. C. one thanks to the release of the stapedial fixation, as we explained in 1965 (9). But the total recovery of the CARHART notch immediately after a correct stapedectomy implies another factor, that is a change in cochlear hydrodynamics, as we will see later in the study of dips and notches in B. C. audiometry.

2.—Dips at low-mid frequencies in B. C. pure tone audiometry.

The disappearance of the various dips and notches at low and mid frequencies, immediately following stapedectomy, is evidently due to changes in labyrinthine fluids pressures. Studying the same problem that we were working on, RICCI and COLLETTI (35) concluded in 1977 that the bone conduction undergoes systematic changes during stapedectomy both in threshold levels and in difference limens of intensity, mainly at midhigh frequency. They are strictly related to the surgical phase of the operations and they appear to be related to differences in cochlear hydrodynamics, rather than to damage of the sensorineural structures. We totally agree with RICCI and COLLETTI, but other factors must be admitted.

The Dip at 500 Hz, which we first thought to be of vascular origin (10, 11, 15), and the Dip at 1000 Hz, originated by JOHNSON, HAWKINS and LINTHICUM (30), seem indisputably due to pressure changes in labyrinthine fluids and not to an enzymatic or vascular etiology. But we have four main reasons to believe that other factors must be added to the pressional one:

a) the disappearance of these Dips at 500 or/and 1000 Hz immediately follows the stapedectomy, as soon as the pre-operative perilymph hyperpressure is reduced by the opening of the new fenestra in the footplate and by its sealing either by a supple vein graft in the teflon-interposition technique, or by a spontaneous thin membrane surrounding the shaft of the prosthesis in the teflon-piston technique. A pure enzymatic origin could not improve B. C. audiometric curve so rapidly. Only a pressure change of labyrinthine fluids after stapedectomy can explain this rapid improvement.

b) from the anatomical point of view, the correlation between the Dip at 1000 Hz and the anterior focus can be explained by the expansion of this focus towards the area of the cochlear canal, precisely corresponding to the 1000 Hz frequency, whereas an enzymatic action spreading from this anterior focus should diffuse into the labyrinthine fluids and

thus progressively reach other areas. The 1000 Hz dip could not be so precise and so narrow.

c) the 1000 Hz Dip can coexist with a cochlear component due to the enzymatic activity, but it does not depend on this activity. The best proof is given by the comparison between pure tone audiograms, showing a very deep Dip on both A. C. and B. C. in stages II without cochlear component, whereas this Dip is only seen on A. C., and not on B. C., in stages III with a more or less severe cochlear component. An enzymatic origin could not cause such a deep Dip on both A. C. and B. C. curves in the stage II of the first patient (BUCH...Jeanine, n° 790339) and only a Dip on A. C. curve, with a decreasing B. C. of enzymatic origin, in the stage III of the second patient (DUF...Maria, N°775995).

d) only the coexistence of 3 factors: hyperpressure of labyrinthine fluids, expansion of the otospongiotic focus into the bony cochlear duct, and toxicity of the enzymatic activity on hair cells, with a possible predominance of one of these 3 factors according to the case, can explain the various dips and notches in A. C. and B. C. curves encountered at low and mid frequencies in pure tone audiometry performed on otospongiotic/otosclerotic patients. Two practical examples can be drawn out of our numerous data: the first one, CAV...Patricia, n°785031, 19 years old, with a very deep dip on 1000 Hz frequency co-existing with poor vascularized middle ear and labyrinthine fluids hypopressure in spite of the dip and tinnitus at 1000 Hz seems to correspond to an active anterior focus acting by expansion:—the second one, CHAR...Andre, n°775002, 45 years old, having an impressive remodelling of the niche invading the footplate and an important labyrinthine fluids hyperpressure explaining pre-operative tinnitus and vertigos, but with a questionable notch on pre-operative B. C. levels, shows an active otospongiotic process leading to labyrinthine liquids hyperpressure through remodelling of the bony cochlea and troubles of resorption.

In fact, these 3 factors: hyperpressure, expansion and toxic action, have the same origin, that is the enzymatic process which only can explain both the bony remodelling of the cochlear duct and of the vestibule with the resultant resorption troubles and the narrowing of these areas leading to focus expansion and fluids hyperpressure, and the enzymatic toxic action on the hair cells. This enzymatic action could be a reaction against the embryonic cartilaginous remnants, very frequent up to 25/30 years of age in the otic capsule, and the enzymatic mechanism of the balance based on inhibitors resulting from the antigen-antibody conflict. The active otospongiosis of the first lytic stage seems to be an autoimmune disease, leading to the inactive otosclerotic stage of pseudo-haversian bony rebuilding.

3.—Notches at mid-high frequency in B. C. pure tone audiometry. They correspond:

a) to the well known "CARHART notch" often seen at 500/2000 Hz in bone conduction with an ABG related to the stapedial fixation. The conductive mechanism can be attributed to the effect of stapes fixation on inertial B. C. before the operation, the stapedectomy changing this pre-operative relative B. C. into the real B. C. showing the true cochlear reserve post-operatively. But we believe that the modification of labyrinthine pressures caused by stapedectomy, can also explain the total disappearance of the CARHART notch immediately following the operation on the footplate, changing the pre-operative hyperpressure back to normal. We must confess that the only mechanical explanation we gave in 1965 (8, 9) was incomplete and partly unsatisfactory. The addition of the two factors, both mechanical and pressional, is logical and explains the broad area of the impaired frequencies, contrasting with the narrowness of the dips caused by expansion of a focus, or with the site of predilection of low-mid frequency in case of expansion of an anterior focus.

b) to the "cookie-bite curves", described by G. SHAMBAUGH (27, 39) and by our group (19,22) in typical cochlear otospongiosis without any conductive components. A labyrinthine fluids hyperpressure may be caused by changes in resorption of the labyrinthine fluids and by the interference of the disturbances in venous drainage in scala tympani, but we must not forget the specific bony remodelling of the cochlear duct, either in the affected middle and apical turns, or sometimes in the lower basal turn, amplifying the hyperpressure and directly acting on the membranous canal through formation of new lamellar bone in the scala tympani (33, 38). Indeed the absence of ABG is in favour of a mobile footplate in these cases and the mobility of the footplate is conflicting with the theory of hyperpressure as the sole factor of the notch. In spite of the absence of any surgical or histopathological findings on ABG in pure tone audiograms, we agree with JOHNSON, HAWKINS and LINTHICUM (30) on the notion that all of these notched losses without any conductive component are in fact the result of active otospongiosis or resultant otosclerosis.

4.—B. C. progressive decrease at high frequencies. Aging and sensorineural degeneration having been excluded, this progressive B. C. deterioration evidently has an enzymatic origin (13, 15, 19, 20, 21, 22, 24). The toxic action of the trypsin on hair cells slowly causes this degeneration according to our enzymatic concept of the otospongiotic disease, in which the upset of the normal equilibrium between trypsin and alpha 1 antitrypsin causes both the bony rebuilding of the niche leading to stapedial fixation and the bony remodelling of the capsular otosclerosis, as well as the cochlear membranous structures impairment leading to sensorineural hearing loss.

But these descending curves, sloping on high frequency, modify the shape of the ABG, as we have already seen in type IV of the ABG systematization. A close study of the ABG shape in each case allows a correct interpretation of A. C. and B. C. component. There is no problem.

5.—Accurate evaluation of real B. C. threshold levels in pure tone audiometry appears illusive in the light of the above detailed discussion. We must add some other misleading elements to the already mentioned deceiving factors for a precise approach of the true B. C. For instance:

a) The B. C. level measurements have not attained the same degree of precision as those of air conduction hearing, for two reasons: first, we have not yet a satisfactory method of calibration of B. C. transducers, even with mastoid model unit;—second, the aim of the B. C. transducer is to vibrate the bony structures of the cochlea being tested, but it induces vibration of the whole head at the same time. Moreover, if an artificial ear has physical characteristics identical to those of a real human ear, it appears very difficult to have precise devices presenting the same responses in terms of sound pressures to that generated in the real ear.

b) The B. C. levels are not only determined by sound vibrations reaching the cochlear fluids through the skull and through the oval and round windows (34, 39), but also through the whole middle ear, owing to the vibrations of the skull, the tympanic membrane, the ossicles, etc., so far as we could paradoxically say that a B. C. loss may be not significant of a bad cochlear reserve. Only a certain amount of sound energy reaches the cochlea directly through its bony structures, acting on labyrinthine fluids and thus on kinocilia of the hair cells. When the skull is set into vibrations by the B. C. transducer, the inertia of the ossicles in the middle ear may produce a differential motion of the stapes, and therefore of the fluids in the cochlea. It is the basis of the explanation of the CARHART notch and of its disappearance, according to the pre-operative stapedial fixation and its post-operative release, changing both ossicles impedance and fluids pressures.

c) Evidence for sound perception with the labyrinth was demonstrated by BLEEKER, WIT and SEGENHOUT (4), who have shown that in guinea pigs and pigeons with a total cochlear loss caused by CO₂ laser radiation or by total removal of the cochlea, fenestration of the lateral semicircular canal affords a quality of information equal to that obtained by monopolar cochlear implants. Of course, it can hardly be expected that frequency discrimination is possible, but patients with bilateral total cochlear loss and intact labyrinth could, after fenestration and training, obtain a meaningful sensation from sounds, especially for the lowest frequencies.

This extensive, but disappointing study of the B. C. threshold levels, done while investigating the relationship between ABG and remodelling of the niche in otosclerosis, led us to the conclusion that the B. C. in pure tone audiometry testing is not always reflective of the true cochlear reserve. It seems that cochlear changes made evident by post-operative pure tone audiometry, and even by standard air conduction speech discrimination audiometric tests, do not always correspond to a true sensorineural type hearing loss. We agree with M. ROBINSON and S. KASDEN (36, 37) stating that the apparent sensorineural audiometric changes immediately following stapedectomy may be not indicative of a cochlear drop, because the conductive mechanism partially implied in standard measure of B. C. levels, is temporarily impaired by changes in the impedance and some other factors, such as oedema, transudates, blood clots, micro-hemorrhagia in the middle ear (37).

For these same reasons, we generally recommend high doses of Cortison (I.V. Hemisuccinate) for the first five post-operative days and middle-ear inflations either by valsalva or by gentle politzer as soon as the first post-operative day, thanks to a wide vein graft sealing the niche. (15, 23)

V. PRECISE EVALUATION OF THE REAL COCHLEAR RESERVE BY BONE CONDUCTION SPEECH AUDIO-METRY

Working on the same topic, that is the research of a valuable method to evaluate the true cochlear reserve preoperatively in otosclerosis, but without studying together, our group in 1967 (10, 11, 14) and ROBINSON and KASDEN in 1970 (36, 37) drew the same conclusion that only pre-operative Bone Conduction Speech Audiometry can reflect the true cochlear reserve. Our basic concept was the same, but the methods were different, both of them allowing an accurate prognosis of the post-operative functional result in otosclerosis.

1/The Bone Conduction Speech Audiometry recommended by ROBINSON and KASDEN (36, 37). In this test, the pre-operative speech discrimination by bone is an excellent indication of post-operative speech discrimination, much more valuable than pre-operative speech discrimination by air. It gives an accurate indication of the post-operative functional result, but only on the condition that we use a maximum permissible masking on the opposite non tested ear (37), for the B. C. cross-over is very great in otosclerosis. Thus this test cannot be performed if the contralateral non tested ear has been already operated on by stapedectomy.

2/The Bone Conduction Speech Weber Test (SWT) which we originated in 1967 (10, 11, 14), is a simple and sure method, allowing the prediction of post-operative functional result for each ear with accuracy. Our test automatically shows, thanks to the direction of its lateralization, the ear to be operated on

(cont. on pg. 14)

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Air Bone Gap, etc.,

Cont. from pg 13

first, and thanks to the position of its curve, the post-operative functional result to be expected for the ear towards which it is lateralized. Moreover, it does not need contralateral masking and so it can be performed even if the opposite ear has already been operated on by stapedectomy.

Since the post-operative functional result is the only accurate reflection of the true cochlear reserve and as the B. C. SWT always predicts the outcome of the ear operated on by stapedectomy in otosclerosis, our B. C. Speech Weber test appears always reflective of the real cochlear reserve. So the best means for the precise evaluation of the true cochlear reserve is only given by B. C. speech audiometry, mainly by our B. C. Speech Weber test.

The only difficulty is to perform this test during the two or three first post-operative days in the patient's room. The B. C. SWT needs a sound proof test cabin, with a tape recorder. For this reason, we are used to perform a B. C. pure tone audiometry every day and the first three days in the patient's room, and if B. C. pure tone testing shows either a B. C. decrease or its disappearance, the patient is immediately tested in a sound proof test room with complete equipment, mainly an audiometer with speech material delivered by tape recorded with dissyllabic word-lists. We believe that transferring the patient recently operated on by stapedectomy to a sound proof equipped test room is less dangerous for the cochlea than to remain doubtful about a questionable B. C. level in pure tone audiometry easily performed in the patient's room. Delay in B. C. Speech audiometry testing prevents the prescription of an efficient therapy in time with high doses of I.V. Cortison, I.V. hypertonic glucose solution, vasodilators, gentle but firm inflations of the middle ear, etc.

These are the only means to perform safe and sure surgery in stapedial otosclerosis, most often associated with a more or less severe cochlear component.

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THE EFFECT OF TYMPANIC MEMBRANE PATHOLOGY ON TYMPANOMETRIC PATTERNS

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Tympanometry has become a commonly used technique in the screening of patients with potential ear disease and the diagnostic evaluation of patients with known ear disease. The continuity and mobility of the ossicles, presence of middle ear fluid, degree of middle ear ventilation, pressure of inner ear fluids and the presence of middle ear tumors are factors most commonly referred to as affecting the impedance of sound wave transmission. Assuming the patency of the external auditory canal, the intact tympanic membrane is the reflecting surface for the probe tone.

Pathology of the tympanic membrane is known by audiologists and otologists to affect the tympanometric pattern. They hypercompliant pattern is often attributed to the monomeric or dimeric membrane and the hypocompliant pattern to tympanosclerosis. Little has been written in the medical literature about the predictability of tympanic membrane pathology on tympanometric patterns. This study is an attempted correlation between visualized abnormalities of tympanic membranes and the tympanometric patterns obtained.

Many studies have demonstrated good correlation between careful otoscopy and tympanometry. McCandless and Thomas showed a 96% correlation between otoscopy by an otolaryngologist and tympanometric abnormalities. The correlation is less precise in younger patients where both otoscopy and tympanometry are more difficult. (1) This study like multiple similar studies, does not address the question as to who is correct, the otologist or the audiologist, when the two methods fail to correlate. I would suspect both techniques detect disease the other might miss.

The tympanometry in this study was performed utilizing the Amplaid acoustic impedance bridge utilizing a 220 Hz probe tone. It is recognized that the 660 Hz probe tone is more likely to elicit biphasic responses from thinned tympanic membranes but since the 200 Hz probe tone is more frequently used clinically it was selected for this study. The patients were all examined under a Zeiss operating microscope. Pneumatic otoscopy was carefully performed under microscopy and tympanic membrane photographs were taken.

Tympanometric patterns were classified according to the system proposed by Jerger and Lidin. (2) It was found, however, that patterns were obtained which were not clearly in the Type A, As, Ad, B, or C categories. These examples will be further presented as they are encountered.

Tympanic membrane pathology can generally be categorized into three main groups: absent, perforated, and intact - abnormal (modified from Lidin.) (3) Absent or inaccessible tympanic membranes are associated with atresia or stenosis of the external auditory canal, most commonly encountered in congenital abnormalities. Perforated tympanic membranes result in flat (Type B) patterns if the eustachian tube is closed or failure to obtain a seal if the eustachian tube is patent. The measured volume will often differentiate a flat tympanogram of a noncompliant middle ear system from a perforated tympanic membrane with a closed eustachian tube. Intact abnormal tympanic membranes will be the major subject of this paper.

The pathology of intact-abnormal tympanic membranes has been subdivided into categories indicated in Table 1. It is important to keep in mind that the disease processes

Table 1

INTACT ABNORMAL TYMPANIC MEMBRANES

HEALED PERFORATIONS	INFLAMMATION
TYMPANOSCLEROSIS	TUMOR
FIBROUS SCARRING	CHOLESTEATOMA
SEGMENTAL RETRACTION	COMBINATION

which result in tympanic membrane pathology also frequently cause middle ear pathology. With an intact pathologic tympanic membrane, the otologist is unable to directly examine the magnitude of middle ear and ossicular involvement. For example, a small amount of tympanosclerosis of

(cont. on page 15)

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In 1973, the first in a series of national conferences on noise control engineering was held in Washington, DC. The most recent conference, NOISE-CON 79 had the theme "Machinery Noise Control," and was held at Purdue University in West Lafayette, Indiana in the spring of 1979. Proceedings of each conference have been published.

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Name These Famous Audiologists (Answer on pg. 16)



1955 - 1957

The Effect of Tympanic . . .

(cont. from page 14)

the drumhead may be associated with extensive tympanosclerosis of the ossicles and tympanum.

At times it is difficult to determine if a tympanic membrane perforation has healed with a monomeric membrane. Pneumatic otoscopy under microscopy will allow this diagnosis to be made. The healed monomeric membrane can be visualized under the microscope and motion of that membrane can be assessed.

Case #1 M.M., represents a patient with bilateral tympanic membrane perforations each measuring approximately 1 mm in diameter. In addition, the patient has extensive tympanosclerotic changes of the remainder of both tympanic membranes. Audiometry illustrated in Figure 1 represents bilateral mixed hearing loss. Tympanometry for the right ear is indicated in Figure 2, and for the left ear in Figure 3. Flat

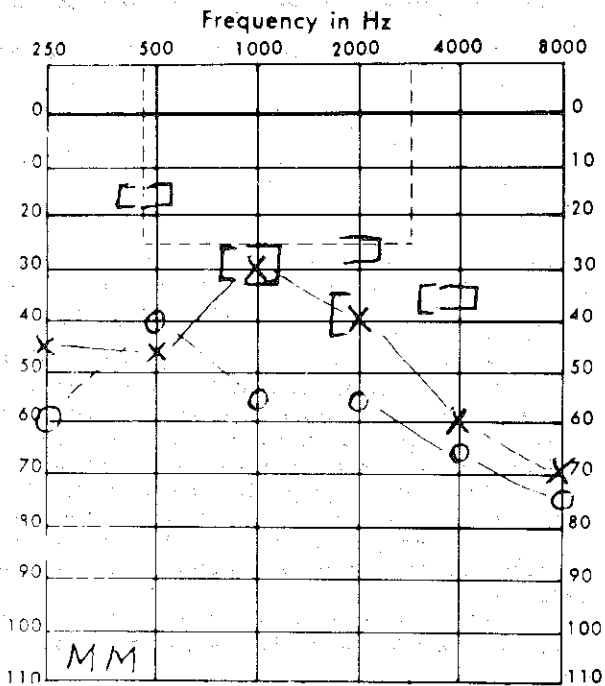


Fig. 1

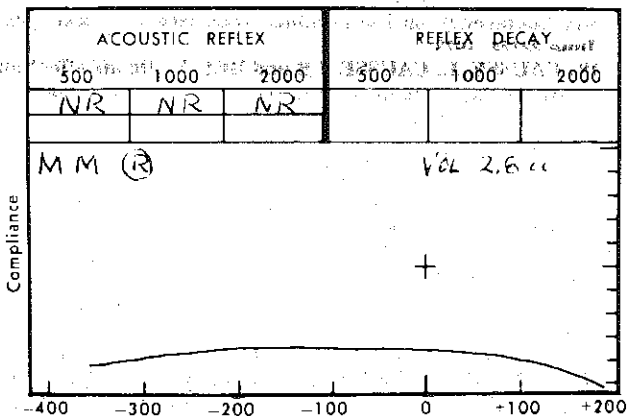


Fig. 2

Symposium on Personal Hearing Protection

Sponsored by the Department of Otolaryngology and the Occupational and Environmental Health Unit, University of Toronto, and Mount Sinai Hospital, will be held May 14-15-16th 1980, at the University of Toronto.

Coordinators: P. W. Alberti, University of Toronto, and Edgar Shaw, National Research Council, Ottawa.

For: Audiologists, Design Engineers, Industrial Hygienists, Industrial Safety Personnel, Occupational Nurses, Occupational Physicians, Otolaryngologists, Research Scientists, etc.

Topics include: Biology of Hearing Loss; Risks from sound; Economics; Personal dosimetry; Hearing Protectors: design, safety, effectiveness: laboratory and shop floor; Motivation for use; Hearing Conservation: serial audiometry; Legislation including Ontario Bill 70, and government monitoring; Is it Effective? and MUCH MORE.

More than 20 International experts from Canada, England, France, Germany, Sweden, United States, etc.

Registration fee \$250.00 before April 1st 1980, \$275.00 after April 1st

For further details and registration application contact Mrs. D. McBride, Office of Continuing Medical Education, University of Toronto, Faculty of Medicine, 245 FitzGerald Bldg. Toronto, Ontario, Canada.

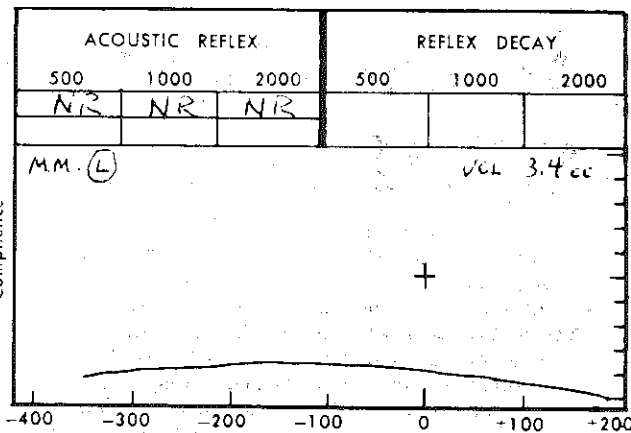


Fig. 3

configuration is attributed to the extensive tympanic membrane tympanosclerosis. There is no fluid visualized through either middle ear space. The perforation has healed over with a monomeric membrane on the right side, but is patent on the left side. The measured volume difference in the two ears is an indication of the patency of the tympanic membrane perforation.

Small, patchy tympanosclerosis of the tympanic membrane does not affect the tympanometric pattern if there is a section of normally mobile tympanic membrane interposed between the annulus and the tympanosclerosis and between the long process of the malleus and the tympanosclerosis. It must be remembered, however, that tympanosclerotic changes can also involve the ossicles usually resulting in As type pattern. Extensive tympanic membrane tympanosclerosis as seen in the first case will result in a flat tympanogram even though the tympanum is well ventilated.

Segmental fibrous scarring of the tympanic membrane results in no significant alterations of the tympanometric pattern. However, extensive fibrous scarring and tympanic membrane thickening results in decreased compliance of the conductive system. Figure 4 represents a tympanogram

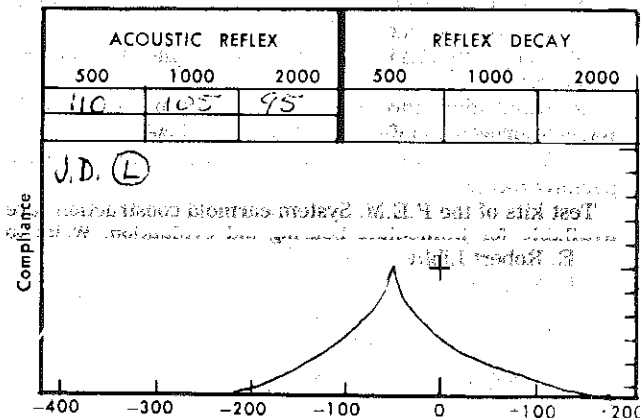


Fig. 4

obtained from a patient with moderately extensive fibrous scarring of the tympanic membrane. Pneumatic otoscopy indicated a well ventilated middle ear space. Pure tone audiometry was within normal limits.

Segmental retractions of the tympanic membrane can cause some difficulty in the prediction of the tympanometric pattern. Here binocular microscopy with pneumatic otoscopy allows a high degree of accuracy.

Figure 5 represents the audiogram of a 13-year-old girl with

Cont. on page 16

Calls for Papers is Issued Inter-Noise 80

An Announcement and Call for Papers for INTER-NOISE 80 is available from the Institute of Noise Control Engineering. INTER-NOISE 80, the 1980 International Conference on Noise Control Engineering, will be held on 1980 December 8-10 at the Hotel Inter-Continental in Miami, Florida, and will have the theme "Noise Control for the 80's." Papers are being solicited in a number of technical areas, including machinery noise reduction at the source, impulse and impact noise, noise emission measurements, labeling, active noise attenuators, acoustical data banks and noise control in industry.

The meeting is the ninth in a series of conferences which have been held annually since 1972. Deadline for the receipt of abstracts is May 12, 1980.

Copies of the announcement and further information on INTER-NOISE 80 are available from the Institute at P. O. Box 3206, Arlington Branch, Poughkeepsie, NY 12603.

Effect of Tympanic

Cont. from pg. 14

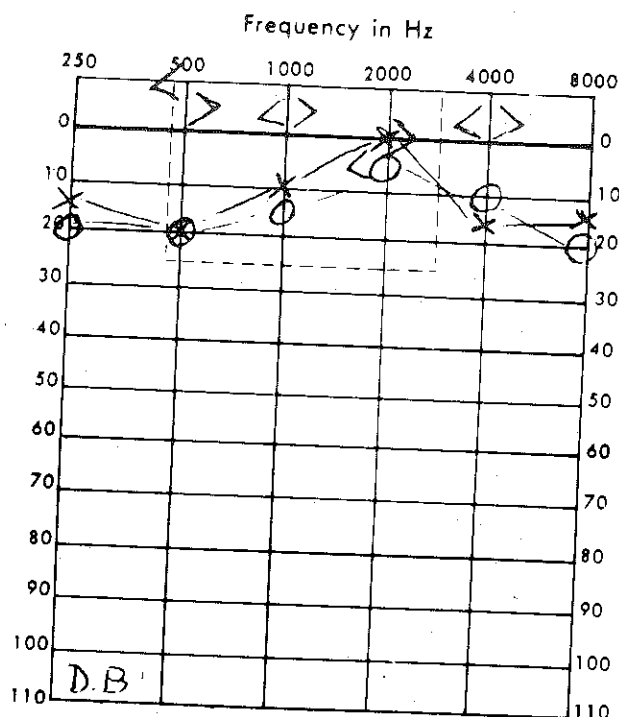


Fig. 5

a long history of recurrent otitis media and bilateral tympanostomies on three occasions. Otoscopy reveals the tympanic membrane which has been segmentalized by bands of fibrous scarring. Large areas of the patients tympanic membranes are deficient in the fibrous layer. These segmental retraction pockets were slightly retracted but were hypermobile with pneumatic otoscopy. The tympanometric patterns indicate hypercompliant systems with negative middle ear pressure. (Figures 6 and 7). This pattern of tym-

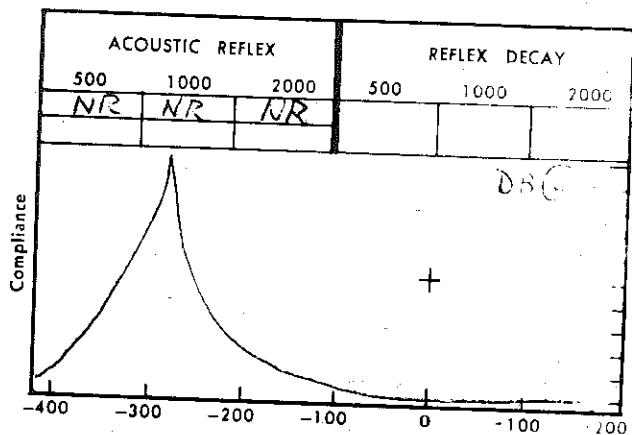


Fig. 6

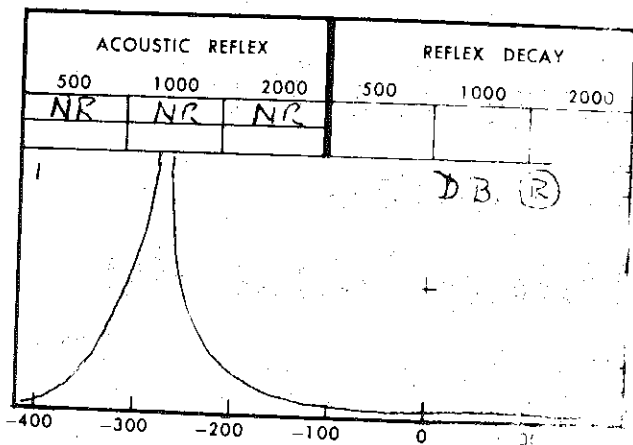


Fig. 7

panogram does not fit well in the classical descriptions and possibly indicates a Type Cd.

The next patient, C. Z., is a 67-year-old female with progressive bilateral decreased hearing and a childhood history of recurrent episodes of otitis media. Her audiogram, Figure 8, represents bilateral sensorineural hearing loss with no

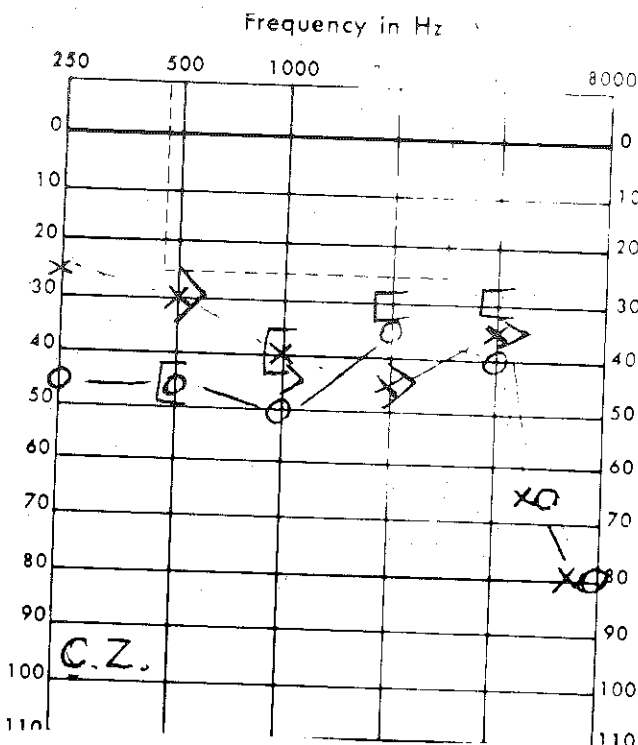


Fig. 8

significant conductive component. Otoscopy indicated tympanic membranes segmentalized by fibrous tissue and areas of monomeric or dimeric membranes. The anterior superior monomer was bulging in the left ear as seen by binocular microscopy. A similar area in the right ear was retracted. Figure 9 and 10 represent they tympanometric patterns seen

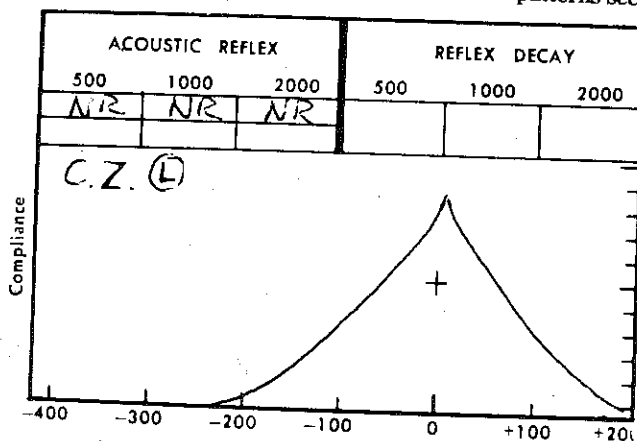


Fig. 9

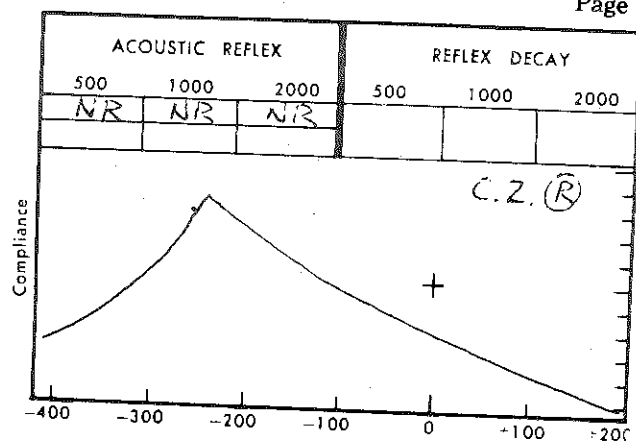


Fig. 10

in these two ears respectively.

The next patient, L. B., also has bilateral segmental retractions. Otoscopy of the left ear indicates a normal appearing pars tensa with a retracted pars tensa, i.e., attic retraction

Cont. on page 17

— ANSWERS to —

Name These Famous Audiologists

Top—Our President
Laura Wilber

Bottom—Our Editor
Marions Downs with
Doreen Pollack Performing
GSR Audiometry—(How times
have changed!!!)

UT Dallas Announces Opening for Audiologist

In the Program in Communication Disorders/Callier Center for Communication Disorders is seeking to fill one position at the Assistant Professor level. The position requires a Ph.D. in Audiology, CERT-A and strong qualifications as a teacher and researcher in aural habilitation/rehabilitation and hearing aids. Position available Fall, 1980. Send letter of interest, vita (indication of sex and ethnicity for affirmative action statistical purposes is requested, but not required), and names of or letters from three references by 15 July, 1980 to:

Academic Search #512
The University of Texas
at Dallas
P.O. Box 688
Richardson, Texas 75080
AA/EOE

Use of Minicomputers in Speech and Hearing Research

An intensive five-day course at the introductory level.

Sponsored by:
Northwestern University
Department of Communicative Disorders

August 1980
and
January 1981

This course is designed to provide speech and hearing scientists, neurologists, physiologists, and psychologists with a basic understanding of how minicomputers work and how they are used in various areas of research. The course will cover the basic concepts of computer hardware and software, control of experiments, stimulus synthesis and analysis, data acquisition and reduction, and the elementary techniques involved in interfacing a computer to other laboratory equipment. Each topic will be covered in lectures, with extensive demonstrations of computers and associated laboratory equipment. The lectures will be complemented with small-group laboratory sessions, which will give participants hands-on experience with many of the techniques discussed.

Course Instructors: Fred Wightman, Ph.D. and Israel Raz, Ph.D.
Enrollment Limited.

Address inquiries to Frederic L. Wightman, Auditory Research Laboratory, Northwestern University, 2299 Sheridan Road, Evanston, IL, USA 60201

Prof. Ettore Bocca

PROF. ETTORE BOCCA,

DIRECTOR OF THE ENT UNIVERSITY CLINIC OF MILAN, RECEIVED THE AMPLIFON RESEARCH AND STUDIES CENTRE'S INTERNATIONAL PRIZE FOR 1979, FOR HIS CONTRIBUTION TOWARDS THE FIGHT AGAINST DEAFNESS.

Amplifon Research and Studies Centre's International Prize, the maximum acknowledgement for studies regarding the fight against deafness, has been awarded, for the year 1979, to the Director of the ORL Clinic of the University of Milan, Prof. Ettore Bocca.

The prizegiving ceremony took place on the 20th March at the Press Club in Milan, in the presence of a vast audience of scientists and doctors from all over Italy.

The Prize Committee's motivation emphasized Prof. Bocca's contribution for solving general problems of audiometry and made particular reference to his research on the diagnosis of lesions of the central auditory system.

The prizewinner was presented by Prof. Massimo Del Bo, Director of the Institute of Audiology of Milan University. Prof. Antonio Antonelli, of the ENT Clinic Of Milan University, illustrated the original and intuitive nature of Prof. Bocca's findings, which brought him fame throughout the world.

The President of Amplifon's Research and Studies Centre—Charles Holland—during the course of the ceremony gave an account of the Centre's activities during the past year.

Starting from 1979 the prize, endowed with approx. \$6,000, has been enriched with a further 2,000,000 Lire (approx. \$2,000) which the prizewinner will assign as a scholarship for researches in Audiology to a young student chosen by him.

In this manner Amplifon's CRS intends to link honouring an internationally famous scientist to motivating young doctors at the start of their career towards research.

During the afternoon of the same day a Symposium was held in honour of Prof. Bocca in the Amplifon Research and Studies Centre, on the theme "Audiometry and the Lesions of the Central Auditory System," attended by Audiologists, ENT doctors and Health Authorities from all over Italy.

The previous prizewinners are as follows:

Prof. Tokuro Suzuki (Japan), Prof. Erik Wendenberg (Sweden), Prof. Hallowell Davis (USA), Prof. James Jerger (USA), Prof. Jozef J. Zwislacki (USA), Prof. Suzanne Borel Maisonny (France), Prof. Michele Arslan (Italy), Prof. Aram Glorig (USA).

Effect of Tympanic

Cont. from pg. 16

pocket. A tympanometric pattern in this ear is a Type A, Figure 11. Her right ear demonstrates a large anterior

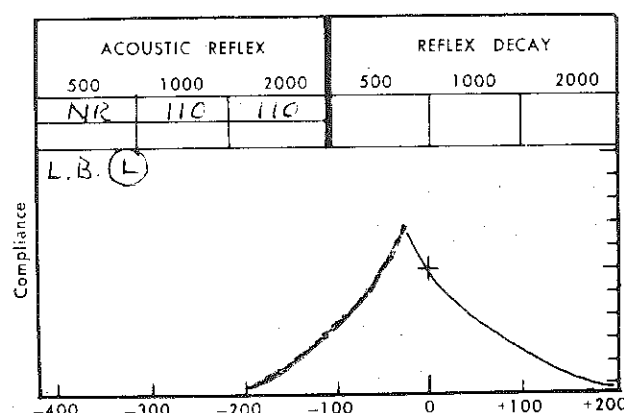


Fig. 11

monomeric membrane which is hypermobile. There is no evidence of middle ear fluid or abnormality of middle ear ventilation. The tympanometric pattern elicited in this ear is indicated in Figure 12.

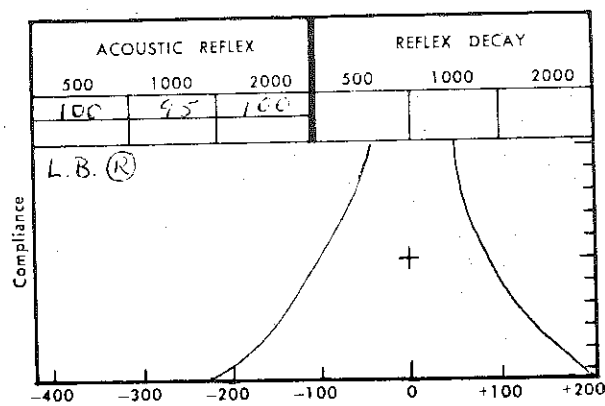
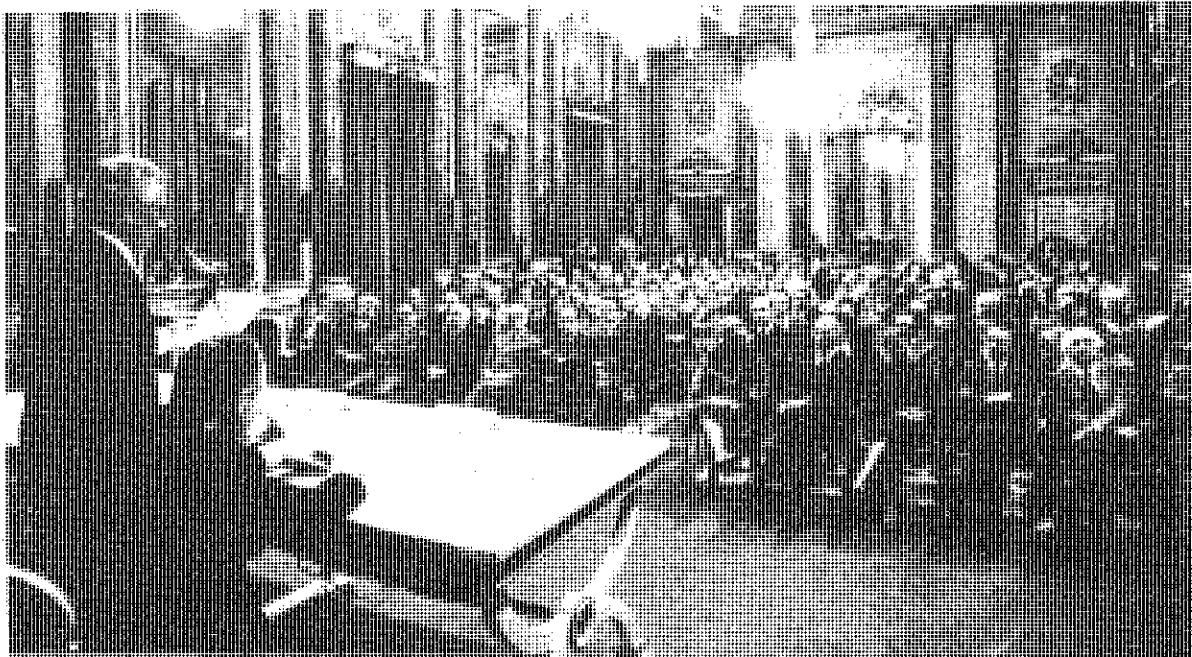


Fig. 12

Cont. on pg. 18



The Sala Napoleonica at the Milan Press Club during the prize giving ceremony.



The prizewinner, Prof. Ettore Bocca, receives the International prize from Mr. Charles Holland, President of the Amplifon Research and Studies Centre.



A moment of the scientific symposium at the Amplifon Research and Studies Centre.

SENTAC Meeting Announced

The Society for Ear, Nose and Throat Advances in Children (SENTAC) is holding its annual meeting at The Mark at Vail, December 5, 6, and 7, 1980.

This is a call for papers for the annual meeting. Papers should be devoted to new ideas in the fields of audiology, speech pathology, otolaryngology and pediatrics relating to the concept of ear, nose and throat advances in children.

The papers will be of 10 minutes duration and an abstract of 250 words maximum will be required. The closing date for receipt of abstracts is July 15, 1980. Papers submitted for

presentation for SENTAC will be submitted to The International Journal of Pediatric Otolaryngology for consideration for publication.

For Further Information, please contact:

Allan B. Seid, M.D.
Program Chairman, SENTAC
Children's Hospital Medical Center
Elland and Bethesda Avenues
Cincinnati, OH 45229

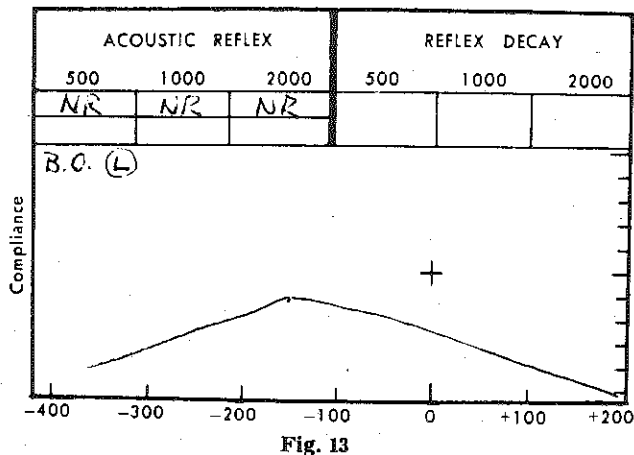
Effect of Tympanic

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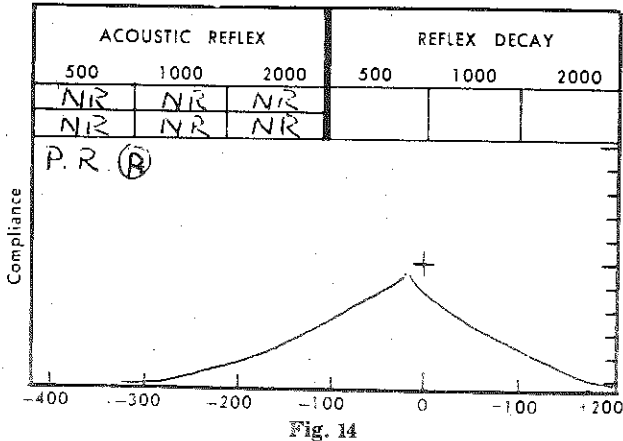
Small attic retraction pockets are commonly seen. If the pars tensa is normal, these attic retraction pockets have no effect on the tympanometric pattern. Another aspect of segmental retractions to be remembered is that apparent retraction pockets may be adherent to the promontory of ossicles of the middle ear. This fixation of the pocket most commonly occurs to the long process of the incus. This can be assessed by binaural otoscopy. Fixation of the retraction pocket may cause decreased compliance. The right ear of patient C. Z., Figure 10 also had a posterior superior segmental retraction pocket adherent to the long process of the incus.

Inflammation of the tympanic membrane with a ventilated middle ear space can occur in myringitis bullosa and otitis externa. It has been my experience with myringitis bullosa, however, that the majority of these patients also develop middle ear fluid with either bulging or retraction of the tympanic membrane resulting in flat tympanometric patterns.

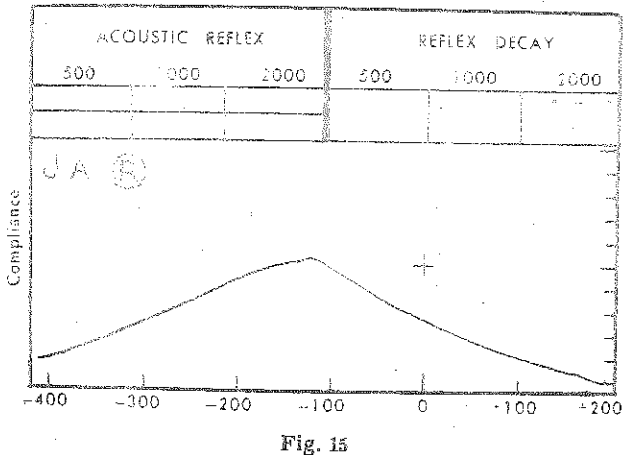
Otitis externa can cause inflammation of the tympanic membrane with thickening of the membrane and decreased compliance. Patient B. O. had a chronic otitis externa with thickening of the tympanic membrane. Otoscopy indicated normal middle ear ventilation. Pure tone audiometry was within normal limits. Her tympanogram is shown in Figure 13.



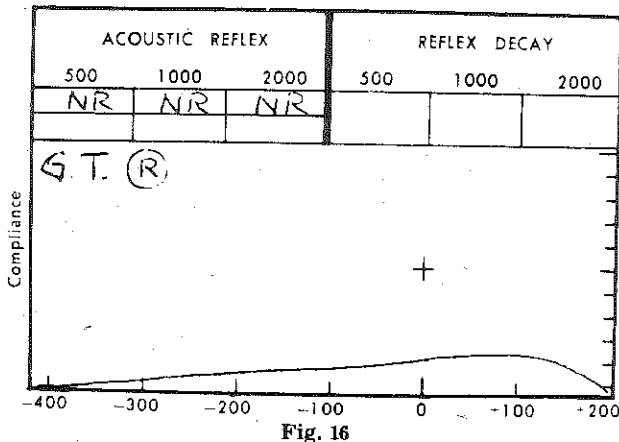
Glomus jugulare and glomus tympanicum tumors can impinge upon the tympanic membrane without direct involvement of the tympanic membrane. Patient P. R. is a 68-year-old woman with a large glomus jugular tumor which fills the lower 35 to 40 percent of her ear canal and rests upon the tympanic membrane. However, the superior portion of her tympanic membrane is intact. It appears normal and has good mobility. Her tympanometric pattern, Figure 14, is within normal limits.



The next patient is a 6-year-old child with a congenital cholesteatoma visualized as a whitish mass between the posterior aspect of the tympanic membrane. His tympanic membrane otherwise appeared normal and was mobile. The tympanometric pattern is seen in Figure 15.



G. T. is a 76-year-old female with a large secondary acquired cholesteatoma. Surgery has not been advised because of her age and general medical condition. Cleaning of the cholesteatoma cavity is accomplished every three to four months. Following cleaning, her cholesteatoma is found to extend into the attic. It has destroyed the posterior superior bony canal wall and extends into the posterior tympanum with destruction of the incus, stapes, and a portion of the malleus. The anterior tympanic membrane segment, in the region of the eustachian tube orifice, is intact and mobile; however, this segment represents probably less than 10 percent of the total area encountered by the sound probe. Her tympanogram is indicated in Figure 16.



It must be remembered that many of these pathologies can occur in combination. The otologist can examine well the tympanic membrane with binocular microscopy and pneu-

matic otoscopy; however, he is usually unable to see the middle ear structures, especially the medial ossicles. Their mobility also affects tympanometric patterns. Combination pathologies are more difficult to predict.

SUMMARY:

Tympanic membrane pathology does affect tympanometric patterns. These effects are usually predictable otoscopically if the tympanic membrane is carefully examined under an operating microscope and utilizing pneumatic otoscopy. They are less predictable if a hand held otoscope is the method of examination. Subtle abnormalities such as the bulging or retraction of a healed perforation may be overlooked. It is crucial to remember that diseases resulting in tympanic membrane pathology also cause middle ear abnormalities. The tympanometric pattern is confused by combinations of pathology and may lead to the conclusion reached by Feldman that acoustic impedance is useful in the diagnosis of middle ear disease only when an intact, normal tympanic membrane exists. (4)

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3. Liden G: Methods for identification of middle ear disease, in Harford ER, Bess FH, Bluestone CD, and Klein JO, (eds). *Impedance Screening for Middle Ear Disease in Children*. New York, Grune and Stratton, 1977, pp 23-33.
4. Feldman AS: Eardrum abnormality and the measurement of middle ear function. *Arch Otolaryngol* 99:211-217, 1974.

Scott Reger Honored By West Virginia University

On the occasion of Scott Reger's award of an honorary degree from his alma mater, West Virginia University, the following citation was made.

"Doctor Reger is certainly an uncommon man. His achievements have gained him an enviable international reputation in the field of audiology, acoustics, and otolaryngology. He is certainly in the category of West Virginia University graduates who have gained unusual eminence in their profession."

"Although a modest, humble man, personally, Dr. Reger is auditory mechanism, but one of the true pioneers in the field of auditory measurement. He is considered by many as the first audiologist in the United States and was among the first scientific investigators in this country interested in the quantitative measurement of hearing levels. He has been active in this field since the early 1930's and there are hardly any aspects of auditory phenomena that were not originally investigated by him.

He is blessed with creativity and inventiveness coupled with unique technical knowledge and skills. This has enabled him not only to design, but to construct instruments to measure hearing acuity which at that time were unavailable. For example, he is credited with the design and construction of the first clinically workable model of the Bekesy automatic audiometer available in this country."

"Through Dr. Reger's work on the measurement of the ear, he has gained the respect and admiration of not only his colleagues in the field of hearing science, but in related disciplines as well, such as acoustics and otolaryngology. This recognition is evidenced by his being named an Honorary Fellow of the American Academy of Ophthalmology and Otolaryngology, a Fellow of the Acoustical Society of America, an Associate Fellow of the American Laryngological, Rhinological, and Otolological Society, and the Honors of the American Speech and Hearing Association."

"He has been instrumental in the establishment of firm interdisciplinary communication with the field of otolaryngology."

ology. He often served on the board of examiners of the national boards of the American Academy of Ophthalmology and Otolaryngology."

"He was one of the early scientists to recognize the relation ship between exposure to unduly intense noise and damage to the inner ear of man. He devised instrumentation and clinically useful techniques to detect and measure the extent of this damage. The fruits of this pioneering interest has culminated in recent years in the Federal Government's active role in the protection of the ears of workers in industry from unduly intense noise."

"He received the Bachelor of Arts degree from West Virginia University in 1927 and then took the first two years of the medical school curriculum. In 1929, he went to the University of Iowa as an Eastman Fellow in Psychology of Music. He has remained at the University of Iowa ever since, receiving the Master of Arts degree (1931) and the Doctor of Philosophy (1933). He then joined the faculty of Iowa Medical Center. For many years he was a musician participating in the woodwind section of the University of Iowa faculty orchestra."

"Dr. Reger has been an outstanding contributor and innovator in all facets of the field of audiology and acoustics: researchers, teachers, clinician and administrator. He is truly one of the most respected leaders in his field. As Professor Emeritus of the University of Iowa, he continues to make significant contributions to his profession. The fact that he is a native of West Virginia (Weston) and a graduate of West Virginia University should make us proud to be affiliated with this state and this institution. He has had an exemplary career and would be an outstanding example of true eminence for the student body of West Virginia University to follow."

Corti's Organ proudly Salutes our colleague and friend, Scott Reger, Ph.D., D.Sc.H.C.

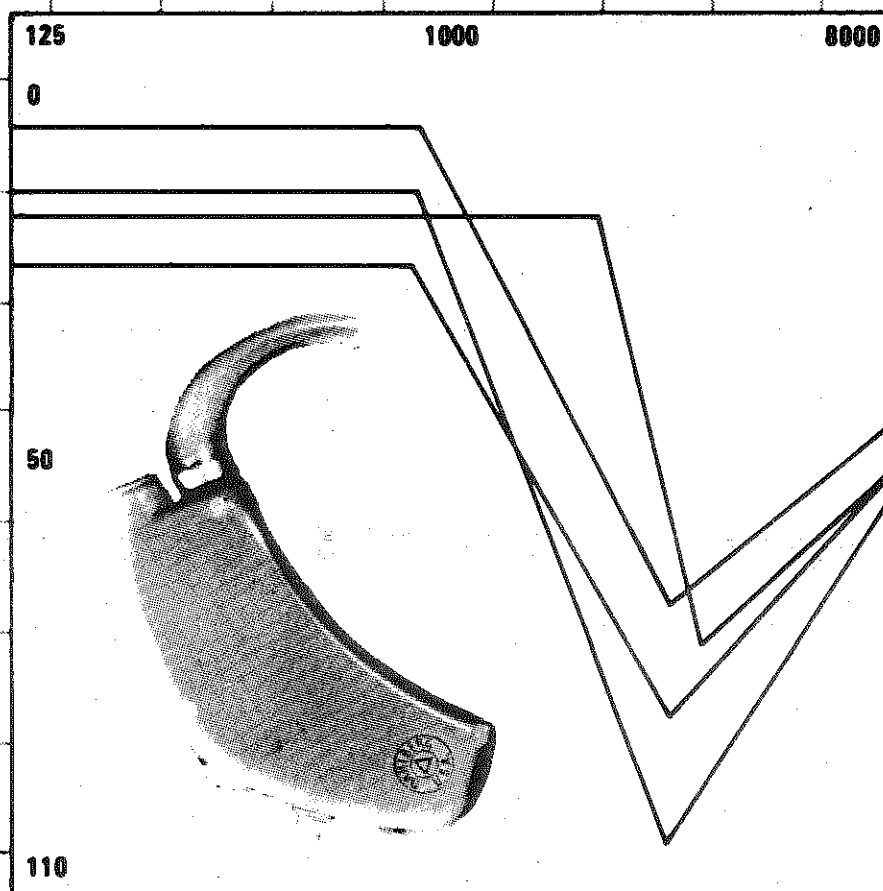
ABR Course Announcement

The Kresge Hearing Research Laboratory of the South, LSU Medical Center, New Orleans, Louisiana, will present a Short Course in Auditory Brainstem Response June 13-16, 1980, with an additional, optional practice day on June 17. The course is co-sponsored by the Lions Eye Foundation of Louisiana, the Eye & Ear Institute of Louisiana and LSU Office of Continuing Medical Education and will feature morning lectures on Anatomy, Physiology and Instrumentation as they relate to applied auditory physiology, and afternoon labs with hands-on, practical instruction in ABR. Special concurrent sessions will be available for people with no experience in electrophysiological measurement. Jim Stockare, MD, PhD, from the Department of Neurology, Mayo Clinic, will be the guest lecturer. Participants will have the opportunity to talk with representatives of major equipment manufacturers and to try their product.

The \$400 tuition includes, in addition to an educational opportunity of the finest quality: reduced hotel rates; free evening jazz party, featuring outstanding New Orleans musicians and hors d'oeuvres; free coffee and refreshments throughout the course. Free transportation to and from the airport and between the hotel and course location may be available, courtesy of the Eye & Ear Institute.

The Lions Eye Foundation of Louisiana may once again provide some full tuition scholarships for graduate students, residents, audiologists, etc. Enrollment in the course is limited to 40 paid participants, or 5 workers per available computer. For further information, application forms, and information on applying for scholarships, please contact Course Coordinator, Kresge Hearing Research Laboratory, 1100 Florida Ave., Bldg. 147, New Orleans, LA 70119, or call (504) 947-6641.

Attacking the Ski Slope

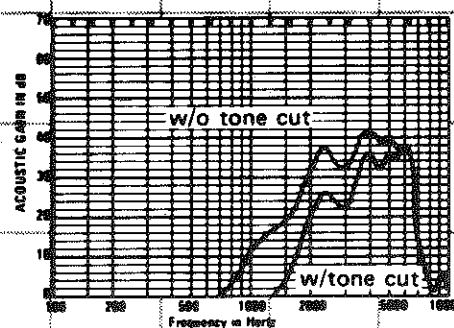


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AAS Members and

A Winter Tail at Vail



Jan Zarnoch, Steve Blane, Marshall Becker, Synn Rogers, Jon Winters, Kathy Blane, Jeff Adams, Christine Becker, Chuck Berlin & Brad Harlow

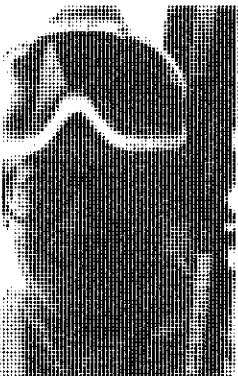
A Decadent Toga Party Ends the Week



The Group Takes to the Slope



Kathy Blane, Jerry Northern and Marcia Simon rest after skiing.



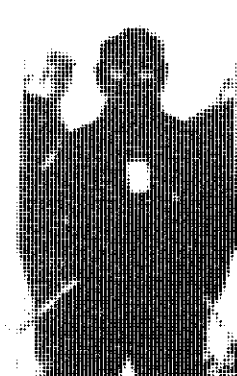
Steve Blane, Pittsburgh. He & his son Bryan won Bronze medals



Adams of Boston, one of the fast skiers



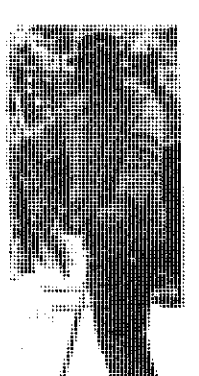
Jean Causse of France takes to the slopes at 71!



Chuck Berlin, New Orleans

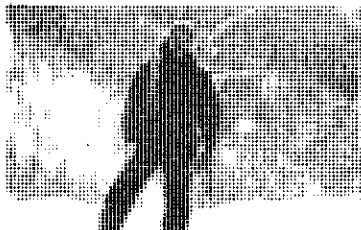


Dave Lim, Bronze Star winner



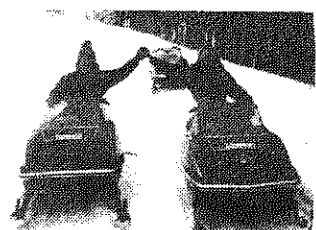
Grady MacArthur won a gold medal in the IAC-NASTAR slalom race.

A Ski



Early Winter in the ski-mobile jamal

Mobile

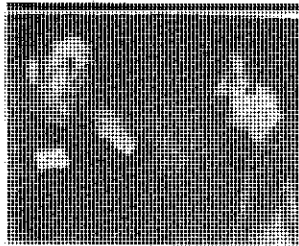


Dave Resnick and Jan Zarnoch

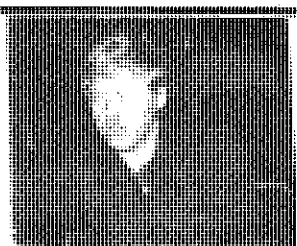
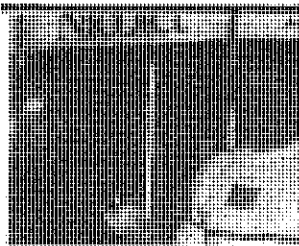
Foray



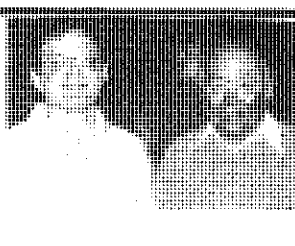
Brad Harlow stops the ski-mobile caravan



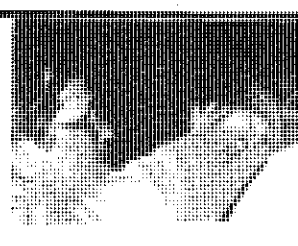
Steve Blane & Jeff Adams



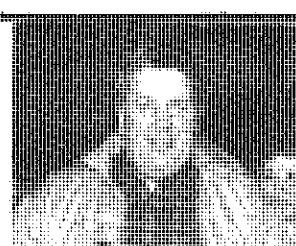
Steve Blane



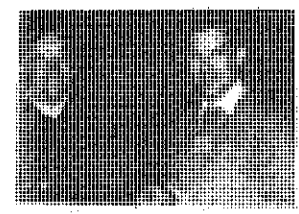
Jan Winters & John Winters



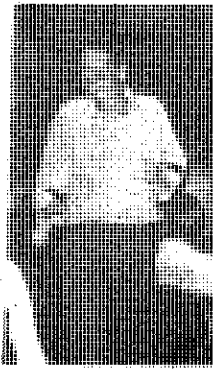
Don Winters demonstrating our mobile



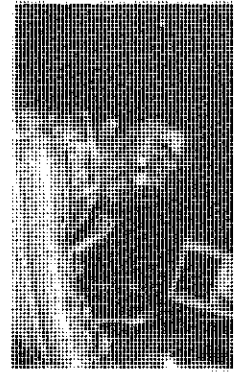
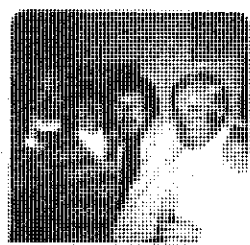
Steve Blane



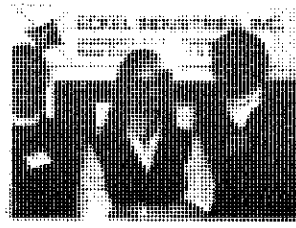
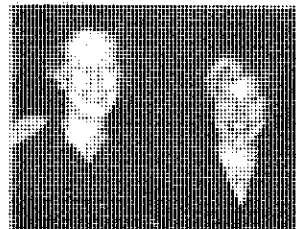
Jerry Agnew



Darrell Teter at a meeting. Meeting?



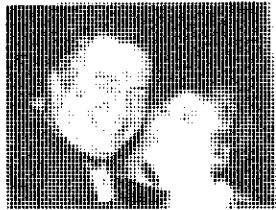
Don Wolfe inspecting an exhibit



John Flood, Eva Axelsson & Alan Eckel

At the Exhibitors Wine and Cheese Party

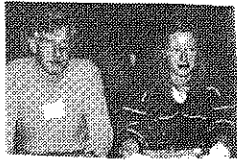
Friends at Vail



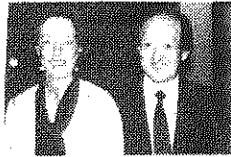
Jack Vernon & Diane Walsh



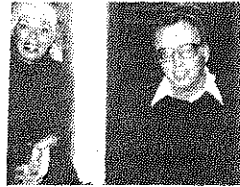
Chuck Shock (South Bend) & Pat Goodwin, Denver



Alf & Eva Axelsson



Margareta and Aage Moller from Pittsburgh



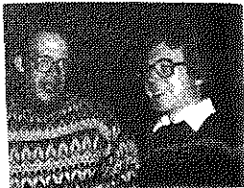
Shirley Keyes and Bob Johnson at faculty party



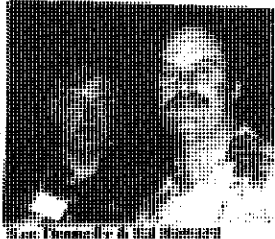
Mike Sello & Ed Howard



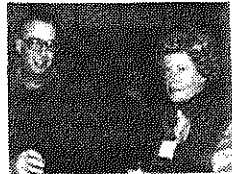
Karen Ostergard & Joe Benevices



Francisco & Karen Sabado



Kath Gerkin, Alf Axelsson and Dave Lim



Charlie Parkin & Son

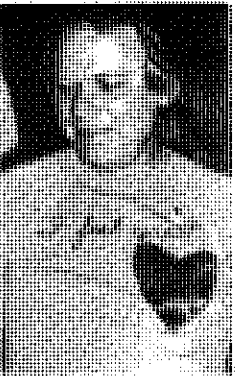
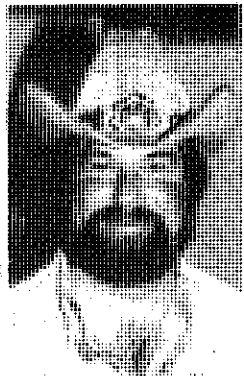


Richard Vaughan of Fresno

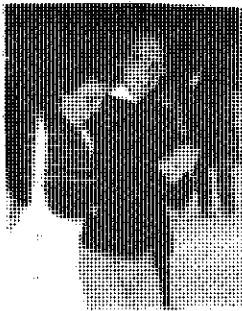


George Lynn

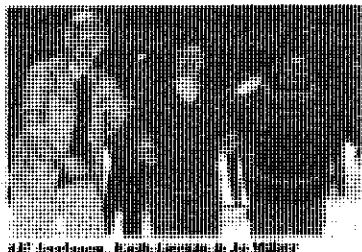
The Opening Cocktail Party



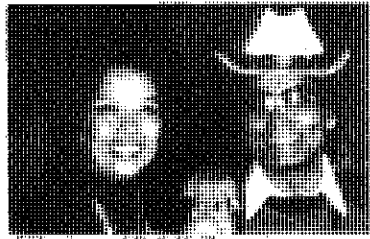
George Lynn clowns on ice



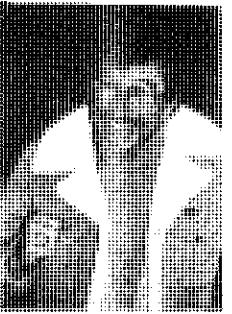
Sally Conley and Brian Becker



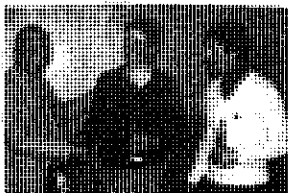
Alf Axelsson, Nea Wolfe, Linda Landeck, and Susan Novotny



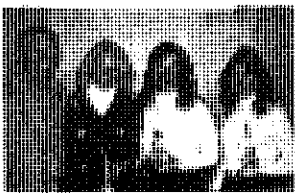
Jo Miller



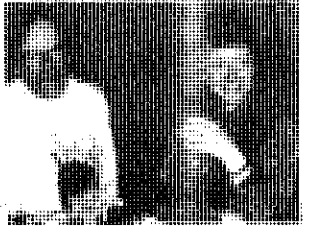
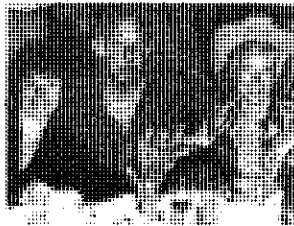
Dave Resnick



Ben Callaway presents the 1st and 2nd place trophies to Bennet Cochrane (Radio Ear) and Bob Mischke of Denver

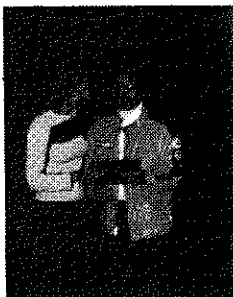


Ben Callaway presents the 1st and 2nd place trophies to Nea Wolfe, Linda Landeck and Susan Novotny



Jo Miller

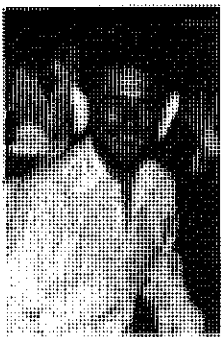
At the Awards Banquet



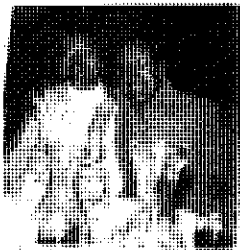
Jeanne Harlow of Tracoustics presents the Best Speaker Award to David Lim



Kathy Blane, Marcia Simons and Jean Harlow



Jo Miller, gets the Big Ear Award



Bob Asby

What is the American Auditory Society?

The American Audiology Society was formed in October, 1974. In June, 1978, after a vote by the members of the Society, the name was changed to the American Auditory Society. The following provides basic information regarding the Society.

What Is The Purpose Of The Society?

The primary aims of the Society are to increase knowledge of human hearing, promote conservation of hearing, and foster habilitation and rehabilitation of aurally impaired individuals. To attain these goals, the Society will coordinate and disseminate information, particularly through the holding of regular meetings, and the publishing of reports. Because of the multiple disciplinary nature of the Society's membership (audiology, otolaryngology, deaf education, hearing aid engineering, psychoacoustics, etc.), the Society will provide a formal platform for the interchange of information from allied professional fields.

Who Can Be A Member?

Active membership is open to individuals holding at least a

baccalaureate degree from a recognized academic institution or to an individual who has had the equivalent of an academic degree in scientific experience or in professional experience in the field of audition. Admission to the Society may be granted by the Executive Committee after the candidate has submitted an application with recommendations from two members, and has paid dues for the year in which application is made. Persons wishing to become members must have an interest in human hearing. The Society shall be based primarily within the United States, but there shall be no geographic limitation on membership.

When And Where Will Meetings Take Place?

An annual meeting will be scheduled to take place either the day before or after annual meetings of other professional groups, such as the American Academy of Otolaryngology (AAO), and the American Speech and Hearing Association (ASHA) and the Acoustical Society of America (ASA).

Will There Be A Journal?

The Society publishes *Ear and Hearing*. *Ear and Hearing* has a clinical format and is issued bi-monthly (6 issues per year). In addition, "*Corti's Organ*" is published on a quarterly basis. *Corti's Organ* is an informal publication and the purpose is to keep members aware of Society activities and other notable events.

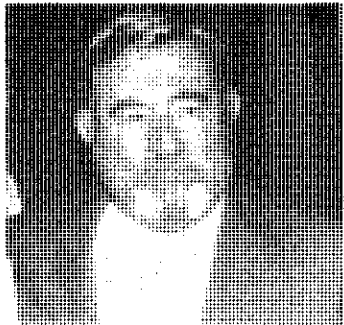
How Much Are Dues?

Annual dues are \$29.00. Because the Society will not concern itself with political issues, such as licensure, certification, etc., dues will remain reasonable. All members receive both of the publications as part of their dues.

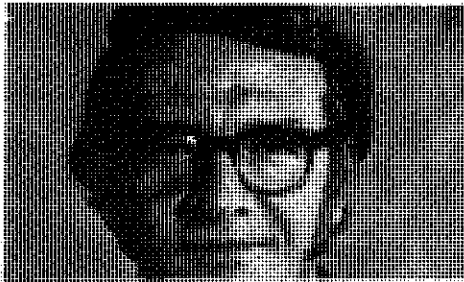
How Does One Join The Society?

To become a member submit an application, with an endorsement from two active members, to the Secretary/Treasurer. For more information write: Ross J. Roeser, Ph.D., Secretary/Treasurer, American Auditory Society, 1966 Inwood Road, Dallas, TX 75235.

Presidents of AAS



Aram Glorig



W. Dixon Ward



Geary McCandless



Samuel F. Lybarger



Laura Wilber



Ralph Naunton (President Elect)

Special Membership Offer

The membership qualifications for AAS include a minimum of a Bachelor's degree or the equivalent in experience and signatures of two active members of the Society. Until July 1, 1980, applications will be accepted without accompanying signatures for applicants who do not know the names of two active members if they are sent on the form below. The secretary/treasurer's office will obtain the necessary signatures from two active members.

Name _____	Date _____
Home Address _____	City _____
State _____	Phone _____
Professional Address _____	
	City _____
State _____	Phone _____

Education		
Institution	Location	Degree/Year

Send \$29.00 to cover dues for 1980. When complete, return to:

Please indicate which is your PREFERRED mailing address:
Home _____ Professional _____

Ross J. Roeser, Ph.D.
Secretary/Treasurer
American Auditory Society
1966 Inwood Road
Dallas, Texas 75235

The AAS Tours to the International Audiology Congress

AAS's European counterpart, the International Audiology Society will hold its XV Congress in Krakow in September 1980. To make it reasonable and congenial for AAS members to attend, group tours are being planned for members, their families and friends.

Among the AAS members who will present papers in Krakow will be Ralph Naunton, Aram Glorig, LaVonne Bergstrom and Marion Downs. Phillip Peltzman will also be on the program. There will be three plenary sessions:

(1) Evaluation of Auditory Function after Surgical Procedures, (2) Etiologic Factors in Sensorineural Hearing Loss, and (3) Paedodaudiology. In addition, contributed papers will be presented.

Two options are being planned for the tour: one a seven-day trip to the Krakow Congress and back; the other an additional week's tour of Vienna and Budapest.

TOUR I—7 days. Air Fare from New York: \$695.00

Departure from New York—August 31

Return New York—September 7

August 31

New York—Evening departure for Warsaw on Pan Am.

September 1

Warsaw and Airport meeting and transfer to hotel. Cocktail party and dinner. Overnight.

September 2

Warsaw/Cracow. Breakfast. Leave Warsaw after breakfast by bus. Stop for lunch at Czestochowa and visit to Black Madonna Shrine.

September 2-6

On your own in Cracow.

September 6

2:00 P.M. leave by bus for Warsaw. Overnight.

September 7

Morning sightseeing. Take Pan Am for New York at noon.

TOUR II—14 days. \$1450.00

FOUR COUNTRY TOUR

POLAND, HUNGARY, AUSTRIA, CZECHOSLOVAKIA

Departure from New York: August 31

Return New York: September 13

1st Day: August 31

New York—evening departure for Warsaw via Pan Am flight.

2nd Day: September 1

Warsaw—Airport meeting and transfer to your hotel. In the evening welcome cocktail party. Dinner and overnight.

3rd Day: September 2

Warsaw/Cracow—Leave Warsaw after breakfast for Cracow. En route stop in Czestochowa where lunch and brief visit to the Monastery with its famous Black Madonna Shrine. Continue to Cracow. Dinner and overnight.

4th Day thru 8th Day: September 3 thru 6

CRACOW - CONVENTION

8th Day: September 6

Cracow/Zakopane. You will continue your tour after 2 PM. Leave Cracow for Zakopane in the Tatra Mountains. Free time till evening then entertainment by the Highlander Folk Group. Dinner and overnight.

9th Day: September 7

Zakopane/Budapest. Morning departure southward to Czechoslovakia across the Tatra Mountains to Hungary. Dinner and overnight.

10th Day: September 8

Budapest—Morning sightseeing tour of Budapest. Visit: The Citadel, St. Matthew Church, Parliament building. Afternoon free. In the evening dinner with folkloric gypsy entertainment. Overnight.

11th Day: September 9

Budapest/Vienna. Drive through Gyor and Nickelsdorf to Vienna. Lunch en route. Dinner and overnight in Vienna.

12th Day: September 10

Vienna—In the morning city sightseeing. Visit Schonbrunn Palace, Hofburg and St. Stephen's Cathedral. Afternoon free. In the evening tour and visit to Grinzing (drinks not included).

13th Day: September 11

Vienna/Prague. Morning departure for Prague, the capital of Czechoslovakia. Lunch en route. Overnight in Prague.

14th Day: September 12

Prague. City sightseeing in the morning. Visit among other sights the Waldstein Palace Museum and National Museum. In the afternoon time at leisure. Dinner and overnight in Prague.

15th Day: September 13

Prague/New York. After breakfast depart for the airport for your flight home. Arriving the same day.

TOUR FEATURES

ACCOMMODATIONS:

Hotels: Accommodations with private bath or shower. Hotel service charges and taxes are included.



The Davis name is known even in the wilderness!



They just aren't teaching people to spell correctly anymore!

Meals: Three meals daily in Poland. Seven breakfasts, three lunches, four dinners (in remaining countries as per itinerary.)
Transportation and Sightseeing: Transfers between airport and hotels; tips to porters for baggage and hotel. All sightseeing and excursions, by deluxe motorcoach, described. Entrance fees where they apply. English speaking guides.

TOTAL: LAND/AIR

\$1,450.00

Per Person/DbI

Single Supplement \$145.00

Air Fares: GIT/APEX-NYC/WAW/PRG/NYC subject to change in event of a fuel increase.

Woodruff World Travel
ATTN: Bob Berg
201 University Blvd.
Denver, Colorado 80206

Please send information on Krakow tour with the American Auditory Society.

Number in my party _____

Signed _____

Address _____

Russia Gets the Sack from AAS

The 2-week AAS tour to the International Audiology Congress in Krakow had planned to take in parts of Russia after the Congress ends. However, with the current national feeling about Russia's invasion of Afghanistan, AAS withdraws any notion of visiting in the Russian sector. Instead, more time will be spent touring beautiful Vienna and exotic Budapest.

The two options for group tours to the Congress are outlined on this page. Please note that one does not have to

be a member of AAS or of the International Audiology Society in order to join the tour. It is open to anyone interested in joining either group, for the Congress alone or for the longer two-week tour.

For those going only to the Congress for the week's stay the price includes airfare alone, plus the two night's stay and dinner in Warsaw, the bus trips to Krakow and back and lunch en route. After arrival in Krakow participants in the Congress must make their own arrangements for lodgings and meals.

CALENDAR OF EVENTS

MAY
9-10

ENG INTERPRETATION, Washington, D.C. 12 hours Category 1 credit for Physician's Award, AMA. The course is designed to aid physicians and audiologists using electronystagmography in the accurate interpretation of ENG findings. Fee: \$200.00. Contact: Marion Servos, ICS, Inc., 520 Interstate Road, Addison, IL, 312-543-6200.

10-11

ADVANCED ELECTRONYSTAGMOGRAPHY COURSE, Memphis, Tennessee. Contact: Course Coordinator, Life-Tech Instruments.

10-12

AUDITORY EVOKED POTENTIALS, Houston, Texas. Contact: Alfred C. Coats, 6565 Bertner Avenue, Houston, TX 77030.

28-30

DIAGNOSIS & REMEDIATION OF CENTRAL AUDITORY DYSFUNCTION IN CHILDREN, University of Cincinnati, Ohio. Contact: Dorothy H. Air, University of Cincinnati Medical Center, Audiology and Speech Pathology Division, Cincinnati, OH, 513-872-4241.

JUNE
4-6

TRAINING COURSE FOR AUDIOMETRIC TECHNIQUES IN INDUSTRY, Fullerton, CA. 18 hours RN credit. Fee: \$200.00. Contact: Max Nelson, Ph.D., Industrial Audiology Institute, 1530 N. Sycamore Ave., Fullerton, CA 92631, 714-879-4265.

9-20

TEACHING LANGUAGE TO DEAF CHILDREN, St. Louis, Missouri. Contact: George Fellendorf, Box 57241, Washington, D. C. 20037, 703-524-5600.

21-25

REHABILITATION THROUGH AMPLIFICATION WORKSHOP, Chicago, IL. Sponsor: American Hearing Research Foundation, AMA Category I credit. Contact: Jack D. Clemis, M.D., Program Chairman, American Hearing Research Foundation, 555 East Washington Street, Suite 2105, Chicago, Illinois 60602. Phone: 312-726-9670.

24-28

1980 INTERNATIONAL CONVENTION, Houston, TX. Sponsor: Alexander Graham Bell Association for the Deaf. Contact: A.G.B. Assn. for the Deaf, 202-337-5220.

27-28

14TH WORLD CONGRESS OF REHABILITATION INTERNATIONAL, Winnipeg, Canada.

27-28

CLINICAL ELECTRONYSTAGMOGRAPHY, Chicago, IL. 12 hours Category I credit for Physician's Award, AMA. These are parallel sessions in the practical aspects for technicians and neuro-otologic applications for physicians and experienced audiologists. Fee: \$200.00. Contact: Marion Servos, ICS, Inc., 520 Interstate Road, Addison, IL, 312-543-6200.

JULY

9-16

TENTH INTERNATIONAL CONGRESS ON ACOUSTICS, Sydney, Australia. The Congress will explore the future of acoustics in its many aspects. Contact: 101CA Executive Committee, 35-43 Clarence St., Sydney, NSW2000, Australia.

14-18

28TH ANNUAL OCCUPATIONAL HEARING LOSS INSTITUTE, University of Maine at Orono, Bangor, ME. 27 credits in PRA Category I of AMA Physician's Award. CAOHC accreditation. This course covers the total field of conservation of hearing to enable the professional to implement, administer and advise in effective hearing conservation. Fee: \$300.00. Contact: U.M.O. Coordinator, 1721 Pine St., Philadelphia, PA 19103, 215-735-0205.

AUGUST

4-7

18TH CONGRESS OF THE INTERNATIONAL ASSN. OF LOGOPEDICS AND PHONIATRICES, Washington, D. C. Contact: Frances J. Johnston, Ph.D., IALP Congress, 10801 Rockville Pike, Rockville, MD 20852, 301-897-5600.

4-8

INTERNATIONAL CONGRESS OF EDUCATION OF THE DEAF, Hamburg, West Germany. Contact: S. Richard Silverman, Ph.D., Central Institute for the Deaf, 818 S. Euclid, St. Louis, MO 63110.

SEPTEMBER

2-6

XV INTERNATIONAL CONGRESS OF AUDIOLOGY, Krakow, Poland. Contact: Dr. Andrzej R. Halama, Kopernika 23a, 31-501, Krakow, Poland.

16-20

7TH ANNUAL DOREEN POLLACK ACOUPEDIC WORKSHOP, Denver, CO. Contact: Listen Foundation, 2525 S. Downing, Denver, CO 80210.

NOVEMBER

20

ANNUAL MEETING OF THE AMERICAN AUDITORY SOCIETY, Detroit, Michigan. Contact: A. Bruce Graham, Ph.D., Henry Ford Hospital, Detroit, Michigan.

21-24

AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION, Detroit, Michigan. Contact: Conventions ASHA, 301-897-5700.

DECEMBER

3-5

SOCIETY FOR EAR, NOST AND THROAT ADVANCES IN CHILDREN, The Mark, Vail Colorado (See page 17).

1981

JUNE

21-27

12TH WORLD CONGRESS OF OTO-RHINO-LARYNGOLOGY, Budapest, Hungary. Written to: Professor Dr. L. Surjan, P.O.B. 112, Budapest, Hungary, H-1389.

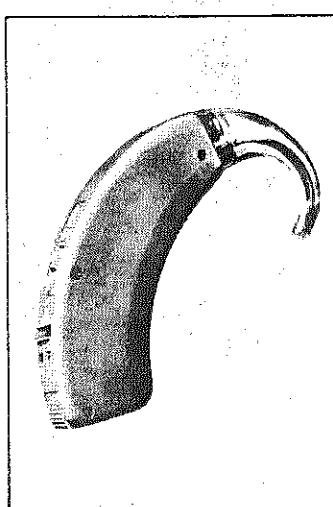
In All The Years of Hearing Instrumentation There Has Never Been an Engineering Achievement Quite Like The Widex A8+*

Years of research and development have culminated in a major breakthrough in postauricular hearing aid design.

Among the many features of the A8+ is an optimally-smooth frequency response, without the peaks and valleys usually associated with ear-level instruments. This is accomplished by a new technique of acoustic filtering developed in the Widex laboratories.

*Models A8+T and A9+T feature a high-efficiency induction pickup coil for effective loop-system use and enhanced telephone listening.

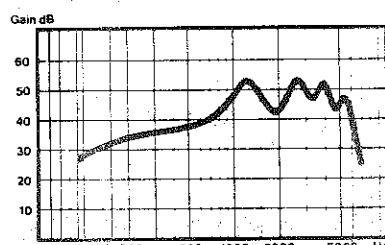
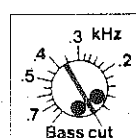
*Models A8+H and A9+H include a user-adjusted Bass Cut Switch which provides selection of two response contours.



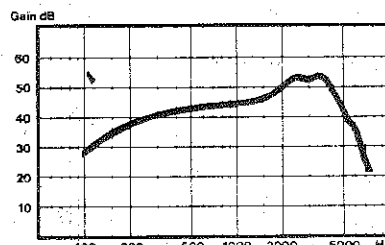
The Electronic Tone Control in the A8+ provides bass-cutoff limits of 100 to 800 Hz, with no attenuation of those frequencies above 1200 Hz. This makes possible the fitting of a wide variety of audiometric configurations, ranging from "flat" losses to "Ski-slope" impairments.

New: Gain Limiter Control enables the Hearing Aid Consultant to pre-set the maximum available gain. Allows the patient with a mild loss to utilize the full range of the volume control. Also secures against excessive gain which might otherwise cause discomfort or acoustic feedback.

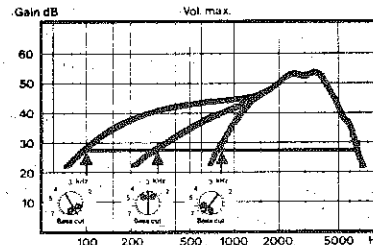
Additional Features: Continuously adjustable compression and output controls; numbered volume control, dual wind-shielded inlet ports; economical battery service.



Response characteristic of a typical wide range ear-level hearing aid. Note the peaks and valleys which can degrade auditory perception.



Response characteristic of the Widex A8+. The smooth, gradually rising curve simulates the response of the unaided normal ear, resulting in unsurpassed fidelity and listening comfort.



Low-frequency response is continuously adjustable, with cutoff limits of 100 to 800 Hz. Only those frequencies below 1200 Hz are attenuated, thereby preserving the high-frequency components of music and speech.

Directional Version Also Available: The Widex A9+ combines all the features of the A8+ with directional performance featuring an improved front/rear selectivity ratio.

Full-Color, Sixteen Page Introductory Brochure: Write or phone for your free copy of a comprehensive, descriptive manual on the A8+ and A9+ series.



Innovators in Research and Development of Fine Hearing Aids

WIDEX HEARING AID CO., INC. • 36-14 Eleventh Street, Long Island City, N.Y. 11106 • Phone (212) 392-6020

Canadian Dealers write: International Hearing Aids Ltd., 359 Davis Rd., Oakville, Ont.

**Pre-register
for AAS
Annual Meeting
Page 20**

**1981 Membership
Directory Complete
In This Issue
See pages 10 - 19**

**Abstracts
From 1980 AAS
Annual Meeting
Continued on
Page 4**

CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 6, No. 2

Spring/Summer 1981

AAS Annual Meeting to be a Blast

The 1981 Annual Meeting of the American Auditory Society will be held in New Orleans, La., on September 21, 1981 in conjunction with the American Academy of Otolaryngology-Head and Neck Surgery. The meeting will take place at the Marriot Hotel in The La Galerie room, No. 3, on the second floor. The theme for this year's program is Surgical and Prosthetic Management in Auditory Rehabilitation and will include a full day's presentation of papers and extend into the evening hours with social events. Featured in this year's program are:

Scientific Papers:

Paul Ward, M.D. — will present the 1981 Carhart Memorial Lecture entitled "Research in Communicative Disorders: A Projection for the Next Decade."

Charles I. Berlin, Ph.D. — Auditory Brainstem Responses

Jack Pulec, M.D. — The Management of Tinnitus

William House, M.D. — Cochlear Implants

Ted Bailey, M.D. — Hearing Aid Dispensing from the Otolaryngologist's Office

Selected Submitted Papers

Social Events:

6:30-8:30 p.m. A scenic river boat tour of the New Orleans historic river front with complimentary hors d'oeuvres.

9:00-? Dinner at the internationally famous Commander's Palace Restaurant with a real-live Cajun comedian to enliven the evening.

A pre-registration form is on page 20.

XVI International Audiology Congress To Meet In Finland

Helsinki, Finland will be the site of the 1982 Audiology Congress May 23-27. Two Americans, Jo Zwislocki and Fran Catlin, will be moderators of two of the Round Table sessions of the Congress. Zwislocki will present a panel on "Cochlear Mechanics", and Catlin presides over "Evaluation of Hearing and Hearing Handicap".

Papers are accepted on any audiological topic for the general sessions. Submittals and information requests go to:

XVI International Congress of Audiology
Secretary-General Dr. Tapani Jauhainen
Department of Otolaryngology
Helsinki University Central Hospital
Haartmaninkatu 4 E
SF 00290 Helsinki 29
Finland

Dr. Tauna Palva, well known to American otolaryngologists, is president of the organizing committee of the Congress. He promises lavish entertainment in the historic city of Helsinki.

A pre-Congress symposium will be held at Goteborg, Sweden on May 20-21, organized by Dr. Gunnar Liden. One day will be devoted to "Paedo-audiology" and the other to "Impedance Audiometry", with special emphasis on its use in otologic surgery. Dr. Liden's address is: Goteborgs Universitet, Audiologiska avd., Oronklinken, Sahlgrenska sjukhuset, 413 45 Goteborg, Sweden.

The 1984 Congress is planned for Santa Barbara, California, with Sandy Gerber as the president of the organizing committee. This will only be the second time the Congress has been held in the U. S.

The program of the Congress and pre-symposium is as follows:

Pre-Congress Meeting: Goteborg, Sweden
Thursday, May 20

Problems in Paedo-Audiology

Friday, May 21

Impedance Audiometry (Emphasis: Otologic Surgery)

XVI International Congress of Audiology, May 1982

(Continued on page 2)

SPECIAL PROMOTION ISSUE

JOIN UP!

**Become a member of the
American Auditory Society**

Fill out the form on page 9
for application for membership

The President's Message

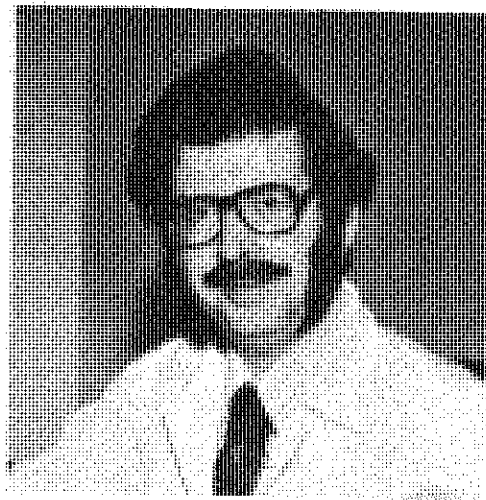
Clinical Research in the Health
Sciences: A Collaborative Venture

It is now far more years than I care to count up since, as a relatively newly graduated physician from the University of London, I first developed what was to prove to be a life-long interest in the problems of hearing and hearing impairment. I can name the day (and almost the hour of the day) when it all started. I had made the decision to enter a residency training program in otolaryngology and on my first day in the program my new chief told me "Nauton, we want you to revive the Deafness Clinic." (The surname as a form of address is an interesting English custom; it keeps those subordinates in place.) The Deafness Clinic at University College Hospital in London had been started a few years prior to the outbreak of World War II by Dr. Phyllis Tookey Kerridge, but was brought to a halt first by the outbreak of World War II and secondly by the untimely death of Dr. Kerridge. The Clinic was unique in concept, but also in possessing a remarkably efficient and still strikingly enormous sound-treated room the size of a small house.

My reactions to my chief's urging to revive the clinic were three-fold: first, I was surprised to find that anyone who scarcely knew the front from the back of a hearing aid would be asked to assume such a responsibility; secondly, I changed the name of the Clinic to the Hearing Clinic; and thirdly, I immediately set out to establish rapport with the Phonetics Department of the University College, University of London, where, I knew, there were basic scientists interested in the physiology of speech and of hearing and in the study of hearing impairment and its alleviation. My new colleagues in the Phonetics Department were Dr. Dennis Fry and Dr. Peter Denes (the latter now at Bell Labs). Here I ask your indulgence as, for the first time in print, I express my appreciation to Dennis Fry and Peter Denes for their support and encouragement, as I began to follow in the footsteps of Phyllis Tookey Kerridge.

After that first start I went on to establish liaison with other physicists and electronic engineer investigators, with speech therapists, with educators of the deaf, and with the hearing aid industry; at the same time, my training in otolaryngology continued.

Since the early days of the Hearing Clinic in London, my



Pres. Ralph Naunton

experience has included several years as a Scientific Officer with the Medical Research Council of England (spending money from the Privy Purse), a year at the Central Institute for the Deaf in St. Louis, and many years spent at the University of Chicago in the Department of Otolaryngology. In

(Continued on p. 19)

**Meet the Nominees
for the
AAS Executive
Committee Election
Page 2**

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Editorial

The Joint Committee On Infant Hearing Is Alive and Well

Spurred on by its excellent Chairperson, Dr. Martha Rubin, the Joint Committee on Infant Hearing met April 12 and 13 at the Lexington School for the Deaf. Representatives were present from ASHA, from the Academy of Pediatrics, the Academy of Otolaryngology and the Nurses' Association. The agenda included an up-dating of methods for identifying congenital hearing loss at birth and later.

The Joint Committee will issue its 1981 statement shortly, covering the High Risk Register, BSER and behavioral tests in the identification of deafness at birth. Management of infants was also covered at the meeting.

This Committee has been an outstanding example of cooperation between Societies in achieving common goals. The merging of disciplines bring strength and vigor to the promotion of early identification, as well as giving it increased credibility. How about Joint Committees for other objectives? Should there be Joint Committees for Hearing Aids, for Noise-Induced Loss problems, for collection of psycho-acoustic information, for management of Hearing Loss? Hardly an area exists that would not benefit from the careful scrutiny of several related disciplines.

Can someone come up with a good list?

International Meeting (From page 1)

Sunday, May 23

Opening Ceremony
Reception by the city of Helsinki

Monday, May 24

Round Table: Audiology, past and future
Moderator: S.D.G. Stephens
Coffee Break
Round table continued
Lunch Break
Sessions
Coffee Break
Sessions continued

Tuesday, May 25

Round table: Cochlear Mechanics
Moderator: J. Zwislocki
Coffee Break
Round table continued
Lunch Break
Sessions
Coffee Break
Sessions continued

Wednesday, May 26

Round table: Evaluation and Measurement of Hearing
Moderator: F. I. Catlin
Coffee Break
Round table continued
Lunch Break
Sessions
Coffee Break
General Assembly
Banquet

Thursday, May 27

Round table: Retrocochlear Hearing Disorders
Moderator: L. G. Johnsson
Coffee Break
Round Table Continued
Closing Ceremony

Meet The Candidates for AAS Executive Committee Election

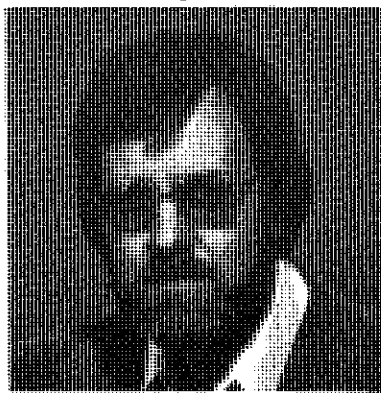
In August of this year an election will be held to replace seven members of the Executive Committee of the American Auditory Society. In this issue of *Corti's Organ* we have asked each candidate nominated for the office to provide the Membership of the Society with some basic bibliographic information, and to provide their thoughts regarding the future direction of the Society.



LaVonne Bergerman, M.D., F.A.C.S., F.R.C.S., (1957, University of Minnesota), Professor of Surgery, Department of Surgery, Division of Head and Neck, 32-34 Rehabilitation Center, Los Angeles, California 90024.

The American Auditory Society is nearly unique in being an effective multidisciplinary professional organization. It has a fine journal which has been published since 1975 and it also has a useful, readable newsletter.

With this fine record of interest in the functions and malfunctions of the auditory system, it is amazing that less than 10% of the published papers have as even one author an otolaryngologist or other medical specialist. (These figures are based on 26 back issues strewn around my office — incomplete and unscientific!) The physician members of the society are not contributing to the journal, at least — mea culpa! How can the society encourage more participation of its otology segment? Certainly establishing a section for New Developments in Otology in our publication should help. I believe there is more that the AAS or its executive committee could do to round out this aspect of our scientific endeavors.



Daniel L. Bode, Ph.D. (1966, Speech and Hearing Science, Michigan University), Director of Research and Development, Hearing Rehabilitation Research Center, House Ear Institute, 256 South Lake Street, Los Angeles, California 90057.

The American Auditory Society continues to represent the best interests of a variety of specialists in audition, particu-

Letter to the Editor

Dear Editor:

I want to congratulate you and Ross on your editorial in *Corti's Organ*. It is a clear and reasoned statement, with which I agree entirely. You mention the effect upon quality of audiological services when an otolaryngologist tries to also be an audiologist. There is another side to that analysis which is equally pertinent. What happens to the quality of medical care provided by that otolaryngologist when he or she tries to also be the audiologist?

I count as personal friends some of the Europeans mentioned in your editorial. These are individuals whom I respect and whose professional contributions have been prodigious. Nonetheless, as I have said to them on many occasions, the American model of non-physician audiologist makes more sense in terms of its broad utility and application.

I will be mailing some of them a copy of your editorial and also this letter. I'm sure we will be hearing from them.

Keep up the good work.

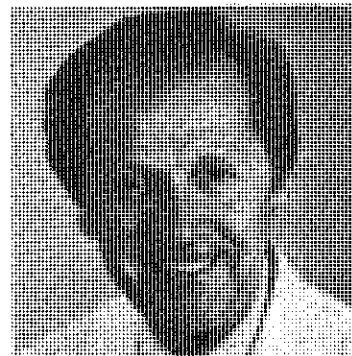
Sincerely,
David P. Goldstein, Ph.D.
Professor of Audiology

larly those of us who are students of broad areas of study and of integration of knowledge. The Society is the one major organization wherein divisions among professional, scientific, and scholarly interests in hearing and hearing disorders are minimized. The essence of the word "colleague" seems to gain significant emphasis within the organization, both in the scope and style of published manuscripts and in the spirit of comradeship which is evident in the context of formal meetings. The recipients of the Carhart Award continue to be persons who represent the best models of our varied fields and who speak to the communality of the membership. The future of the Society and its individual members is enhanced immensely by these attitudes of community, of attention to issues influencing a wide range of individual and collective interests, and of encouraging a free, yet disciplined, exchange of information, opinions and philosophies.



Sanford E. Gerber, Ph.D., (1962 University of Southern California), Professor of Audiology, Chairman, Department of Speech, University of California, Santa Barbara, California 93106.

I view the American Auditory Society as an interest society as distinguished from a professional society. Therefore, we must continue to encourage participation from all those who ascribe to the society's aims as stated in the by-laws. Similarly, as an interest society, we should stay aloof from sectarian professional concerns except insofar as we foster the understanding of audition and auditory disorders.



A. Bruce Graham, Ph.D., (1953, Northwestern University), Chief, Division of Audiology, Speech and Language Pathology at Henry Ford Hospital, 2799 West Grand Boulevard, Detroit, Michigan 48202.

I consider myself fortunate to have been involved with some of the early planning sessions concerning the American Auditory Society. At the outset I made it quite clear how great I thought the opportunity would be to share the thinking of the many disciplines involved with the hearing impaired. If one is truly concerned with the welfare of these patients, one needs to look at the current otolaryngologic trends in diagnosis and medical or surgical management. From the audiologists come testing techniques and plans for non-medical or surgical habilitation or rehabilitation. New developments in testing or amplification equipment come from the manufacturer. The most effective educational approaches using these tools and the evidence at hand is the province of the educator of the hearing impaired. Each of these specialists has much to offer. There are many professional organizations geared to specific areas of research, but here in the American Auditory Society is an opportunity for genuine sharing of ideas to the benefit of this hearing impaired population.

(Continued on p. 3)

**AAS ANNUAL MEETING
SEPTEMBER 21st**

Meet The Candidates (Cont. from p. 2)



Earl R. Harford, Ph.D. (1958, Northwestern University), Professor of Otolaryngology, Director of Audiology, University of Minnesota Medical School and Director of Audiology Clinic, University Hospitals Outpatient Department, Audiology Clinic Box 283, Mayo Building, University of Minnesota Medical School, Minneapolis, Minnesota 55455.

The basic objectives of the American Auditory Society are to stimulate an increase in knowledge and understanding of the auditory process, to promote conservation of hearing, and to foster habilitation and rehabilitation of persons with hearing impairment. Primary among various vehicles to accomplish this objective is the dissemination of information through podium presentations and publications. The Society has not veered from this course the past six years since its founding in October 1974. There have been efforts by other groups and forces to enlist the formal declaration of support from AAS in political and semi-political issues, but the leadership of the Society rejected such maneuvers.

The strength of AAS lies in the fact that it is essentially an open organization that welcomes anyone who has a sincere interest in the objectives of the Society. The membership is diverse and the pace of the Society is relaxed and congenial. Those who attend the annual meetings can attest to the harmonious atmosphere and the sincerity of the members to support the Society. During the past 18 months the Journal of the American Auditory Society got a new name. (*Ear and Hearing*), a new cover, format and Editor (Ross Roeser). Many members and associates responded to the call to support the journal. By all indicators, *Ear and Hearing* has potential to become one of the major periodicals for hearing health professionals in the coming years. Audiologists, in particular, have been searching, consciously or subconsciously, for many years for an effective publication for the

dissemination of their research, clinical experiences and ideas. *Ear and Hearing* is a natural vehicle to accommodate this need.

As I look into my crystal ball for some enlightenment on the future of AAS, I see productive, exciting and interesting years ahead for this young organization. The AAS can and will meet the needs of many hearing health professionals as a forum for their interests. It must not lose sight of its primary aims and continue to avoid the temptations to indulge in professional politics and non-scientific and non-educational missions. Welcome to all those who can support and maintain the objectives of AAS.



Susanne Kos, M.A. (1975, North Texas State University), Dispensing audiologist, Metroplex Hearing Aid Centers, Inc., Medical Plaza Hearing Aid Dispensary, 801 Road to Six Flags W. #134, Arlington, Texas 76012.

The success of the American Auditory Society has been evidenced recently by the significant increase in members of varying disciplines. This demonstration of a common interest in human hearing will foster, we trust, an ever-widening marketplace for more sophisticated refinements of existing rehabilitative capabilities. By fruitful exchange of information gathered from experiment and experience, we hope to further penetrate the barriers which presently stifle our efforts to fully comprehend the auditory system and our attempts to compensate for its abnormalities.

To this end the official journal of the society has been renamed *Ear and Hearing* to reflect our shared endeavors. The metamorphosis of this compilation of writings has transformed rather pedantic and esoteric readings into a format for prevailing, clinically applicable material. Single issues are now even devoted to special topics for a current

collection of works from authors, renowned and novice alike, providing latest coverage with ready reference.

It would seem with such enthusiasm engendered by the ever-increasing membership and the laudatory contributions of recent data to the society's literature that we cannot fail to attract more and more of those from divergent professions who view the same objective from their respective vantage points. We should expect a prosperous future from such a practical alliance.



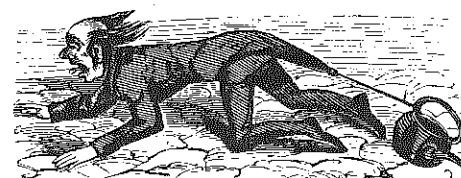
E. Robert Libby, O.D. (1948, Pennsylvania College of Optometry), President of Associated Hearing Instruments, Inc., 6796 Market St., Upper Darby, Pennsylvania 19082.

The hearing health care field is vibrating with excitement. Change is occurring constantly and rapidly. The field is undergoing greater changes than in many medical areas.

As hearing health care becomes more important to the well being of the public we face new challenges, new incentives and new goals to meet these increasing and changing demands. The American Auditory Society will and should be in the vanguard of these changes creating new areas of cooperation and progress.

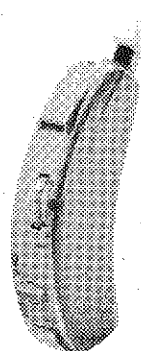
I would be proud to be closely involved with this distinguished professional organization consisting of high quality specialists interacting in an area of close cooperation helping to shape and reshape the hearing health field.

(Continued on p. 4)



1. COMPACT SIZE

The Maico Series G117 is a small aid with great performance range. Some small, cosmetically attractive aids have limitations in either output or gain. The Series G117, however, provides 53 dB peak gain, and 124 dB peak power output (SSPL90).



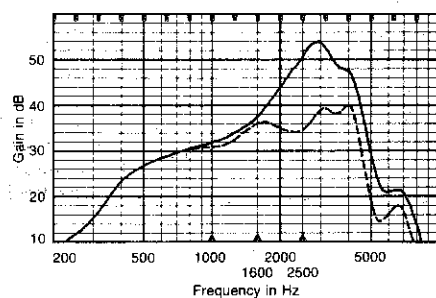
A numbered volume control, plenty of battery life, an on-off switch, and wide, high frequency bandwidth... the Maico Series G117 is a hearing instrument designed to effectively serve the needs of a significant segment of the hearing impaired population.

2. UNUSUAL THINNESS

The Maico Series G117 is only .295" thick. This is particularly desirable when fitting the person whose ears are close to the head and who wears glasses.

3. TWO SPECIALLY CONSTRUCTED EARHOOKS

An Open Response (OR) earhook is designed to be used in open (unoccluded) earmold fittings. It tends to reduce the potential for acoustic feedback in tubing type fittings.

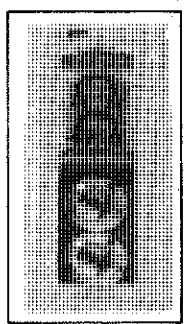


Continuous line shows in situ response (KEMAR) of Series G117 using Insertion Response (IR) earhook with occluded mold; dashed line is estimate of actual amount of amplification at eardrum (insertion response).

An Insertion Response (IR) earhook is intended for use with closed (occluded) earmolds. It produces a smooth, slightly rising response at the eardrum, instead of a dip, by overcoming the amplitude loss caused by

the full earmold. (As is well known, the ear itself produces amplification at 2700-3000 Hz because of ear canal resonance and pinna diffraction effects. But the presence of a full, closed mold in the ear canal removes this natural amplification and causes a 15-20 dB loss.)

4. TWO TRIMMER CONTROLS



Despite its small size, two concealed adjustment controls provide a wide range of performance adjustability. The Power Output (HF average

SSPL90) can be reduced from 117 dB to 100 dB SPL independent of gain, and the Low Frequency control reduces gain 15 dB at 500 Hz.

5. ULTRACARDIOID DIRECTIONAL PERFORMANCE

Some research studies suggest the ultracardioid response is twice as effective in rejecting signals from the rear hemisphere when compared to aids using conventional directional microphones. The Series G117 has one of the best front (0°) to rear (180°) response separations, especially in the higher frequencies, and maintains separation even in open (tubing type) earmold fittings.

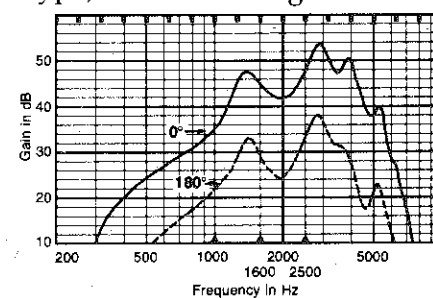


Illustration shows that separation between front (0°) and rear (180°) response of Series G117 is broadly distributed across frequency, extending into the higher frequencies (HA 2 coupler, 60 dB input).

ERTON MAICO

Criton Corporation
Electronics and
Defense Group

Maico Hearing
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Minneapolis, Minnesota 55435 USA
612 835-4400
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Meet The Candidates (Cont. from p. 3)



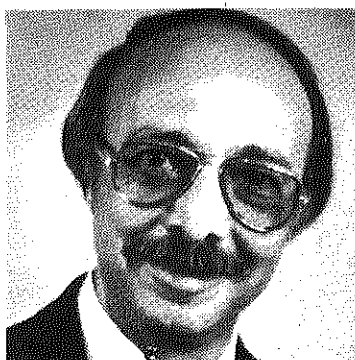
William L. Meyerhoff, M.D., Ph.D. (1966 Northwestern University; 1979, University of Minnesota) Associate Professor, Chief, Department of Otolaryngology, University of Minnesota, Minneapolis, Minnesota.

The American Auditory Society is one of the few official organizations supplying the route for dissemination of information between members of disciplines who are interested in auditory problems. Through this mechanism of interdisciplinary interaction the goal of improved patient care is being achieved. In the future, the American Auditory Society must continue this charge and aggressively bring about an awareness of its existence and goals among those individuals who are clinically or scientifically interested in audition. In addition, it may be conceivable in the future, to use the treasury of the American Auditory Society to supply small seed monies to young individuals beginning auditory research.



James A. Nunley, B.S. (1958, Oklahoma State University), Director of Engineering Audiotone, 2422 West Holly, P. O. Box 2905, Phoenix, Arizona 85062.

"When this Society was founded, I personally was very excited. There was, and still is, a great need for exchange of ideas and information between the various disciplines in our field. I think the Society, through its meetings and publications, has provided a good forum for this interchange. I would hope the Society would continue these efforts. I think the Society is in a position to, not only encourage, but originate joint projects between the various disciplines. Joint efforts to solve problems could have some very positive results. Sometimes it is amazing what clever solutions can be found to problems when people with different perspectives take a new look at that problem. With admiration for past accomplishments and great hope for future success of the Society, I would be honored to be elected and serve on its Executive Committee."



W. Dixon Ward, Ph.D. (1953 Harvard University), Professor, U. of Minnesota (Depts. of Communication Disorders, Otolaryngology, Environmental Health, Psychology), 2630 University Ave. SE Minneapolis Minnesota 55414.

To the best of my ability, I support the aims of the Society as stated in our by-laws: to increase knowledge about audition, to promote conservation of hearing, and to develop procedures and devices to assist the hearing impaired. In general, I oppose involvement of the Society in political issues, particularly those that have nothing to do with audition, but including arguments over territorial claims (only the incompetent want monopoly).

(Continued on p. 20)

L. Deno Reed, Sc.D. (1959, The Johns Hopkins University), Director, Office of Research and Demonstrations, National Institute of Handicapped Research, Switzer Building, Room 3426, 400 Maryland Avenue, SW., Washington, D. C. 20202.

As a charter member of the American Auditory Society, I have supported the aims of the Society. During my thirty years of professional service I have continually participated in the increase of knowledge, understanding of the auditory process, promotion of hearing conservation, fostering of rehabilitation, information of program development, and dissemination of information both nationally and internationally. As a member of the Executive Committee I would continue my active support in all of the purposes of the Society.

IN MEMORY

Anupum I. Master, 42, director of audiology at Mercy Hospital and Medical Center in Chicago, died at the hospital April 13th after a heart attack.

Born in India, Mr. Master helped to establish the audiology department as the hospital's first audiologist in 1969.

He is survived by his wife, Kunjlata; his son, Viraj; his daughter, Anuja; his parents, the Rev. and Mrs. Ithiel V. Master; and his sister Suvasini McCormick.

Mercy Hospital and Medical Center, chartered in 1852, is a member of the Metro Six hospital group affiliated with the University of Illinois College of Medicine.

Abstracts and Summaries from 1980 Annual Meeting (Continued from Winter/Spring Issue)

An Evaluation Of Victoreen's MCL Hypothesis

LOREN L. WEBB, Ph.D.
Department of Speech Pathology and Audiology
Western Washington University
Bellingham, Washington

ABSTRACT:

The otometric procedure for prescribing hearing aids, as outlined by Victoreen, is based on MCL values to a damped wave signal (DWS). No independent laboratory has investigated the validity of Victoreen's MCL hypothesis. We evaluated this hypothesis by measuring MCL's in normals and successful hearing aid wearers with both the DWS and N-B noise.

Our results support the Victoreen hypothesis; however, because of high intersubject variability, the practicality of Victoreen's method is questioned.

Clinical Application of The Feasibility Scale For Predicting Hearing Aid Use With Older Subjects

RALPH R. RUPP, Ph.D.
The University of Michigan
Ann Arbor, Michigan 48109

The prediction for individual adjustment to wearable amplification is one that should be made by the audiologist following the clinical hearing aid evaluation and the following orientation period. The clinical audiologist can collect subjective information, along with objective data on an older individual which can provide a strong provisional estimate as to ultimate daily usefulness of the subject's hearing aid.

The purpose of this paper is to present a clinical view of a feasibility scale for predicting the probable use of a personal hearing aid with an older individual. The Feasibility Scale for Predicting Hearing Aid Use (FSPHAU) amasses findings on eleven prognostic factors which cumulatively indicate the likelihood of successful amplification for the older person.

The eleven prognostic areas include the following:

1. Motivation and manner of referral to professional audiologic services,
2. Self assessment of the subject's communicative difficulties in reviewing information,
3. Verbalization by the individual as to "fault" for the hearing difficulties,
4. Extent of the hearing loss and understanding difficulties, without amplification and then with amplification,
5. Informal verbalizations about the hearing aid during the hearing aid evaluation,
6. Indication of client's general state of interaction, adaptability and flexibility,
7. Age of the client,
8. Finger and hand dexterity and mobility of the patient,
9. Visual ability of the patient,
10. Financial resources, and
11. The presence of a significant other person to assist the client in the total rehabilitation program.

The most positive prognosis that the patient will become successful hearing aid user is based on the eleven factors just listed. The potentially successful hearing candidate might be described in the following way. He is about 65 years of age, is highly motivated, has a realistic attitude as to the cause of the communicative problem, is flexible and adaptable, has a measurable hearing loss of 25 db HTL or more, has adequate vision and finger-hand-arm dexterity, has few actual financial worries, and has a good friend or relative who can team-mate the entire process. Unfortunately, this ideal patient may not exist. A Feasibility Scale assists the audiologist in predicting success of hearing aid experience for a specific client. Four classifications for prognosis are located at the bottom of the Scale, and based on the arithmetic total, will suggest the "success" prediction for the subject.

The scoring of the Scale is accomplished by the use of a single page recording form. Not all of the eleven factors receive equal emphasis on the Scale. Factors of motivation, self assessment, and magnitude and shift in the hearing levels are weighted more heavily because of their importance to the older person.

The decision-making process on the part of the audiologist

as to which numerical value to attach before weighting calculations are added to assist the clinician in reaching an objective score.

Four prognostic predictions are possible from the employment of the FSPHAU. They include the following:

Positive — with scores of 76 — 100%

Equivocal — with scores of 61 — 75%

Limited — with scores of 41 — 60%

and **Very Limited** — with scores below 41%.

The clinical employment of the Feasibility Scale for Predicting Hearing Aid Use (FSPHAU) provides us with analytical support for decision making regarding the usefulness of recommended amplification for our older patients. It identifies the client who will need additional study, orientation and counseling regarding the benefits and limitations of amplification. For a limited number of clients, the Scale points out a population which may need alternative programs to help them improve their receptive language base. The Scale is an effective instrument in that it assists the audiologist in studying key and critical areas related to the client and his probable success in making the adjustment to a hearing aid. It gives analytical structure to the clinical observations made by the audiologist on behalf of the client. The Scale is an effective tool.

The Negative On/Off Effect In Cochlear and Early Stapedial Otosclerosis

Brian D. Forquer, M.S.
James L. Sheehy, M.D.
Otolitic Medical Group
Los Angeles, California

ABSTRACT

Acoustic reflex patterns were reviewed for one hundred patients suspected of having cochlear otosclerosis and 73 patients with confirmed stapedial otosclerosis and mild con-

(Continued on p. 5)

Abstracts

(Continued from p. 4)

ductive hearing losses of less than five years duration. Three abnormal reflex patterns were exhibited by these patients — negative on/off, efferent, and no response. The negative on/off pattern was found to be equally as common for each of the subject groups. The efferent pattern was much more frequent in the early stapedial otosclerosis group. In cases where the patient has a mild sensorineural hearing loss, excellent speech discrimination, and family history of hearing loss, the presence of the negative on/off is now considered indicative of cochlear otosclerosis.

Speech-Band Audiometry

Barbara Franklin, Ph.D.
San Francisco State University

Although there is agreement that speech is the most effective elicitor of response for certain populations, it has not been used because of the inability to obtain quantitative information corresponding to an audiogram. This investigator has developed a new audiometric testing procedure using filtered speech bands which can be used as an alternative or supplement to pure-tone audiometry (United States Patent #4,139,730, **Method of Testing Human Auditory Response**, Feb. 13, 1979, Inventor: Barbara Franklin). The phrase "ah clap clap" has been sent through a filter with various high-and-low-frequency cut-off points. The frequency range of the bands was varied in order to maintain equal energy levels in each of the five speech bands. Each speech band is centered at one of the test frequencies on an audiometer, from 250 to 4000 Hz.

Presentation of Speech Bands

The speech band cassettes are played through the tape circuit of the audiometer. Because of the nature of the populations typically tested with speech bands, an ascending procedure is recommended. For newborns, infants, young children, low-functioning and hard-to-test individuals of all ages, the novelty of the stimulus is crucial to the response.

Results and Discussion

In order to establish the validity of these narrow speech bands, audiograms were obtained by this investigator on easy-to-test hearing-impaired subjects, and a comparison was made of their pure-tone and speech-band audiograms. It was found that their pure-tone and speech-band audiograms were remarkably similar at each test frequency.

Large-scale field testing of speech-band audiometry has been completed at selected sites throughout the country. The speech bands were found to be effective with a wide range of populations, including: newborns, children, retarded and deaf-blind children and adults, and hard-to-test individuals. The speech bands were presented using a wide variety of test procedures including:

1. Observing of behavioral changes
2. Orienting
3. Conditioning to visual reinforcement
4. COR audiometry
5. Localization
6. Hand raising
7. Play audiometry

There was a close correspondence between the speech-band and pure-tone audiograms for easy-to-test subjects. Thresholds for a number of subjects were substantially lower for the speech bands than when standard audiometric procedures were employed, and speech-band audiograms were obtained for many subjects who previously were untestable. The speech bands were successfully used to obtain air conduction (free field and under earphones), bone conduction, and aided thresholds.

It seems to this investigator that the use of narrow speech bands to test hearing is a logical and natural clinical application of the neurophysiologic data available on the development of auditory behavior.

Adult-Onset Hearing Impairment Rehabilitative Directions

B. Gail Frankel, M.A.
Health Care Research Unit
The University of Western Ontario
London, Ontario, Canada
and
Susan H. Brainerd, Ph.D.
Department of Communicative Disorders
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Little investigation has been done in the area of handicap experienced by adults with acquired hearing impairment. In our view, the circumstances — economic, social and psychological — that confront such individuals are likely to be significant and are deserving of more study. This study was conducted to assess adaptation to adult-onset hearing impairment. Adaptation is seen as multi-dimensional construct assessed in terms of: 1) variations in experienced handicap within specific categories of hearing loss; 2) psychological well-being; 3) interpersonal relationships and social interaction; and 4) educational and occupational achievement. One of the specific objectives involved the compilation of the results of the study into a meaningful guide for those engaged in aural rehabilitation.

Our sample was comprised of individuals between the ages

of 18 and 50, who had received an audiological evaluation in the past 18 months, whose Pure Tone Average at 500, 1000 and 2000 Hz, was worse than 20 dB (ANSI, 1969) in at least one ear, and whose onset of hearing impairment was after the age of 16 years.

A questionnaire was designed to collect data from the sample of hearing-impaired adults. The self-administered questionnaire was divided into six major sections. These sections solicited information on general health, psychological well-being, social interaction, use of leisure time, social support and demographic information. In addition, we used two sets of items from the U. S. National Health Survey on hearing ability, the Ewertson and Birk-Nielsen Social Handicap Index, the Alperin Scale of Communication Function, and a set of items designed to elicit the respondents' feelings about how hearing impairment affects work role performance.

Our second source of data for the study was the individual's audiology clinic file. Data taken from the files included pure tone results for air and bone conduction, speech reception thresholds, word discrimination scores and site-of-lesion test results. The final sample excluded persons whose onset of impairment was before the age of 16 who could not be screened at the initial selection, resulting in a total of 478 individuals who met all the criteria for inclusion.

This paper focuses on the results of the study that have particular relevance for those involved in aural rehabilitation. Specifically, we will examine the relationship between actual hearing impairment, perceived handicap, and a number of psychological variables. The better ear pure-tone average serves as our measure of hearing impairment. In our sample, the better ear PTA ranges from 0 to 87 dB with a mean of 17.8.

Each of the study participants completed the Social Handicap Index, developed by Ewertson and Birk-Nielsen (1973). The Social Handicap Index contains 21 items, 10 phrased positively and 11 negatively. Scores on this scale were converted to percentages, yielding a range of 0, "no perceived handicap", to 100, "severe perceived handicap". Our sample had SHI scores ranging from 2 to 100 with a mean of 41.4.

We felt that the individual's attitudes to various communication situations were of considerable importance in rehabilitation. Accordingly, participants were asked to complete the Alperin Scale of Communication Function. Scores were calculated on the four sub-scales of the Alperin: family, self, social-vocational and general communication. These scores have a potential range of one to seven, with higher scores indicating more positive or more healthy attitudes.

In our view, the goal of all rehabilitation is personal well-being. Thus, we felt it was important to examine this dimension on our sample in order to determine the correlates of well-being. Various aspects of psychological well-being, including anxiety, depression, anger, paranoia and self-

esteem were assessed. Scores on each of the five scales ranged from one to five, with high scores indicating a greater tendency toward the particular characteristic being measured.

Recent literature has shown that an individual's perception that he is loved, esteemed and part of a network of mutual obligations can act as a mediator in illness outcome. It was our belief that this factor — called "perceived social support" — might play an important role in adaptation to hearing loss, and therefore might be of relevance to aural rehabilitation. Social support was measured through the use of a story identification technique. Potential scores ranged from one to five with high scores indicating higher levels of perceived support.

The final measure is one developed especially for this study. Its primary purpose was to assess how much an individual feels that his work role performance is influenced by his hearing loss. It may well contain other elements, and since our examination of its validity has only begun, we can not make any further statements about its meaning at this time. Scores on this scale range from one to five, with higher scores associated with the feeling that hearing loss does not affect work role performance.

Our strategy for analysis in this paper was to examine correlations among these variables. A preliminary step when one uses multi-item indices involves the assessment of the internal consistency or reliability of the scales developed. Chronbach's coefficient alpha was calculated for each scale. All the coefficients were well within acceptable limits.

According to Ewertson and Birk-Nielsen, individuals with greater hearing loss are likely to experience significant perceived handicap, while persons with minor hearing loss rarely experience significant social handicap. They report that actual impairment and perceived handicap are highly correlated. Our data tend not to support their findings. In our sample, the average better ear hearing loss is 17.8 dB; yet the average score for this sample on the Social Handicap Index is 41.4, and the correlation between the two measures is a modest .38. Studying an audiogram, therefore, may not provide a totally accurate picture of the difficulties an individual could be experiencing in everyday life.

The Alperin Scale provides clinicians with information on specific problem areas for individuals with hearing loss. Each of the four Alperin sub-scales was considerably more strongly correlated with perceived handicap than with actual impairment. Once again, how an individual experiences his hearing loss seems to be more clinically significant than his actual impairment.

The dimensions of emotional well-being measured in our study are essentially unrelated to Better-ear Pure Tone Average. It was evident that individuals who perceive themselves to be handicapped, regardless of their actual impairment, are more likely to be experiencing emotional difficulties.

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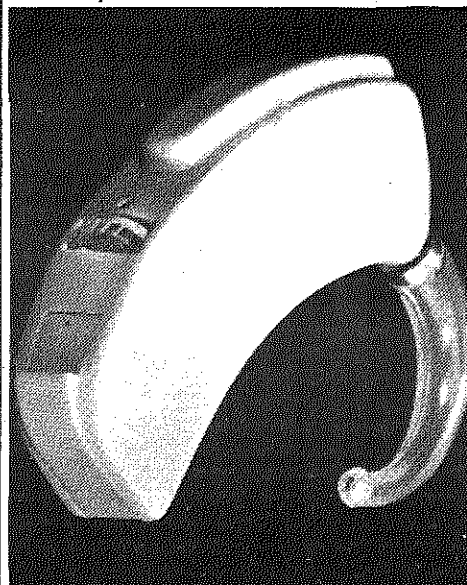
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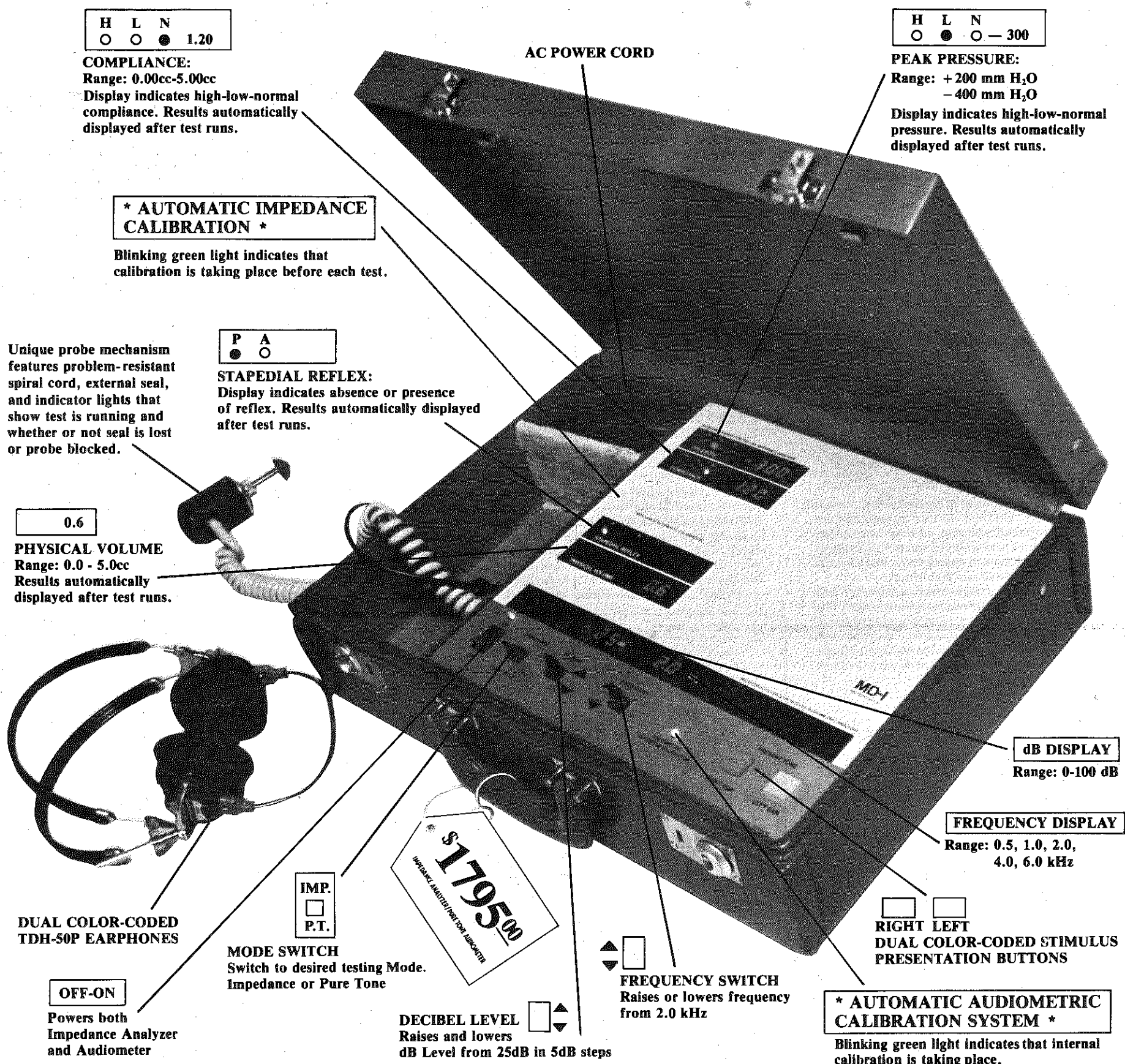


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More Abstracts

(Continued from page 5)

One would expect that individuals with more serious hearing loss would be experiencing more difficulties in work role performance. This is borne out by our data, both in the Alpinar Social-Vocational sub-scale and in the "work performance" scale developed for this study. Both scales have somewhat modest correlations with Better Ear Pure Tone average; in fact, they represent the largest correlations with the actual impairment measures. However, once again the correlations with perceived handicap are considerably higher and are in the range where their significance for aural rehabilitation cannot be underestimated.

Social support does not appear to have strong relationships with either perceived handicap or actual impairment. This is not an unexpected finding, since we see this variable playing an important role as a mediator or facilitator in adaptation. That role will be examined in future reports on this study.

In summary, what we have found in this fairly straightforward preliminary analysis is that standard diagnostic tests do not provide a complete picture of how hearing loss affects individuals in everyday life. Persons with clinically minor hearing impairment appear to be experiencing some difficulties in adjustment — emotionally, occupationally and socially.

What does this mean for those interested in aural rehabilitation? Simply stated, we feel that it may be necessary to extend the assessment procedure beyond the routine diagnostic test battery to include some other aspects of functioning. Audiologists make judgments about the needs for auditory and visual rehabilitation from their inspections of test results and case histories. Our results indicate that a "normal" pure tone average can be associated with a greater than expected perceived handicap, and a variety of emotional problems. Aural rehabilitation may need to consider the importance of individual perceptions and of other psychological and social factors in order to provide more complete service to the hearing impaired.

Basic Guidance For Prosthesis Utilization

Norma Bain Norton, M.A.

Fitting a well selected prosthesis and offering an hour or two of counseling is insufficient rehabilitation for the adult suffering from a severe to profound hearing impairment. Nor does it necessarily meet the needs of the moderately hearing impaired adult who exhibits very poor speech discrimination. The critical issues in promoting prosthesis use for any level

of hearing loss appear to be 1) the choice of an appropriate device, 2) a scientifically based prosthesis selection process, 3) the client's and associates' motivation, and 4) the clients' understanding of the ramifications of prosthesis use. A basic guidance program has been designed and put into practice which stimulates early prosthesis use. It provides orientation and support through counseling, sequential auditory cue training, directed and non-directed behavior modification techniques for communication skill improvement, and leads into a home study program. Home study is considered essential in supporting self-helping, self-directing behavior on the part of the adult client.

These programs and materials were initially developed for deafened adults in an experimental single electrode cochlear implant program at the Ear Research Institute. The program evolved from work with 18 hearing impaired adults with bilateral warble tone averages poorer than 95 dB HL, ANSI. A subject group of 24 adults with the same or worse hearing levels were trained with various revisions of the procedures and materials. Additional subjects with hearing aids and vibrotactile devices have used the materials which are now being modified for those adults experiencing moderate to severe loss.

The basic guidance for prosthesis revolves around a nucleus program of 26 hours. The recommendation is for 10 direct contact sessions over no less than 2 weeks. These direct contacts may vary from a total of 10 to 30 or more hours depending on the communication needs and skills of the client. A major portion of the program can and should be conducted in groups. The home study program can be completed at the client's own pace in 6 months or less. Additional therapy may be suitable for those adults who request it or who have very poor communication skills. Initially, basic guidance sessions focus on refinement or redevelopment of critical listening ability. Minimal cue training of approximately 6 to 8 hours graphically reinforces for the client the multiple uses of even partial or distorted speech and environmental and speech sounds.

The beginning speech training materials can be differentiated or identified solely by temporal or by a combination of temporal and intensity parameters. The client relies on prosody, intonational and/or suprasegmental features for contrast and emphasis cues. There is, as yet, no standard terminology which describes these interchanging perceptual concepts, and no appropriate methodology exists for analyzing them.

The importance of differentiating these cues for profoundly deafened adults became evident in therapy and when results were reviewed from the Norton Rhyme Test, which was developed to examine error patterns between primary phrases (Norton, 1979; Eisenberg and Norton, 1978). Final plosives in the closed sets of 4 consonant-nucleus-consonant words were more distinguishable (90% correct) than any other features.

What could be called cuing on the absence of sound was, in reality, cuing on the modification of the vowel. From tests and therapy sessions with over 60 adults even remnants of the sophisticated and recognizable temporal processing seem to provide dependable cues for the deafened adult who has experienced the normal process.

The materials developed for training critical listening ability follow a hierarchy of sequentially graded perceptual tasks from duration cues only, to duration and intensity cues, on to limited phonemic place of production comparisons. The differentiations begin with single words, same/not same, and lead to detection of practiced and not practiced words or sentences from among intracategorical events. The most difficult task is recognition of phonemes or words embedded in sentences. The tasks are practiced first audio-visually and then in the auditory alone condition. They are made more complicated by 1) enlarging the closed sets, 2) using more complex or longer contrasts, words or sentences, 3) using noise interference, and 4) using recorded vs. live presentation, with or without noise interference.

An arbitrary decision was made to specify a task by task minimal cue performance level of 75%. That is, a "cannot fail" task was considered essential for people who must deal with perceptual failures daily. Thus, the client has immediate success because of the choice of materials, and is taught exactly what he/she is to use for the cue in each task.

Besides the minimal cue training, the basic guidance program also addresses preliminary speechreading training and voice level monitoring, all of which are continued with the home workbook and audio cassettes. Three speechreading activities are stressed 1) review of the visual characteristics of speech sounds for those who need it, 2) teaching the client and relative of friend the DeFilippo and Scott tracking method (1978) with specified strategies for home practice, and 3) group therapy examining speechreading techniques. The latter is a 10 step non-directive process aimed at helping the clients develop practical speechreading strategies no matter what their over-all skill. Group counseling sessions during basic guidance as well as assignments during the home study period concentrate on those externally and internally controllable activities or mind sets which reduce barriers to communication.

A preliminary polling of the initial group of profoundly deafened clients in the implant program revealed their worry and concern over inability to control their voices. Voice level, vocal quality, and prosody and intonation appear to be the most prevalent speech/voice areas effected by hearing loss in adults, to which the least amount of study and research design attention has been devoted (Reed, 1980). Markedly effected are word per minute rates, amount and rate of pauses, pitch and loudness stress, and pitch contours. Deafened adults are not aware of the technical ramifications of intonation and voice level interferences resulting from hearing loss, but they are acutely aware of a reduction in communication effectiveness. The fine nuances of intonation and prosody are lost influencing the reactions of others to the hearing impaired person.

The range of acceptable articulation seems to be wider within the normal hearing and hearing impaired populations compared to that of prosody and intonation interferences. During basic guidance and home study the client learns to graph room and situation acoustics to better judge the voice levels needed and then receives therapy by an experienced speech pathologist.

The attempt to relate therapy task results, effects of use over time of a prosthesis, and pre/post test scores can lead to interesting conclusions. But the careful graphing of goals throughout the program reveals for both client and staff progress or lack of it, and the need for goal review or program redirection. Assignment reports and questionnaires re daily usage and quality of life changes provide follow-up during the home study period.

A carefully nurtured awareness of the availability and usefulness of partial auditory cues can help the adult become a critical listener with a prosthesis. Other program services support the client's moves toward competence in daily life. This is no small matter. One half of those fitted with hearing aids appear to need such guidance and support.

Adult Auditory-Visual Training

Dean C. Garstecki, Ph.D.
Northwestern University

This paper describes an experimental approach toward the evaluation and treatment of auditory-visual communication problems in adults with acquired hearing impairment. In the program, both self-report and bisensory evaluation procedures are used along with other measures in determining the need for auditory-visual communication training and for designing a client-centered remediation program.

Subject measures include use of referral source information, case history and interview data and client self-report of hearing handicap. The revised Hearing Performance Inventory (Lamb, et al, 1979) is used for determining overall communication skill as well as differences in auditory and auditory-visual communication. It is used to determine the client's ability to self-manage communication problems.

Objective measures include an assessment of hearing acuity, screening of visual acuity and evaluation of sentence perception ability. Standard audiometric test procedures are used to assess hearing acuity. A Snellen chart is used to obtain an estimate of binocular visual acuity at the usual screening distance of 20 feet and also at a 1 meter

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More Abstracts

(Continued from page 7)

conversational speech distance. Finally, a videotape recording of one list of the Utley Lipreading Test sentences is presented.

The videotape is presented to each client within a nine foot viewing distance. Primary and competing audio signals are mixed at a 0 dB PM/CM ratio and presented at 60 dB SPL. This is done to obtain a controlled measure of auditory-visual sentence perception under a commonly encountered, moderately difficult, listening condition. Clients view each sentence one time only. Their written responses are scored according to a numeric weighting system devised by Miner (1969).

Remediation Procedure

Evaluation results provide baseline data for the development of an auditory-visual communication training program. The program emphasizes training through systematic manipulation of four message parameters: message type, competing noise type, primary message-competing noise level, and the use of situational cues. Audible presentation of Utley sentences in noise without cues constitutes the baseline condition.

Training begins where the client is able to achieve a pre-determined performance criterion level. To determine the starting point, the four message parameters are systematically varied to increase message redundancy by increasing message content, changing competing signal type and decreasing level of presentation, and by adding relevant situational cues. The procedure is to obtain a measure of baseline performance, then probe performance at higher numbered levels where message redundancy is increased. The point at which the pre-determined performance criterion is met is termed the ceiling level. If a pre-determined criterion level cannot be achieved within this scheme, the process is continued at an increased primary to competing message ratio.

Furthering the process, the noise type is changed at the increased primary to competing message ratio. Finally, the primary message may be presented without a competing message.

Baseline and ceiling performance levels circumscribe the short-term remediation goals. The short-term goals are to develop improved communication skills at each successful level of decreasing redundancy from ceiling to baseline levels, until either no additional progress is attained or until satisfactory baseline level performance is achieved.

In summary, complementary use of self-report and auditory-visual speech perception procedures has resulted in a comprehensive, logically progressing program of improvement of overall communication ability for some hearing-impaired adults. These preliminary findings suggest that

there may be some benefit in applying this approach in designing rehabilitative programs for other communicatively handicapped people. Further investigation of the use of this organizational approach, of the relative importance of various message parameters inherent in everyday communication, and the control of these parameters in the design of communication-remediation programs, is currently underway.

Computer Based Analysis of Language For Evaluation And Treatment of Deaf Children

Marian MacEachron
and
Barbara Parkhurst
Graduate School and University Center,
City University of New York

The linguistic output of the hearing impaired is often seriously deficient. Language development is certainly slower than normal and in some cases appears to follow patterns that differ from normal ones. There are also great individual differences in language development and usage among hearing impaired children. What appears to be needed is intense individualized remedial language training programs. Designing and executing such programs is a formidable time-consuming task because of:

- (1) The amount of data that must be collected and interpreted in longitudinal studies. These are necessary to increase our understanding of language development in the hearing impaired.
- (2) The detailed evaluation that must be performed for each child.
- (3) The amount of individualized training necessary.

We have been working with a computer program, originally developed by Newcomb (1963) at the Center for Communications Research, which we feel will be able to simplify some aspects of these tasks. The program does a very detailed syntactic analysis of written language along with error recognition and correction. It has some semantic capabilities but these are quite limited. It can reduce the burden placed on speech/language pathologists and teachers of the deaf by rather quickly analyzing the syntactic and lexical aspects of written language for data collection and individual evaluation purposes. It can also be used as a tutorial device.

The program is called PERC (Parsing with Error Recognition and Correction). PERC is written in FORTRAN and parses a sentence by testing the input string of word classes against programmed graph structures that describe grammatical sentences. The word class string is generated by a

(Continued on page 19)

Wullstein Awarded International Prize



The 1980 edition of the Amplifon Research and Studies Centre International Prize — one of the most important recognitions for studies or activities connected with the fight against deafness — has been awarded to a West German Doctor, Prof. Horst Ludwig Wullstein of Wurzburg, for the brilliant results he obtained in the middle ear surgery.

Prof. Wullstein's research and work are universally known by scientists. In particular, he has introduced in the treatment of chronic otitis media the basic principles of the middle ear physiology, developing, with tympanoplasty, original surgical techniques aiming at restoring and preserving the hearing function.

The CRS International Prize was created ten years ago to honor scientists who distinguished themselves, anywhere in the world, in the fight against deafness. The Prize Awarding Committee decreed this year to bring to the public opinion's attention the achievements of an ear surgeon, whose imposing amount of both theoretical studies and practical work has positively enhanced the science of Audiology.

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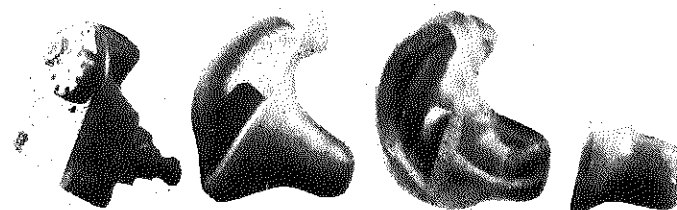
chrome air horns, a color TV (over the double bed), and AM-FM stereo/tape deck with a power booster driving six 3-way speakers and 120 channel CB radio. He's a good example of how this group takes advantage of today's technological advances. In their homes . . . cars . . . trucks . . . and now in their ears.

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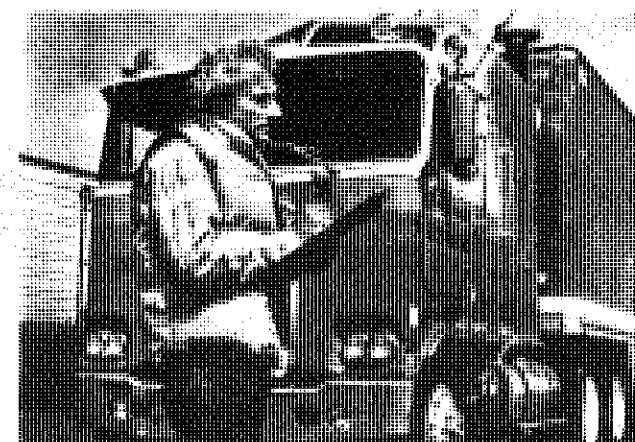
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Join Up - Special Membership Offer

The American Audiology Society was formed in October, 1974. In June, 1978, after a vote by the members of the Society, the name was changed to the American Auditory Society. The following provides basic information regarding the Society.

What is the Purpose Of The Society?

The primary aims of the Society are to increase knowledge of human hearing, promote conservation of hearing, and foster habilitation and rehabilitation of aurally impaired individuals. To attain these goals, the Society will coordinate and disseminate information, particularly through the holding of regular meetings, and the publishing of reports. Because of the multiple disciplinary nature of the Society's membership (audiology, otolaryngology, deaf education, hearing aid engineering, psychoacoustics, etc.), the Society will provide a formal platform for the interchange of information from allied professional fields.

Who Can Be A Member?

There are two categories of members: Active and Associate.

Active membership is open to individuals holding at least a baccalaureate degree from a certified college or university. To become an Associate of the Society, an applicant need only to support the aims of the Society. Associates do not have voting privileges, but do receive all publications and have all other rights and privileges. The Society is based primarily within the United States, but there is no geographic limitation on membership.

When And Where Will Meetings Take Place?

An annual meeting will be scheduled to take place either day before or after annual meetings of The American Academy of Otolaryngology (AAO) or The American Speech and Hearing Association (ASHA).

Will There Be A Journal?

The Society publishes *Ear and Hearing* and *Corti's Organ*. *Ear and Hearing* has a scientific format and is

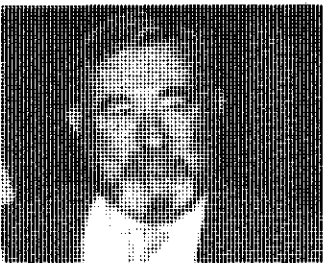
issued bimonthly (6 issues per year). *Corti's Organ* is published on a triannual basis. The format of *Corti's Organ* is informal and the purpose of the publication is to keep members aware of the Society's activities and other notable events.

How Much Are Dues?

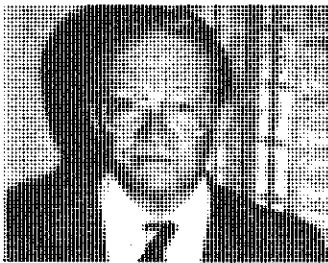
Annual dues for 1981 are \$29.00. Because the Society will not concern itself with political issues, such as licensure, certification, etc., dues will remain reasonable. All members receive both of the publications as part of their dues.

How Does One Join The Society?

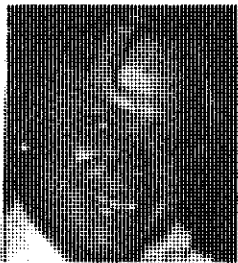
To become a member submit an application with an endorsement from two active members to the Secretary/Treasurer. For more information write: Ross J. Roeser, Ph.D., Secretary/Treasurer, American Auditory Society, 1966 Inwood Road, Dallas, Texas 75235.



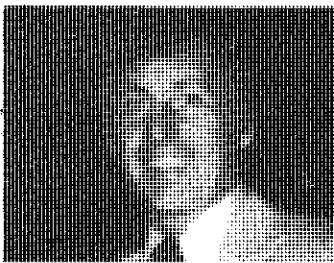
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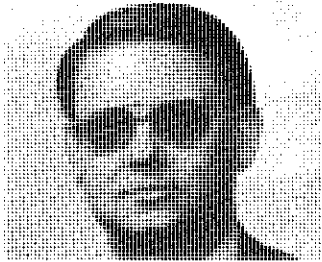
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The requirements for Active Membership in AAS include the minimum of a bachelor's degree or the equivalent in experience and signatures of two active members (see above). Until August 1, 1981, applications will be accepted without the accompanying signatures for applicants who do not know two members. The Secretary/Treasurer's office will obtain the necessary signatures from two active members.

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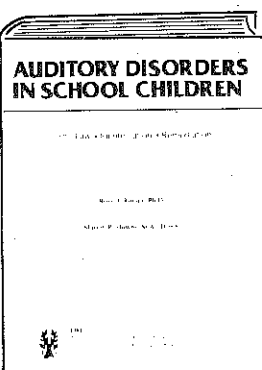
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The President's Message

(Continued from p. 1)

each of these instances I have been lucky enough to work alongside clinical and basic scientists from professional areas other than but adjacent to my own, always with a minimum of protocol but a maximum of sharing of professional interests and expertise.

I make no apologies for this dig into personal history, although I abhor the practice (which is tantamount to telling your friends about your experiences during the war). The reason I burden you with the details is that on that day many years ago, when I was asked to start the Deafness or Hearing Clinic I sowed the seeds of a lifetime philosophy which has stayed with me; it has been reinforced by other experiences and is as timely today as it was then; it is of fundamental importance to the practice of scientifically-based medicine, to clinically-directed research in medicine and to our area of professional interest in particular — the understanding of human hearing, the conservation of hearing and the habilitation and rehabilitation of the hearing impaired.

I recognized in those early days in London that the most effective way or the only way in which I could contribute to the area of clinical medical science that I was entering had to be in close collaboration with scientists in adjacent disciplines.

Today, the ideas and principles I formulated as a fledgling otolaryngology resident and investigator are no less pertinent; in fact they have grown in importance to the point where I believe the health of our shared interest in the hearing impaired is threatened unless we restate and revitalize some basic tenets. Every physician has a responsibility to his profession and his patients to provide competent medical care based on sound scientific principles; so each physician must, among so many other things these days, be trained as a scientist and maintain contact with the scientific aspects of his profession throughout his professional life. More to the point, those of us who feel the urge to be involved in clinical research must recognize that it is difficult now to "go it alone," unless we have most unusual training and expertise in research methods. Clinical research has become more of a joint venture than it ever was before and major advances in the health sciences are most commonly made now by teams of investigators rather than by the solitary investigator working in isolation. But the physician has always had and continues to have a role of great importance to play, just as is true of the other partners, in this research consortium.

Now I have come full circle. The number of physicians involved in research is declining, for many complex reasons. But one of those reasons may be that we have, to some extent, lost sight of the ideas I thought erroneously that I was perceiving for the first time the day I walked into a residency program. Health care has become a complex industry and clinical research into health science, although no more or less difficult, has become and continues to grow more complex. We each have a role to play, but only if there is interdisciplinary collaboration can research be most cost-effective and lead to significant improvement in patient care.

It is particularly appropriate that I share these personal thoughts and experiences with you in *Corti's Organ*, the house journal of the American Auditory Society; here we have a new society pledged to the support of not merely one or two of the many professional areas involved in hearing and hearing impairment, but all of them — audiology, education, habilitation, medical or surgical treatment and rehabilitation. I congratulate those readers who are members of this Society and who by joining it, have cast their vote for collaboration in clinical research and the care of the hearing impaired and deaf. Those readers who are not yet members, particularly physicians, I urge to consider joining to lend support to the concept of interdisciplinary collaboration in our common field of interest.

More Abstracts

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lexical component which contains a dictionary search, morphological processor and a permuter for words having more than one possible word class. The dictionary contains the English words and a set of codes describing their word classes and special functions such as verb type, adverb position and determiner order. An error is recognized when the input string fails to match any programmed structure; the error is identified by the point of failure. When the program operates in what we call the internal correction mode, the word class string is modified to correct the error and processing continues. It is important to note that this modification does not alter the input sentence; the final printout contains and identifies the error.

When used as described above, PERC can supply us with the following information about input sentences:

- (1) phrase structure analysis
- (2) part of speech analysis
- (3) error analysis
- (4) gross lexical counts such as word counts, sentence counts, words per sentence
- (5) complexity measures such as type/token ratio and subordination ratio
- (6) a single index of error severity

Thus, using this mode, a great deal of longitudinal data
(Continued on page 20)

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Don W. Worthington Ph.D. (1969 Northwestern University), Director of Audiology and Vestibular Services, Boys Town Institute for Communication Disorders in Children, 555 North 30th Street, Omaha, Nebraska 68131.

I have never been known as one who rushes out and joins each new organization that is formed. If an organization has nothing to offer its members, either personally or professionally, then I have no time for that involvement. With this philosophy, I studied the aims, objectives and progress of the American Auditory Society for several years before applying for membership. I am convinced that this organization is unique in providing membership opportunities to a diverse multi-disciplinary group of professionals dedicated to all aspects of human hearing. The publications and annual meetings of the Society offer the best possible avenue for cross discipline education and involvement. It allows each member of the Society an opportunity to assume equal responsibility and input while minimizing "territorial rights". One can correctly say, the Society facilitates cross professional communication. These efforts must be sustained in the future.

More Abstracts (Continued from p. 19)

can be analyzed in a short period of time. Or, a large number of children can be evaluated for purposes of record keeping and designing individualized treatment programs.

The internal error correction feature of PERC can be bypassed, so that the program can operate in an interactive mode, where it recognizes errors but requires the user to correct them. It is hoped that in this form it will serve as a tutorial device, allowing the older child an opportunity for

individualized practice with immediate feedback.

When this interactive mode is used, after the student makes the required error correction, the final printout contains the corrected form of the sentence. However, a listing of errors made before correction appears along with the detailed structural analysis. Thus the interactive mode can also give a record of progress.

Conclusion

Our experiences with PERC have demonstrated its potential for language analysis and teaching. Pilot research (Parkhurst and MacEachron, 1979, 1980) has demonstrated its ability to parse sentences produced by children with severe hearing impairments. Longitudinal studies of the language of hearing impaired children are being initiated at this time. Further developments in the program for evaluation and teaching purposes are planned.

Test-Retest Reliability Of A Distinctive Feature Different Test For Hearing Aid Evaluation

Pat Feeney
Iowa Head and Neck Associates
and
J. Richard Franks
Washington State University

This study was undertaken to develop and examine the reliability of new test material and procedures which might meet the requirements of sensitivity, reliability, and brevity desired in comparative hearing aid evaluations.

Three steps were taken to increase sensitivity. First, distinctive features were used so that a relatively large number of speech characteristics could be evaluated using a small number of stimuli.

Second, to further increase sensitivity, 13 consonants found to be frequently confused by hearing impaired listeners were selected. The thirteen consonants chosen were: /b, t, d, f, k, p, s, g, t, ch, th, th, v/.

Third, signal-to-noise ratios were adjusted to place the scores on the steepest portion of the articulation curve.

The Distinctive Feature Difference Test was prepared using the following procedures. Each of the previously indicated phonemes was recorded in the phrase /A C I I/ by a speaker of general American English. Ten scramblings of the stimulus phrases were recorded with the carrier phrase "you will mark" preceding each item.

A second tape was made from the original and passed through a B & K spectrum shaper for low-pass filtering of 12 dB per octave at 800 Hz. CID W-22 Lists were also recorded through the filter.

A closed response set was chosen for the test. Thirteen consonants as multiple choice alternatives for the consonants were provided for each response. The subjects were simply asked to select and circle the consonant heard in the stimulus phrase. The consonants presented in the test by the symbols: P, G (George), K, B, F, T, D, Th (voiced), Th (unvoiced), and Sh.

The test was administered to twenty-one normal and twenty hearing impaired subjects.

Test Administration

The filtered DFD Test recording was presented to normal subjects to simulate a high frequency hearing impairment. A signal-to-noise ratio of +20 was used, with at 70 dBA and a speech-band competing noise.

For the normal group, the test materials were prepared means of a group audiometer with matched TD phones. The normal subjects first received four practice trials with the DFD Test in quiet and in noise followed by lists which constituted the test and retest trials. The subjects were also given four practice trials with the W-22 words. Then full lists consisting of Lists III-A were presented. These lists constituted the retest for the W-22 words.

For the hearing impaired group, each subject was given the test answer form after which six to ten words were used for the subjects to learn the test procedure. A signal-to-noise ratio, using pink or speech noise, yielding 75 percent of the DFD maximum score after the first four trials. The 75 percent level was placed performance on the upper linear portion of the articulation curve. Finally, a test list was presented at the signal-to-noise ratio followed by a one-minute break and a retest. The stimuli were presented at a comfortable level through headphones.

Results

For comparison, the Distinctive Feature Difference Test was scored both on the basis of distinctive feature differences and on the basis of the identification of the correct word. The smallest mean test-retest difference and standard deviation were obtained with the DFD Test scored by distinctive feature differences. This was true for both the hearing loss subjects and the simulated loss group. Scores, representing only the simulated loss group, the largest mean test-retest difference and a larger deviation than the DFD scores.

T-tests for related means were applied to the data of the simulated hearing loss group and the hearing group. The mean test-retest differences for the DFD Test the phonemic scores were not statistically significant; however, the test-retest mean differences for the W-22 Lists were statistically significant at the .01 level.

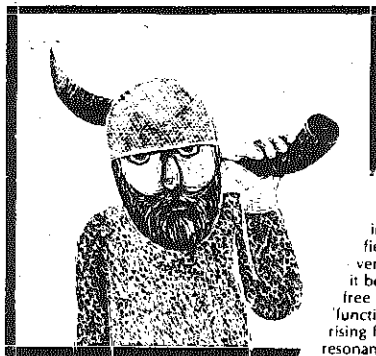
Intra-subject consistency is vital when considering

(Continued on p. 21)

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Jackson Hole Rendezvous

A workshop designed specifically for clinical audiologists, hearing aid specialists, and otolaryngologists will be held in Jackson Hole, Wyoming, September 1-5 1981, at the Ramada Snow King Inn. Jackson Hole Rendezvous, a Conference for Hearing Health Professionals, will provide fifteen credits toward continuing education units required by various organizations and licensing boards. Accreditation by the American Medical Association and NIHIS of the National Hearing Aid Society is pending.

Members of the faculty are eminently qualified hearing health professionals, who will share innovative educational information with the attendees. Along with the outstanding lectures, the registration fee includes such activities as a float trip on the Snake River at the Base of the Grand Tetons, followed by a steak fry at the Triangle X Ranch, a guided bus tour of the Grand Teton National Park, and a boat ride on Jackson Lake with a lunch on Elk Island.

Members of the faculty include:
David P. Egolf, Ph.D., Assistant Professor, Electrical Engineering, University of Wyoming.

Geary A. McCandless, Ph.D., Professor, Speech Pathology/Audiology, Head of Audiology Department, University of Utah Medical Center.

Ralph A. Nelson, M.D., Otologist, House Otolologic Medical Group, Los Angeles, California.

Jerry L. Northern, Ph.D., Professor of Otolaryngology, Head of the Audiology Section University of Colorado Medical Center.

Martin S. Robinette, Ph.D., Professor of Audiology, University of Utah.

Darrell E. Rose, Ph.D., Director of Audiology, Mayo Clinic

Wayne J. Stabb, Ph.D., Vice President, Audiotone

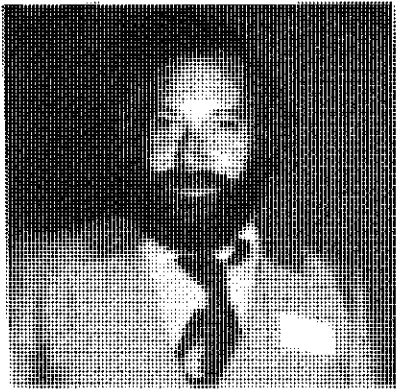
Darrel L. Teter, Ph.D., Private Practice, Speech Pathology and Audiology, Denver, Colorado

David L. Wessell, Marketing Manager, Hearing and Test Instruments, Phonic Ear Inc.

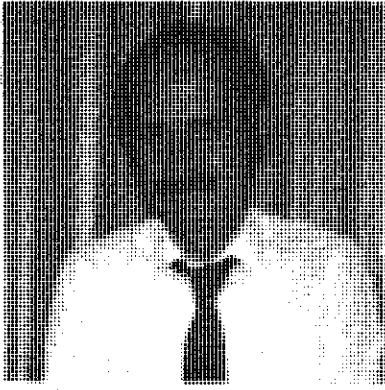
Jack A. Willeford, Ph.D., Professor and Director, Divison of Audiology, Colorado State University.

Inquiries concerning the Jackson Hole Rendezvous should be made to the chairman of the committee, Michael W. Marion, Casper Clinic, 940 East 3rd Street, Casper, Wyoming 82601. Phone 307-265-3970.

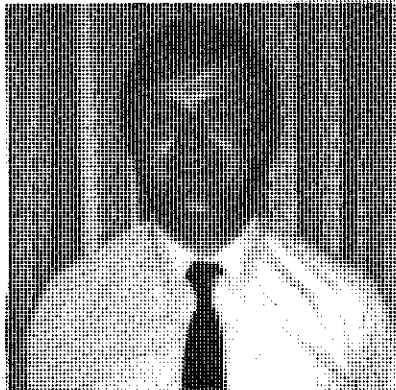
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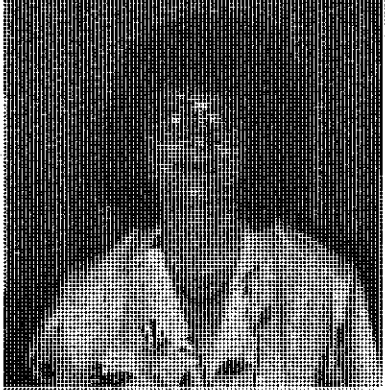
Michael Seidemann



Gerald Miltenberger



George Cire



Virginia Anderson

Pre-registration Form for 1981 AAS Annual Meeting

Registration is open to all who wish to attend on the following schedule:

	Registration for Meeting		*Registration for Meeting, River Boat Tour and Dinner	
	Before Aug. 15	After Aug. 15	Before Aug. 15	After Aug. 15
AAS Member	22.00	26.00	55.00	65.00
Non-Member	35.00	45.00	70.00	80.00
Resident-Student	10.00	15.00	35.00	45.00
Spouse	10.00	15.00	35.00	45.00

*Limited to 85 registrants on a first-come basis.

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☐ Yes ☐ No

Send to:
Michael F. Seidemann, Ph.D
AAS Program Chairman
LSU Medical Center
100 S. Derbigny
New Orleans, LA 70012

MAKE CHECK PAYABLE TO A.A.S.

Abstracts

(Continued from p. 20)

to evaluate and rank hearing aid performance. The DFD scores for both groups show strong test-retest consistency with scores differing by less than 7 percent. In contrast, only 52.5 percent of the simulated loss subjects exhibited test-retest differences less than 7 percent for the W-22 Lists.

In summary, the results of this investigation appear to support the reliability of the DFD Test and the noise competition procedure postulated

as meeting the requirements for an efficient and sensitive speech reception test for comparative hearing aid evaluation. However, it is recognized that the appropriateness of the DFD Test must be proven in actual clinical situations involving comparison of hearing aids with hearing impaired subjects. Nevertheless, the present study suggests that the test is worthy of further clinical and research examination.

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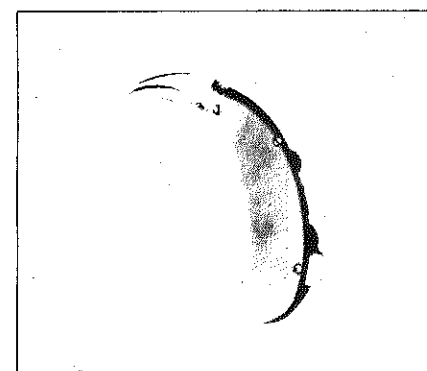
Argosy alternatives for the hearing health care professional . . .

Fine, quality hearing instruments delivered to dispensers at very affordable prices under a liberal quantity discount schedule. At Argosy we sell Rexton precision instruments, featuring the latest in technology and styling. Our new, com-

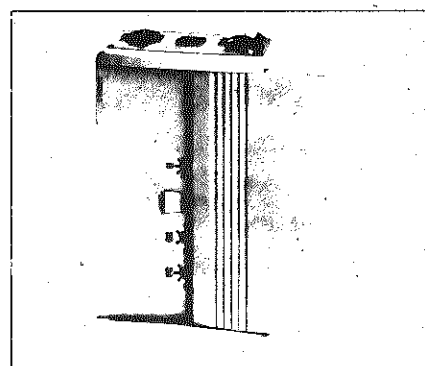
plete earmold laboratory facilities. Acoustic Technologies, specializes in producing quality earmolds and acoustic couplers to meet the demands of the most discriminating professional and user.

Behind-The-Ear Instruments

Currently 18 models are available over all power classes. The line includes a tinnitus masker and several units with high frequency emphasis response. Most instruments feature compression. The versatility within the Rexton line is readily apparent, from the compact Mini Series to the popular 780. Rexton engineering assures you and the user of quality performance and durability.



The Mini 25 PP is pictured.



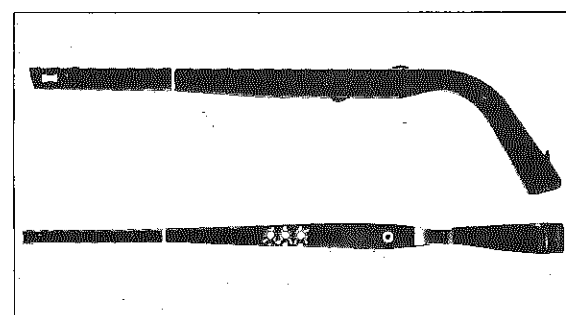
Body Instruments

The Power Master and Super Master are lightweight and cosmetically styled with a wide choice of receivers including bone-conduction and Y-cord fittings. Both are economical to operate on an AA penlite battery. A protective cap covers controls and microphone opening.

The Power Master 25 PP is pictured.

Eyeglass Instruments

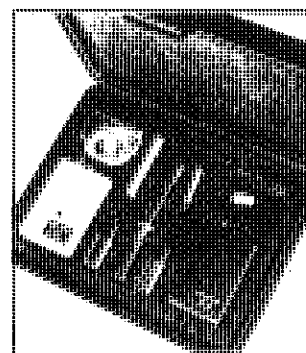
A wide range of eyeglass units are available, including two bone conduction instruments. All air-conduction models are universal left and right and feature pre-cut, "snap-on" extensions for ease of fitting. Models are available for open coupler fittings, severe high frequency sloping losses, and push-pull circuitry for severe losses.



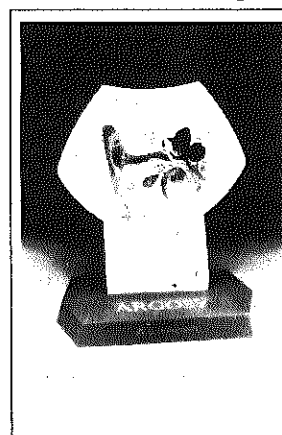
The Mini Compact is pictured.

The Mainstreamer

The individual wireless auditory training system is designed primarily for use by the mainstreamed student, yet it has application for many individuals outside the classroom. The use of transducer coils eliminates the need for any wires to the ear. Typical range of this system is in excess of 200 feet with good signal-to-noise ratio, even when worn under clothing.



Ear Replica



The Argosy Educational Series provides the dispenser with valuable educational tools for office, clinic, school and university use. The anatomical, 3-dimensional display accurately depicts the outer, middle, and inner ear in full color. The 8-inch high unit is molded of durable, color-fast plastic. A brochure, "REXTON INTRODUCES KEMAR", is also available through Argosy's educational program.

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CALENDAR OF EVENTS

JUNE 1981

10-13
THE 5TH ANNUAL FITZ-HUGH SYMPOSIUM: PEDI-
ATRIC OTOLARYNGOLOGY. The Boar's Head Inn, Char-
lottesville, Va. CONTACT: University of Virginia School of
Medicine, Box 368-Medical Center, Charlottesville, VA 22908.

11-13
PEDIATRIC OTOLARYNGOLOGY '81, Galveston, TX.
Sponsor: Dept. of Oto., University of Texas Medical Branch,
Galveston. Fee: \$180. 20 hrs. AMA Category I credit. Guest
Faculty: Drs. Robin Cotton and Sylvan Stool. CONTACT:
Chairman, John K. Jones, M.D., Dept. of Oto., Univ. of Texas
Medical Branch, Galveston, TX 77550/call 713-765-3633.

AUGUST 1981

2-6
F.T. HILL 22ND ANNUAL SEMINAR IN OTOLARYN-
GOLOGY, Waterville, ME. Sponsor: Colby College and the
Mid-Maine Medical Center. Fee: \$270. CONTACT: Colby Col-
lege, Mayflower Hill, Waterville, ME 04901.

5-7
GREAT DEBATES IN OTOLARYNGOLOGY, Seattle, WA.
Sponsor: Univ. of Washington in cooperation with Washing-
ton State Medical Association. CONTACT: Univ. of Washing-
ton, Div. of CME, SC-50, Seattle, WA 98195.

SEPTEMBER 1981

12
"AUDIOLOGIC TESTS IN NEURO-OTOLOGIC DIAG-
NOSES: Historical and Contemporary Perspectives." A one
day seminar being held in Philadelphia, PA. Speakers are
James Jerger, Ph.D and Daniel M. Schwartz, Ph.D. Registra-
tion fee \$125.00. Contact: John T. Ciarrochi (215) 747-6800.

21
ANNUAL MEETING OF THE AMERICAN AUDITORY
SOCIETY, New Orleans, La. (See Page 1 for details.)

20-23
AMERICAN ACADEMY OF OTOLARYNGOLOGY AND
HEAD AND NECK SURGERY ANNUAL MEETING, New
Orleans, LA. CONTACT: Ruth C. Enquist, Director of Meet-
ings and Membership, AAO, 15 Second St., Rochester, MN
55901/call 507-288-7444.

25-26
"CENTRAL AUDITORY PERCEPTION — A Practical
Workshop in Theory Diagnosis and Management." Pres-
ented by Liz Protti, M.S. and Maxine Young, M.S., Delaware
County Memorial Hospital, Drexel Hill, PA. Fee \$150.00.
Location: New York Statler, New York, City. Contact: John
Ciarrochi (215) 747-6800.

NOVEMBER 1981

20-23
AMERICAN SPEECH-LANGUAGE-HEARING ASSO-
CIATION NATIONAL CONVENTION, Los Angeles, CA.
CONTACT: Frances J. Johnston, Ph.D., Director, Conventi-
on and Meetings Div., American Speech-Language-Hear-
ing Association, 10801 Rockville Pike, Rockville, MD 20852/call
301-897-5700.

ANNUAL MID-WINTER SYMPOSIUM ON PRACTICAL
SURGICAL PROBLEMS IN OTOLARYNGOLOGY Snow
mass (Aspen), Colorado. Sponsored by: Lutheran General
Hospital. 30 Category I Continuing Education credits. Con-
tact: Robert M. Meyers, M.D., Program Chairman, Lutheran
General Hospital, 1775 Dempster Street, Park Ridge, Illinois
60068.

MAY 1982

1-8
COMBINED OTOLARYNGOLOGICAL SPRING MEET-
INGS, The Breakers, Palm Beach, FL. CONTACT: Harry
McCurdy, M.D., COSM Coordinator, American Council of O-
tolaryngology and Head and Neck Surgery, 1100-17th St., N.
Suite 602, Washington, D.C. 20036/call 202-659-4591.

OCTOBER 1982

17-20
AMERICAN ACADEMY OF OTOLARYNGOLOGY AND
HEAD AND NECK SURGERY ANNUAL MEETING, New
Orleans, LA. CONTACT: Ruth C. Enquist, Director of Meet-
ings and Membership, AAO, 15 Second St., Rochester, MN
55901/call 507-288-7444.

APRIL 1983

9-16
COMBINED OTOLARYNGOLOGICAL SPRING MEET-
INGS, The Fairmont, New Orleans, LA. CONTACT: Harry
McCurdy, M.D., COSM Coordinator, American Council of O-
tolaryngology and Head and Neck Surgery, 1100-17th St., N.
Suite 602, Washington, D.C. 20036/call 202-650-4591.

OCTOBER 1983

23-27
AMERICAN ACADEMY OF OTOLARYNGOLOGY AND
HEAD AND NECK SURGERY ANNUAL MEETING, A
heim, CA. CONTACT: Ruth C. Enquist, Director of Meet-
ings and Membership, AAO, 15 Second St., Rochester, MN
55901/call 507-288-7444.

NOVEMBER 1983

18-21
AMERICAN SPEECH-LANGUAGE-HEARING ASSO-
CIATION ANNUAL CONVENTION, Cincinnati, OH. CO-
TACT: Frances J. Johnston, Ph.D., Director, Convention
and Meetings Div., American Speech-Language-Hearing Asso-
ciation, 10801 Rockville Pike, Rockville, MD 20852/call
301-897-5700.

MARCH 1984

5-9
7TH SHAMBAUGH WORKSHOP ON OTOMICROSCOPY
AND THE 4TH SHEA FLUCUANT HEARING LOSS
SYMPOSIUM, Northwestern University's Thorne Hall, Chi-
cago, IL. CONTACT: National Hearing Assoc., 1010 Joliet
Blvd., Suite 308, Oak Brook, IL 60521/call 312-323-7200.

MAY 1984

5-12
COMBINED OTOLARYNGOLOGICAL SPRING MEET-
INGS, The Breakers, Palm Beach, FL. CONTACT: Harry
McCurdy, M.D., COSM Coordinator, American Council of O-
tolaryngology and Head and Neck Surgery, 1100-17th St., N.
Suite 602, Washington, D.C. 20036/call 202-659-4591.

OCTOBER 1984

16-20
AMERICAN ACADEMY OF OTOLARYNGOLOGY AND
HEAD AND NECK SURGERY ANNUAL MEETING, Las Vegas, NV.
CONTACT: Ruth C. Enquist, Director of Meetings and Mem-
bership, AAO, 15 Second St., Rochester, MN 55901/call
507-288-7444.

NOVEMBER 1984

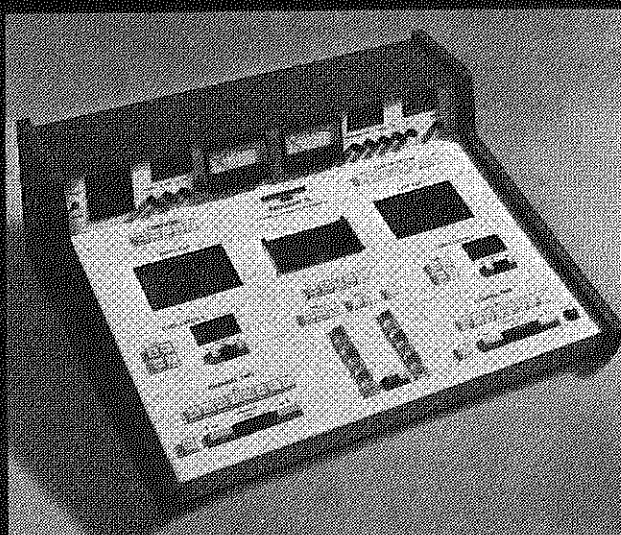
16-19
AMERICAN SPEECH-LANGUAGE-HEARING ASSO-
CIATION ANNUAL CONVENTION, San Francisco, CA.
CONTACT: Frances J. Johnston, Ph.D., Director, Conventi-
on and Meetings Div., American Speech-Language-Hear-
ing Association, 10801 Rockville Pike, Rockville, MD 20852/call
301-897-5700.

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AAS ANNUAL MEETING
SEPTEMBER 21ST

A ROGUES GALLERY OF
PICTURES OF AAS, SENTAC,
& AO MEMBERS AT PLAY &
WORK! P.P. 5-7

SUMMARIES OF AAS
PAPERS AT ANNUAL
MEETING BEGINNING
ON PAGE 4.

American Auditory Society
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CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 6, No. 3/Vol. 7, No. 1

Fall/Winter 1981-82

Annual Meeting A Grand Success Over 135 Attend

A Long Day of Good Papers

Those who sat through the whole day of papers at the AAS Annual meeting Sept. 21 were rewarded with a variety of stimulating, provocative and informative talks by members and guests. A prize for the most presentations should go to Michael Seitz, who co-authored and presented three excellent papers. A prize should also be awarded to the most frequent questioner, Dave Lilly, whose well-considered questions kept things lively. Abstracts of the papers begin on page 5 of this issue.

The highlight of the meeting was the Carhart Memorial Lecture, given by Paul Ward. He described the results of a national committee's conclusions regarding the status of Research in Communication Disorders — a projection for the next decade.

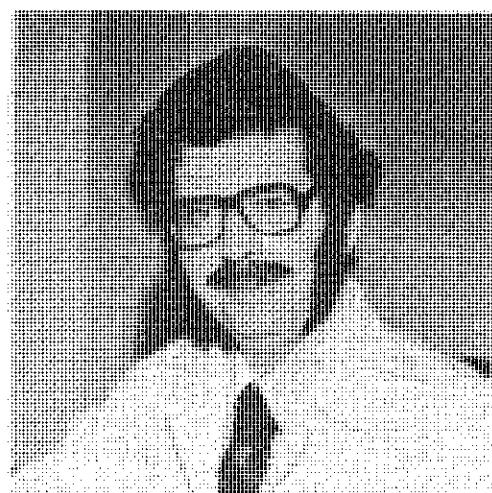
Sailing Down The River With AAS, SENTAC & AAO

Over 120 people boarded the river boat Cotton Blossom for an evening's entertainment that combined groups from three organizations: AAS, SENTAC and the Academy. A relaxed two hours' cruise up the Mississippi on the paddle-wheeler featured cocktails and excellent hors d'oeuvres. The boat had been chartered by Charlie Anderson, as Tracoustics' contribution to the R & R of the societies.

Following the cruise the entire entourage walked through the streets of the French Quarter to Armands, a well-known restaurant where the banquet was held. The evening's entertainment was provided by a Cajun comedian who convulsed the group with his monologue and accent.

The entire evening was planned and executed by Mike Seidemann, who is the new president of SENTAC and was program chairman for the AAS meeting.

NAUNTON ON FOR 2ND TERM



Pres. Ralph Naunton

At the annual meeting of this Society Ralph Naunton graciously accepted a draft from the Executive Board to serve another term as President of AAS. He was urged to continue because of the feeling of the Board that a year has not been long enough to effect some of the ideas that he has had to expand the purview of the Society. It will also be expedient to have Ralph as president because the Board designated that next year's meeting be again held in conjunction with the Academy of Otolaryngology rather than with ASHA. The reason for this change of policy is that ASHA is meeting in Toronto next year, which would be difficult for members to attend and for a society to transport materials.

LaVonne Bergstrom was appointed program chairman for next year's meeting which will again be in New Orleans. Mike Seidemann was drafted to repeat his stellar performance as Local Arrangements Chairman for the meeting in New Orleans.

The minutes of the Executive Board meeting for September 20 are on page 3.

Highlights of 1981 Meeting

- Bergstrom named 1982 Program Chairman (Pg. 3)
- 1982 Meeting to be in New Orleans again (Pg. 3)
- Naunton appointed for unprecedented 2nd term (Pg. 1)
- Keith named 1983 Program Chairman - AAS to meet in Cincinnati (Pg. 4)
- New Executive Committee members announced (Pg. 3)

International Audiology Society Meets — Special Air Fare Available

For Registration

or

Submittal of Papers

For registration or submittal of papers write to:

XVI International Congress of Audiology
Secy.—Gen. Dr. Tapani Jauhiainen
Dept. Of Otolaryngology
Helsinki University Central Hospital
Haartmanin Katu 4 E
SF 00290 Helsinki 29, Finland

Sign Up For Finland

The numbers are growing of people planning to attend The International Auditory Congress in Helsinki, May 23-27, 1982. Spurred by the reasonable air fares that can be obtained — as low as \$611.00 round trip from New York, audiologists and otolaryngologists are hurriedly submitting papers that will put them on the program of the Congress.

[Ed. note: It has been our experience that any legitimate paper will be accepted for presentation by The International Auditory Society. Therefore you may be quite sure that you will be placed in the program if you submit.]

There will be a Pre-Congress meeting in Goteborg, Sweden for those who want to visit Sweden before going on to Finland. A package air-flight is being worked out at the most reasonable rates and information can be obtained from Marion Downs, Box B210, University of Colorado Health Sciences Center, Denver, CO. 80220.

CORTIS ORGAN is a quarterly publication of the American Auditory Society, processed in Dallas, Texas.

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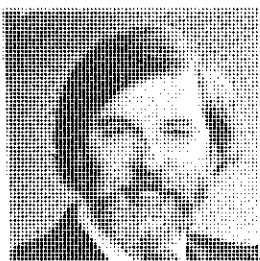
Ex-Officio:
Marion Downs, M.A.
Laura Ann Wilber, Ph.D.

AAS Members On Cronkite's Show

On June 30, CBS aired a prime-time program on the early identification of deafness. Most of the segment was filmed at the University of Colorado Health Sciences Center in Denver and featured AAS members Jerry Northern and Marion Downs. Scenes from Lexington School for the Deaf and Albert Einstein Medical Center in New York were shown.

"Walter Cronkite's Universe" is a science magazine show that began in June, 1981. "That They Might Hear" was a special documentary on the importance of early identification of hearing loss in young children. The show featured children with hearing problems and interviews with their mothers, and demonstrated several techniques for testing the hearing of young children and infants, including BSER testing and the High Risk Register. CBS indicated "That They Might Hear" would be seen by a viewing audience of at least 30 million people.

Our Renaissance Men and Women



John Muma

(Ed. Note: Those among us who do not live by bread alone are worthy of recognizing from time to time. This will be the first in a series of such recognitions. If anyone has a favorite Renaissance person to nominate, please inform the Editors.)

John R. Muma: Ph.D., Penn. State University; Chairman, Speech Pathology and Audiology, Texas Tech University. John is both a researcher and clinician with over twenty years of clinical experience in a variety of clinical settings. He has over forty publications most notable of which are *Language Handbook* (Prentice Hall, 1978), *Muma Assessment Program* (MAP) (Natural Child Publisher, 1979), and *Language Primer* (Natural Child Publisher, 1981). He has been a keynote or featured speaker for more than 60 state or regional conventions and invited speaker at more than 45 universities. John has been active in the American Speech-Language-Hearing Association, American Psychological Association, and the Society for Research in Child Development. In ASHA, he was one of the candidates selected to be interviewed for Executive Secretary and he was in the final pool of candidates for nomination for president last year but not a nominee. He is currently organizing an Academy of Language Disorders. John has served as a reviewer for several scholarly journals and three book publishers. He has been a panel reviewer for the Office of Special Education. And, he has been very active in dealing with federal and state legislators and officials in defining and solving problems with P.L. 94-142.

John's non-professional interests include fishing, poetry, and antiques. Herewith are samples of his poetry:

POULTICE

John R. Muma
1979

She . . . in a quiet way
Knows me well
Even lying upon her breast
For that moment
I know her face
And she mine!
Our placenta dropped away
And I dropped into her sleep
And she into mine.

Leaving her behind,
My tears and hers,
I laid myself down
Upon my school rug.
And, we smiled
Even greater smiles
For both of us
Which neither saw.

She laid upon me
A warm poultice
For whatever took me
So I waked
In warm Spring morning
And she waked beside me.

Letter From England

My dear Editor,

The depressing, climatic, and social-political-economical conditions have discouraged your foreign editor from putting pen to paper. As a matter of fact he has been busy spreading the pathological gospel on the Continent and, in particular, in Belgium where he has lectured at three consecutive conferences.

ENT-pathology in common with the problems of hearing has been attracting the interest of both the general pathologist and the otolaryngologists-audiologist. This was well shown at the meeting of the British Division of the International Academy of Pathology arranged by Dr. W. Gepts, Professor of Pathology at the new University Medical School in Brussels and by the fact that the European Economic Council i.e. its subcommittee on hearing research has met, also in Brussels, under the able chairmanship of our friend Professor Salvatore Iurato from Bari to discuss a coordinated European research programme of the organ of hearing.

The third occasion for my visiting Brussels came when I was invited to take part in the Symposium on Otospongiosis of the Belgian Association of Otolaryngologists (President Dr. Freyenhoven) attended by all leading Belgian and French otolaryngologist among them Dr. Causse senior, whose theory of the lysosomal role in the pathogenesis of otospongiosis our electron microscopic studies have confirmed. Also in this country seminars and courses in our field abound and a most stimulating course at the famous Radcliffe Infirmary in Oxford arranged by Bernard Colman and his Staff has attracted many from near and far. In fact the faculty included two Americans, the ever popular Manfred McGee from Detroit and Professor R. Cotton from Cincinnati and R.E. Gristwood from Adelaide (Australia). The British contingent included many well known otolaryngologists and audiologists of our country.

Soon we shall be packing our cases for our annual pilgrimage to the Ear Research Institute recently renamed The House Ear Institute a well merited baptism.

I have begun a depressed note but the sun has come out, an American has won the Open Golf Championship in Sandwich and true sportsmanship has been displayed by winners and losers who have included some of the greatest golfers, e.g. the Golden Bear Jack Niklaus. What a contrast to the recent behaviour on the tennis courts of Wimbledon by you know who . . .

We have been worried about many more important things bearing on our future and recalling the past but, above all, we have been praying that the fruitfully-plague threatening California may soon be conquered. As Hamlet said to Horatio: 'There are more things in heaven and earth than are dreamt in your philosophy'.

Sincerely,
I. Friedmann

Editorial

The Taste of Crow

Ye editors are happily ingesting crow's meat as a result of the good turnout at the AAS meeting in New Orleans. Just two years ago we sourly complained that few otolaryngologists attended our meeting, which was also held in conjunction with the Academy that year. However, this year's attendance has been the highest yet recorded, giving the laugh to our crabbed mutterings.

Actually, the ranks were swelled largely with audiologists who were attending the Academy and were touching base with AAS in the process. There was, to be sure, a cadre of loyal otolaryngologists who left the main meetings to sit in on ours.

The gratifying aspect this year was the very tangible assistance and recognition the Academy gave us for our meeting: *Item:* The Academy assigned us a meeting place. *Item:* The Academy gave us a day for meeting within the main schedule of the Academy's program. *Item:* The Academy published our meeting time and place in the regular printed program. *Item:* In the formal procession that opened the Academy meeting this year, our president was invited to march as representative of the AAS. Ralph Naunton reported that, corny as the procession idea was, he really enjoyed it and was impressed by it.

All of these concessions give us a warm feeling for the Academy, and encourage us to seek more dialogue with the Academy and its members than with other groups. With Ralph Naunton as our marching proxy for a second term perhaps a new era of cooperation will begin. — MPD, RJR

Wanted: Poster Child Nominee for 1982

WASHINGTON, D.C., (October 15, 1981) — The Council for Better Hearing and Speech Month today invited nominations for a 1982 poster child who, along with a celebrity chairman, will represent more than 22,000,000 Americans with communicative disorder during next May's national public information campaign.

Winner of the contest will be featured in television, radio, and publication publicity, and visit the nation's capital to help launch the campaign in early May. Planned activities include a tour of the city, visits to the White House and Capitol, participation in a May 1 national special event campaign kickoff, and other special appearances.

Poster child nominees must be at least three but no older than six years old and have a significant hearing, speech, or language problem. Contestants may be sponsored by parents, friends, teachers, hearing or speech field professionals, or organizations.

To enter a child, submit his or her name; biographical information; at least two different, good-quality black and white photographs (preferably 8" x 10" glossies); a professional estimate of the degree of hearing or speech loss; and a signed photo release. Description of the child's personality, likes and dislikes, and favorite activities would also be helpful.

Mail entries to "Poster Child Contest," Council for Better Hearing and Speech Month, 1430 K Street, N.W., Suite 600, Washington, D.C. 20005. Entries must be received by the Council no later than Monday, January 4, 1982.

CITIES

John R. Muma
1970

Cities are for those
Who study subway routes
And walk fast but never at night.

Apartments are for cliffdwellers
Who don't know totem makers
Nor priests
But understand and bet
Against pro-teams.

Factories are for smoke gatherers
Who wait for and stalk
Trucks.

Crows are for those
Who measure and count
By stop-lights
Who hustler hustlers
At nonclearance sales.

Cars are for linking
Breakfast and twilight TV sets
And preparing us for cities
By emerging and purging
With starts and stops
Toots and honks
Lanes and patterns
Overpasses and underpasses
Which bypass us,
Us.

Minutes of the 1981 Executive Committee Meeting

Minutes of the American Auditory Society Executive Committee Meeting

Members Present:

Charlie D. Anderson, Marion P. Downs, A. Bruce Graham, Ed Johnson, Susanne Kos, Fred Linthicum, Ralph F. Naunton, Ross J. Roeser

Members Absent:

Susan Conway-Fithian, Malcom Graham, Earl Harford, Merle Lawrence, Sam Lybarger, Hiroshi Shimizu, John Sinclair, Dixon Ward, Laura Wilber.

- President Naunton opened the meeting at 3:30 p.m.
- The minutes of the 1980 Executive Committee meeting were presented and approved with only one spelling error correction.
- The Income and Disbursement Statement for the period of January 1, 1981 through August 31, 1981 was reviewed and discussed.
- A list of 167 applicants for membership was presented. Of this number 138 were approved, and 29 had incomplete memberships as they didn't have the necessary signatures.
- Results of the recent Executive Committee election were reviewed. A total of 403 ballots were received. The successful candidates were: Lavonne Bergstrom, Earl Harford, Susanne Kos, Bill Meyerhoff, James Nunley, Dixon Ward and Don Worthington. Those members of the Executive Committee retiring are: A. Bruce Graham, Merle Lawrence, Fred Linthicum, Samuel F. Lybarger. President Naunton expressed appreciation to the retiring officers for the effort they had expended for the Society during their terms.
- After considerable discussion, the site for the 1982 annual meeting was set for New Orleans in conjunction with the American Academy of Otolaryngology. Michael Seidemann volunteered to be the local arrangement chairman, and the names of two Executive Committee members were suggested for Program Chairman (Lavonne Bergstrom and Suzanne Kos). During the 1982 meeting an attempt will be made to have a booth for the Society.
Four individuals were identified for the Carhart Memorial Lectureship Award. President-Elect Anderson will contact the individual selected by the Executive Committee to determine if he will accept the award.
- Ross J. Roeser was appointed Secretary/Treasurer for 1983.
- Marion Downs pointed out that limiting the terms of the President to one year does not allow the President time to have an impact on the direction of the Society, and suggested that the term of the President be extended for a period of 2 years. There was a general consensus that extending the term of the President to 2 years would allow for more continuity. The bylaws limit the term of the President to one year, but do not prohibit the President from being re-elected. In view of this, with approval of President-Elect Anderson, President Naunton was re-appointed for an additional one year term for 1982.
- Ross Roeser was designated as a representative to a committee to meet with ASHA to discuss future involvement of Representative Professional Organizations. A meeting will be held on October 4, 1981 in Chicago.
- Susan Conway-Fithian recently informed President Naunton that she was unable to fulfill her duties as an Executive Committee member, and resigned from the office. The AAS bylaws do not specify how Executive Committee members are replaced. Therefore, A. Bruce Graham, whose term of office was to expire in December, 1981 was appointed to fill her vacancy. His term of office will be extended through December, 1983.
- John Sinclair, a member of the Executive Committee, did not renew his membership, and President-Elect Anderson indicated that he would contact him and determine if he wished to continue being a member of the Society. The name of an individual was suggested to replace John Sinclair if he does not wish to continue his membership in AAS.
- The Academy of Dispensing Audiologists recently contacted AAS and suggested that a joint meeting be held in 1983. After discussion it was unanimously decided that AAS not meet with ADA.

Do You Know These Applicants?

The following individuals applied for membership in AAS under the special provision and as yet do not have sponsors. If you know any of them and would like to be a sponsor, please write Susanne Kos, Assistant Secretary (1966 Inwood Road, Dallas, TX 75235).

New Members needing Sponsors

- Bui Minh Duc M.D. Walnut, Ca.
- Charles J. Baldwin, M.D. Jacksonville, Fla.
- Janet Brueck, M.A. Memphis, Tn.
- Cynthia Bagwell, M.S. Norris City, Ill.
- Bonnie L. Boehr, M.A. Pacific Palisades, Ca.
- McKay Burton, Ph.D. New Orleans, La.
- Walter Chariz, Ph.D. San Antonio, Tx.
- Stanley Cannon, M.D. Miami, Fla.
- T. Walter Carlin, Ph.D. Houston, Tx.
- Richard B. Dawson, M.D. Okla. City, Okla.
- Debra G. Dolman, B.S.E. St. Joseph, Mo.
- Georgina R. de Erdmann, M.A. Mexico City, Mex.
- Marcia Fariss, M.A. San Jose, Ca.
- M. Reese Guttman, M.D. Chicago, Ill.
- Joan Larson Glasier, M.Ed. Imola, Calif.
- Richard Hetsko, M.Ed. Oberlin, Oh.
- Harriet Green Kopp, Ph.D. San Diego, Calif.
- James Jerome, M.A. Ft. Bennington, Ga.
- Clayton R. Johnson, M.S. Dubuque, Ia.
- Jo Hanna Kingsland, Ed. Spec. Oak Park, Mich.
- Malcom H. Light, M.A. Miami, Fla.
- Ron M. Parker, Ph.D. Manhattan, Ks.
- Patricia Patton, M.S.C. Montgomery, Ala.
- James S. Payne, M.Ed. Rome, Ga.
- Thomas Moore, M.S. Calgary, Canada
- Guy O. Pfeiffer, M.D. Mattoon, Il.
- Wm. F. Strock, M.S. Medford, Or.
- R.K. Vaughan, M.C.D. San Bernadino, Ca.
- Richard B. Vaughan, Ph.D. Fresno, Ca.
- Dwayne Wildhagen, M.A. Winter Haven, Fla.

- During the 1980 AAS Executive Committee meeting the possibility of publishing a membership directory was discussed. It was estimated that the cost of publishing and mailing such a directory would be about \$2,200.00. In view of the cost, it was decided that the membership directory not be published separately but remain in *Corti's Organ*.
- The Executive Committee approved the transfer of \$1,000.00 from the AAS account to the *Ear and Hearing* account in January, 1982.
- The Editorial Board of *Ear and Hearing* recommended that in lieu of the cash award for the best papers appearing in *Ear and Hearing* in 1981, the authors of the papers receive a plaque. After discussion the Executive Committee approved this recommendation and it was further more resolved that the awards be presented during the annual meeting. In addition, the authors should be invited guests of the Society for the annual dinner.
- Ross J. Roeser expressed his appreciation to the members of the 1981 Editorial Board of *Ear and Hearing*. He also recognized the Editorial Consultants for *Ear and Hearing* during 1981. The names of the Editorial Consultants will be published in the November/December, 1981 issue of the journal.
- Marion Downs pointed out that in 1984 the International Congress of Audiology will meet in Santa Barbara, and that Sanford Gerber was the local arrangements chairman. It was the consensus of the Executive Committee that AAS should have at least a half day meeting during the International meeting and that Marion Downs should contact Dr. Gerber to begin making plans for it. Because Dixon Ward has been active in both the International Audiology Society and AAS it was felt that he should be involved in setting up the meeting.
- Ross Roeser indicated that he was looking into purchasing a computer for the Society and due to the relatively sizeable investment wanted to inform the Executive Committee.
- The Executive Committee as a group expressed its appreciation to Mike Seidemann and the other members of the program committee for their efforts in planning this year's meeting.

There being no other business the meeting was adjourned at 6:20 p.m.

AAS Statement of Income and Disbursement (1/1/81-8/31/81)

Revenues	
1. Membership dues	\$15,565.93
2. Ear & Hearing allowance	1,500.00
3. Interest on savings account	1,210.93
4. Sales of advertising - Corti's Organ	1,225.00
5. Convention & registration	2,562.00
6. Other	
Total Revenues	\$22,063.86

Expenses	
1. Supplies	\$313.92
2. Equipment	9.44
3. Postage - Office	589.00
- Corti's Organ	778.39
4. Duplicating costs	229.04
5. Telephone	185.84
6. Travel	802.67
7. Publication costs	
- Ear & Hearing	20,149.30
- Corti's Organ	2,859.09
8. Accounting & audit	250.00
9. Contract services	
- Office	578.58
- Corti's Organ	1,012.50
10. Convention expense	349.96
11. Supplies - Corti's Organ	5.45
12. Sec./Treas. expense allowance	400.00
13. Overhead	42.07
Total Expenses	\$28,556.24
Net Income	(6,492.38)

Assets	
Cash-Checking	\$3,595.29
Savings	\$11,569.79
Equipment	\$518.90
Less accumulated depreciation	(\$378.29)
	\$15,305.69

Capital	
Balance December 31, 1981	\$21,798.07
Income as of August 31, 1981	(6,492.38)
Accumulated Capital August 31, 1981	\$15,305.69

Bergstrom 1982 Program Chairman



LaVonne Bergstrom

Dr. LaVonne Bergstrom has accepted The Program Chairmanship for the 1982 meeting, which will be held again in New Orleans in October. A call for papers will be sent out early in the Spring. Anyone wanting information or to help with the meeting should contact:

LaVonne Bergstrom, M.D.
Div. of Head and Neck Surgery
Room 32-34 Rehab. UCLA
1000 Vetran Ave.
Los Angeles, Calif. 90024

Summaries of Papers

The Effects of Tinnitus On ABR Waveforms

Michael R. Seitz
Brooklyn College
Brooklyn, N.Y.

Dennis G. Pappas, M.D.
ECHO Foundation
Birmingham, Al.

Martha R. Mundy

Over 7 million people in the U.S. suffer from severe tinnitus and it is often the major symptom that brings patients into the otolaryngologist's office. The origin of tinnitus can be anywhere along the auditory pathway. As part of the diagnostic process, a number of patients who have complained of moderate to severe tinnitus have been evaluated with Auditory Brainstem Response Testing (ABR). During the course of this testing, patients who complained of tinnitus often had unusual as well as abnormal ABR responses. This observation was originally documented by A. Shulman, Department of Otolaryngology, SUNY, Brooklyn. He reported his results in a paper given at the Eastern Triological Society meeting (1981) using a simultaneous ABR technique.

In an effort to better understand the effects that tinnitus may have had on ABR waveforms resulting from monaural stimulation ABR responses of 45 patients previously evaluated were reassessed and compared to the following general data:

1. Patient medical history
2. Physical otological examination findings
3. Audiometric results
4. Specific ABR latency parameters that included:
 - a. Absolute latencies for Waves I, III and V
 - b. Interpeak latencies for I-V, I-III and III-V
 - c. Waveform replication
 - d. ABR evaluation - normal vs. abnormal, peripheral vs. retrocochlear

RESULTS

Initially, subjects were divided into two categories (peripheral and retrocochlear) based on their ABR evaluations. No objective or systematic response patterns were observable in the ABR latency or IPL data as waveforms ranged from completely normal to highly abnormal.

Two common findings for these patients were identified: the lack of or difficulty in replication of ABR waveforms and the presence of noise on the resulting ABR traces — that was not caused by operator or equipment problems. Four to six separate runs were often necessary before any two would replicate to an acceptable level. In addition, some ABR's displayed reduced Wave V amplitudes when compared to Waves I and III and absolute latencies from these patients often suggested sensitivity thresholds better than PTA.

Examples of aberrant waveforms will be presented and discussed in terms of the effects tinnitus might have on the evaluation of ABRs, in determining the presence or absence of pathological conditions.

References —

- Shulman, A. and Seitz, M. "Central Tinnitus — Diagnosis and Treatment. Paper presented at the Eastern Triological Society meeting, Philadelphia, 1981; and accepted for publication in *Laryngoscope*.

Candle Snuffer Incus Replacement Prosthesis

Claude P. Hobeika,
Dorsey Ann Fleming,
Gayle P. Riemer,
Shirley E. Owens,
Cincinnati, Ohio

Several techniques have been described for reconstruction of the ossicular chain when the long process of the incus fails to make contact with the head of the stapes. Although socially adequate hearing levels have been reported immediately following surgery, long range studies indicated a gradual deterioration in the post-operative hearing levels.

The present paper describes a new technique of incus repositioning. The short process of the incus is drilled away and the incus fashioned into a "candle snuffer" prosthesis that is placed between the neck of the malleus and the head of the stapes. The patient's own incus or a homograft were used.

Thirty-two cases were selected for the studies. The follow-up period was four to six years. They all had in common, the partial or complete absence of the long process of the incus with an intact malleus and stapes. The cases were divided into two categories. One group consisted of ears with a center perforation and an ossicular discontinuity, and the other group consisted of ears with a cholesteatoma and ossicular discontinuity.

Audiological evaluations were carried out pre-operatively and at intervals of one month, three months, six months after surgery and yearly afterwards.

The post-operative air bone gap was 5 to 15dB at three months after the surgery in 97% of the cases. This remained unchanged in 91% of the cases at four and six years after the surgery.

In the ears that needed a second procedure, the repositioned incus was found at surgery to be in excellent position and transmitting motion from the malleus to the oval window.

One of the added advantages of the "candle snuffer" prosthesis is that it raises the tympanic membrane immediately below the scutum, and therefore, avoids the reformation of an attic cholesteatoma.

In summary, we feel that the "candle snuffer" prosthesis is ideal both in the short and long term follow-up for reconstruction of the ossicular chain, when the incus is partially or completely absent.

Application of the Brain Stem Arc Study to Patients with Unilateral Ear Fullness

Donrue C. Poole, and Joel F. Lehrer
Teaneck, New Jersey

Abnormalities in the latency and amplitude of the stapedial reflex (as recorded in the Brain Stem Arc Study) have been found in patients with certain vertigo syndromes.^{1,2} Findings in one hundred-fifty-four patients with such diagnoses as vestibular neuronitis, acute labyrinthitis, positional vertigo, cerebral vascular insufficiency, perilymphatic fistulas and Meniere's Disease have been reported. Patients with vestibular neuronitis, perilymphatic fistulas and cerebral vascular insufficiency were found to have the most frequent incidence of abnormalities. This evaluation has been extended to patients with unilateral ear fullness in whom there were no physical, audiologic or tympanometric abnormalities. A series of eight cases is presented in which amplitude reductions in the stapedial reflex were present on the side of the fullness. Antiserotonin therapy was associated with a return of the amplitude to normal and a relief of the symptom of fullness.

Normal studies of the latency and amplitude of the stapedial reflex as displayed by a strip recorder will be demonstrated along with abnormalities noted in patients with the above vertigo syndromes and unilateral ear fullness. Instrumentation and methods will also be presented.

1. Bosatra, A., Russolo, M., and Poli, P.: Modifications of the Stapedius muscle reflex under spontaneous and experimental brain-stem impairment, *Acta, Otolaryngol.*, 80: 61-66, 1975
2. Lehrer, J. and Poole, D.: Abnormalities of the stapedius reflex in patients with vertigo, *Am. Journal of Otolaryngol.*, in press.

Physical Characteristics and Attenuation of Foam Earplugs

Curtis R. Smith, Roy M. Broughton, Jr.,
James N. Wilmoth, Thomas E. Borton, and Ben T. Mozo
Birmingham, Alabama

Because engineering noise controls are sometimes infeasible, earplugs are considered by many as viable alternatives to protect workers hearing. Solid polymer earplugs are particularly popular for this purpose. However, a recent study showed that a solid insert earplug only 0.5mm smaller than the measured ear canal diameter effectively negates the expected attenuation of the device. None of the commercially available ear canal calibrators measure increments this small; and even if they did, providing premolded earplugs for every possible ear canal diameter is unrealistic when other alternatives are available.

Five types of foam earplugs that theoretically expand to seal the ear canal, thus eliminating the need for concern about fit, were evaluated in this study. Ten of each plug type were investigated (1) to determine the physical characteristics such as weight, length, diameter, density, expansion force, expansion pressure and chemical composition; and (2) to relate these physical characteristics to attenuation.

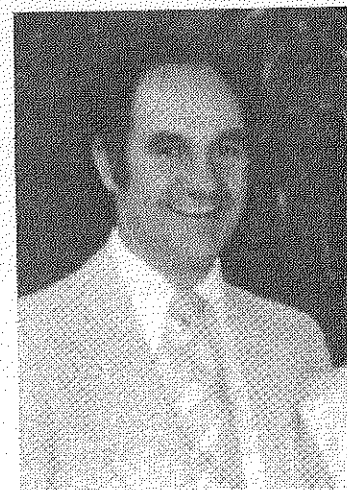
Expansion forces were measured to the nearest gram using an artificial ear canal designed by these investigators in conjunction with an Instron Universal tester. The other physical property measurements were made using standard equipment.

Attenuation measurements were made utilizing a Knowles Electronic Manikin for Acoustic Research (KEMAR). The results indicated that all of the commercially available form earplugs evaluated are similar in diameter, weight, and density, but were somewhat more variable in length. Although expansion force was the measurement obtained for each earplug, force per unit area (or pressure exerted against the ear canal wall) was expected to be the important variable related to attenuation. Expansion pressure was our estimate of the pressure exerted on the wall of the ear canal by the expanding foam. Both expansion force and the calculated expansion pressure were highly variable within a single manufacturer's earplugs. The chemical composition of the plugs was differentiated in terms of chlorination and water solubility.

In general, all of the hearing protectors provided greater attenuation at the higher frequencies. This finding is not new and was anticipated. At 125 Hz, the experimental plug provided significantly more attenuation than any of the other devices. Although this particular earplug provided attenuation equal to better than that of the others at all frequencies, the mean differences were not always statistically significant. Chlorination seems to have a pronounced effect on attenuation. The data indicate about 46 units of attenuation difference in residuals, after correcting for all other effects, between chlorinated (higher mean) and unchlorinated plugs.

The practical significance of these findings is that no particular earplug in our sample can be regarded simply as "better" than the others; conclusions must be drawn with reference to the earplug at each frequency.

Keith Named Program Chairman for 1983



Robert W. Keith

Robert W. Keith has already started planning for the 1983 program to be held November 17, 1983 in conjunction with the annual ASHA meeting in Cincinnati, Ohio. Program suggestions should be directed to:

Robert W. Keith, Ph.D.
Director Division of Audiology
and Speech Pathology
University of Cincinnati Medical Center
231 Bethesda Ave.
Cincinnati, Ohio 45267

The Effects of Logon and Very Short Latency, Frequency Specific Click Stimuli on ABR Waveforms

W. Alan Eisele, Michael R. Seitz,
Martin J. McCutcheon, and Lynn F. Vranes
Birmingham, Alabama

SUMMARY

While data exists on click stimuli, tone pips and filtered clicks of various durations, little normative data exists on logons or very short duration, frequency specific clicks. The logon is a pure tone that is amplitude modulated by a gaussian distribution curve. The very short duration, frequency specific clicks were matched to the logons by frequency and duration but had a different rise-fall duration and shape. The purpose of this study was to compare logon elicited and short latency tone pip elicited ABR's from the same subject pool.

METHOD

Two separate ABR instruments were used; the Nicolet CA 1000 and the Teledyne TA 1000. The TA 1000 uses 2, 4 and 6 kHz logons as stimuli. We matched the duration of the frequency specific logons with diamond shaped tone pips generated from the CA 1000. The 2kHz tone pip was 600 microseconds in duration compared to the TA 1000 logon of 610 microseconds, the 4kHz was 400 microseconds in duration with the TA 1000 logon being 350 microseconds in duration, the 6kHz pip was 200 microseconds in duration compared to 250 microseconds for the TA 1000 logon.

Each subject (N=12, 6 males and 6 females) had hearing thresholds of better than 15dB HL for the test frequencies. The test instrument, sex of subject, frequency and ear tested were counterbalanced across all subjects. A stimulus repetition rate of 20.5 pulses per second was used for both instruments with a time base of 10 msec. Three silver-silver chloride electrodes were used with the earlobes used for reference and the vertex as active. Impedance was kept below 5000 ohms and balanced between the electrodes. Absolute latency measurements were taken from cursor outputs for Waves I, III and V at four intensities (70, 50, 30 and 10 dB nHL) for each frequency tested. Each run was the result of 2000 presentations and replicated. IPL's for I-III, I-V and III-V were also recorded for all measurable intensities.

RESULTS

Stimulus onset time was adjusted to be equal for each instrument and the data were then subjected to multivariate analyses. No significant differences in either absolute latencies or IPL's were found between the logon and tone pip stimuli. There was the anticipated significant differences in the latency-intensity functions and sex for both stimuli. There was a qualitative difference in the number of subjects who had recordable waves I and III at lower intensities for the logon stimuli. These data will be discussed in terms of the effectiveness of both stimuli to elicit ABR waveforms and their potential usefulness in clinical procedures.

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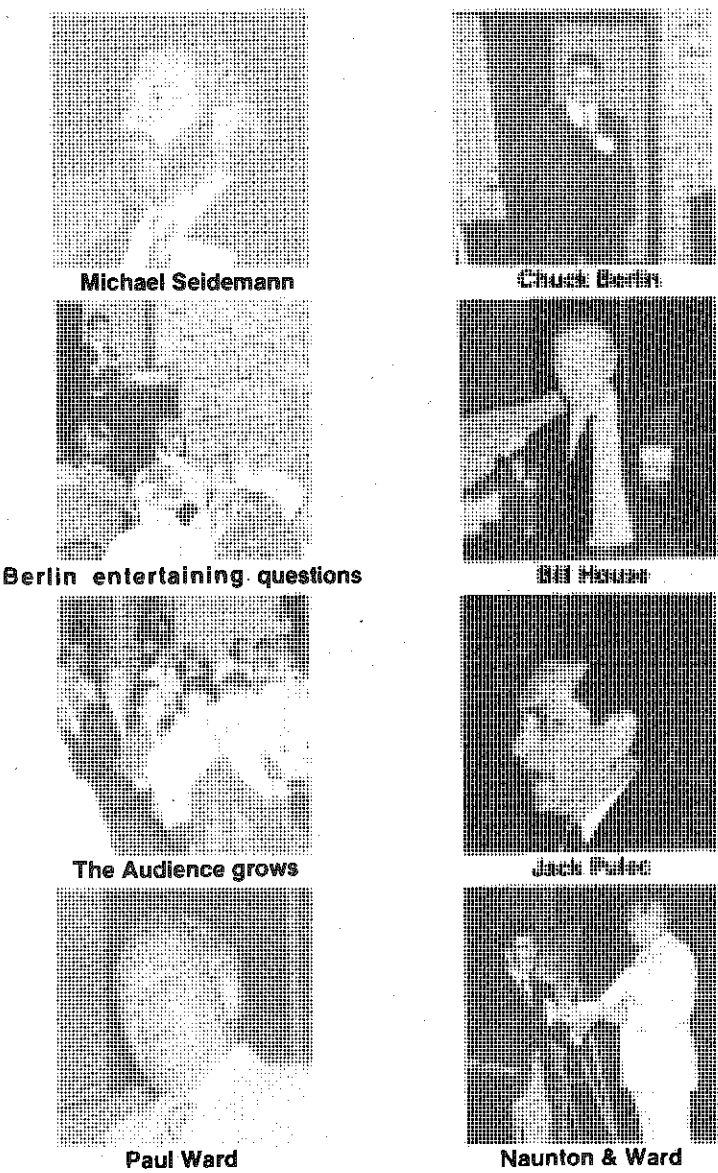
The Executive Committee Meets



At Registration

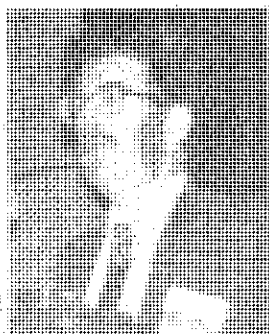


The Speakers at Work The Morning Session



(Cont. p. 6)

The Speakers at Work Afternoon Session



Ralph Naunton



Ross Roeser



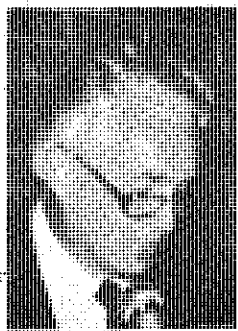
Mike Seitz



Brian Forquer



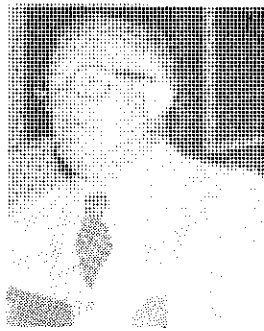
Claude Hobeika



H. Bailey



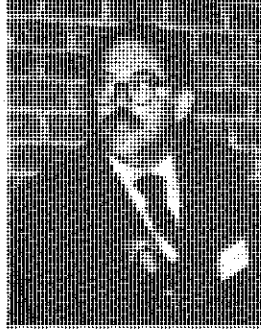
Sharon Graham



Lindsey Pratt



Donrue Poule

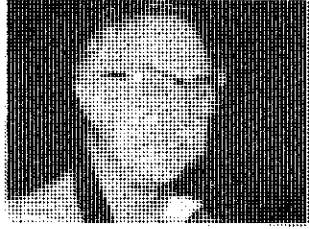
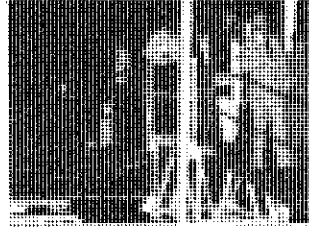
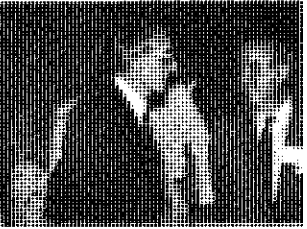
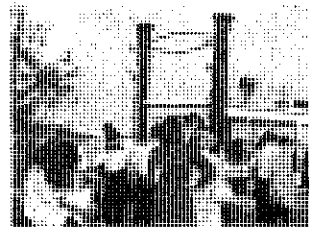
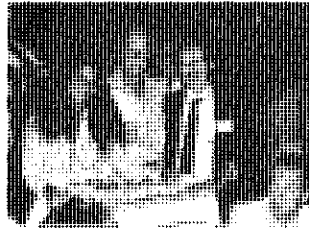
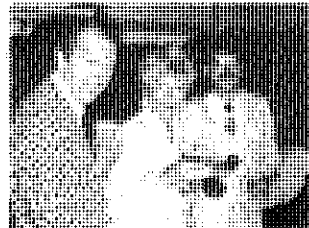
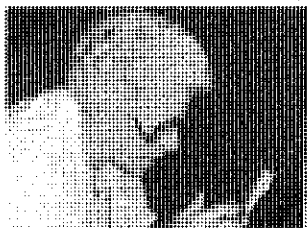
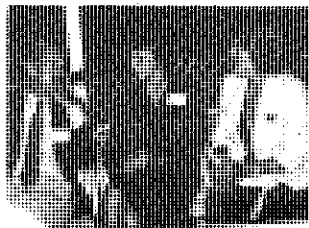
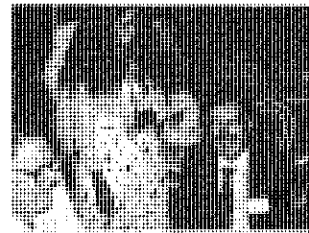
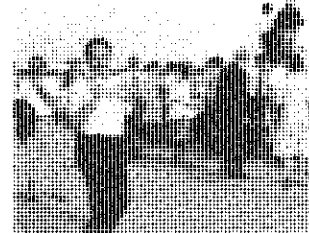
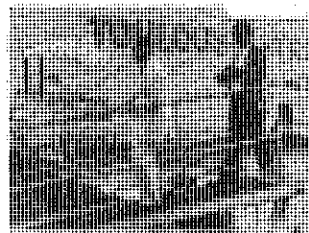
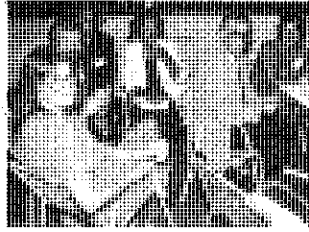
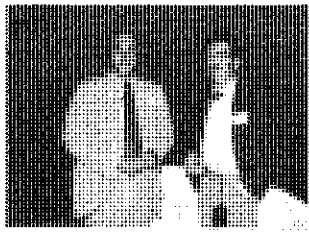
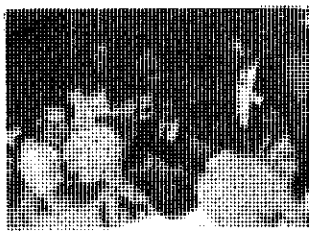
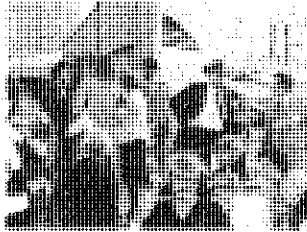
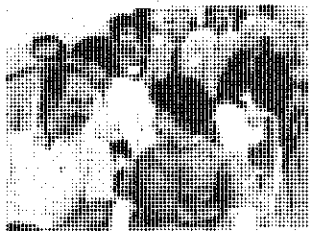


Roy Broughton



John Coleman

On The Boat Trip and at Dinner (One Hundred and twenty-one Attend Dinner)



(Continued on page 7)

At Dinner

(Cont. from pg. 6)



(Continued from page 4)

Tinnitus Relief from Diet, Nutrition, Exercise, and Relaxation Techniques . . . a Clinical Study

By Paul Yanick

(Dr. Yanick was unable to attend the meeting, but readers can review the paper in print.)

This article summarizes the latest findings of a two-year long term clinical research project on patients suffering from problematic tinnitus and sensorineural hearing loss.

Since stress is often a contributing factor in many cases of problematic tinnitus, a holistic approach consisting of an individualized diet, nutrition, exercise, and stress reduction program was applied to 80 patients, ages 12-79, mean age 52, with progressive sensorineural hearing loss. Each of the 80 patients was tested before and three months after starting the holistic program. The reason for a three month follow-up is because it is the author's clinical experience that it often takes two to three months before the program actually begins to improve hearing and/or tinnitus problems.

Sixty-five or 81.2% of the eighty patients had improvements that ranged from 5-40 dB with a mean 25 dB improvement in their pure tone average (PTA) and speech reception threshold (SRT). Out of these sixty-five patients, forty-three patients also had a 6-40% (mean 30%) improvement in speech discrimination scores. Nine patients or 11.3% of the group had only slight, insignificant improvement, less than 5 dB in SRT or PTA and 6% in speech discrimination scores. Six patients or 8.6% of the group had no improvements or notable decrease in their hearing.

From these eight patients with sensorineural hearing loss, fifty patients had loud annoying tinnitus. All of these patients could not get any significant relief from tinnitus maskers and were labeled as incurable by a number of ear specialists. Most of these patients were so distressed that they discussed suicide as an eventual happening if the tinnitus did not subside.

After three months on the holistic program, forty-two patients or 84% of the fifty tinnitus sufferers reported relief in varying degrees, while only eight patients or 16% of the group claimed the tinnitus remained the same and did not change.

In the forty-two patients who reported relief, twelve patients claimed that the tinnitus was completely gone, sixteen patients claimed that the tinnitus decreased to very soft, almost unnoticeable levels and fourteen patients reported that the tinnitus decreased to not so annoying and bearable levels.

An earlier 1973-1975 clinical study on patients with hearing loss, in collaboration with an otolaryngologist associate and several internists, revealed that diet is indeed effective in providing patients with dramatic relief from tinnitus and ear pressures. This study, published in part in Journal of the American Audiology Society, revealed that ninety consecutive patients with fluctuant sensorineural hearing loss reported relief from tinnitus and ear fullness only one month after dietary management.

From the foregoing discussion, it is evident that the ear is highly dependent upon proper oxygenation and a full, not partial or mutilated, chain of nutrients for optimal sensory function. Its vulnerability, although in part is determined by genetics, is high to oxygen and nutrient deprivation. Imbalances, deficiencies, and/or excesses of certain nutrients can be expected to upset the metabolic rate and/or delicate biochemical balances of the inner ear resulting in hearing, balance, and/or tinnitus problems.

Middle Ear Effusion in Children: A Report On Treatment For 200 Patients

Brian D. Forquer,
Fred H. Linthicum, Jr.,
Otolologic Medical Group, Los Angeles

Professionals involved with delayed speech and language development have become increasingly concerned about the deleterious effects of ongoing mild conductive hearing loss secondary to middle ear effusion. Mild conductive hearing loss is known to cause significant speech and language delay in some children and subsequent reduction in academic achievement. Otolologists and pediatricians are also concerned with the occasional sequelae of unresolved otitis media including coalescing mastoiditis, central perforation and primary and secondary acquired cholesteatomas. These effects of unresolved effusion have prompted physicians to seek to minimize delay in resolution of the problem.

This study reviews results of treatment of middle ear effusion in 200 children under nine years of age. Three treatment strategies were used: 1) prescription of medications including, decongestants, antihistamines, and/or antibiotics for an extended time with frequent monitoring; 2) prescription of medication first for a short time interval, and then if the effusion did not resolve, performance of surgery; 3) immediate myringotomy with insertion of ventilation tubes and possible adenoidectomy.

Early surgical intervention resulted in significantly shorter delay in hearing restoration. It did not result in a lower recurrence rate and it did not reduce the number of occasions when thick fluid, as compared to thin fluid, was found at surgery.

(Continued on page 8)

CALENDAR OF EVENTS



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(Continued from page 7)

Three children who were considered to be medical and surgical failures were fit with mild gain, low maximum power output hearing aids. In 97% of the cases reviewed, medical or surgical treatment resolved middle ear effusion in less than four months. This length of delay was considered acceptable for most children. Children with the longest histories of hearing impairment were, fortunately, the children most likely to receive immediate surgical intervention.

We feel that the child with mild conductive hearing impairment due to effusion who is a candidate for hearing aids is a rarity, and that for most children medical treatment will resolve the problem within acceptable time limits.

Relationship Between Iris Color And Nipts In Industrial Workers

Curtis R. Smith,
Thomas E. Borton,
Michael R. Seitz,
and Robert N. Kleinstein
Birmingham, Alabama

It has been hypothesized that melanin, the basic pigment found in the skin, eye, and other body organs including the cochlea, acts as part of an inner ear protective mechanism against the effects of intense noise. The color of the iris may represent one index of melanin concentration in the inner ear, and investigators have suggested that a relationship exists between both temporary and permanent noise-induced threshold shift (NIPTS) in the auditory system and iris color. The purpose of this investigation was to study the relationship between iris color and hearing threshold level (HTL) in a sample of workers exposed to hazardous levels of industrial noise.

Method

The subjects in this investigation (N=266) were textile workers ranging in age from 18 to 67 years (mean age=39.2 years) with the following demographic characteristics:

Race		Sex	
Nonwhite	White	Female	Male
24%	76%	37%	63%

The sample was divided into two groups depending upon the noise level to which they were exposed. Noise level measurements (sound pressure levels in decibels at octave bands) were made at the time of iris color determination. The control group included workers who were exposed to workplace noise levels less than 75 dBA. The experimental group included workers consistently exposed to noise levels greater than 92dBA per eight-hour work shift. The iris color of each subject was assessed using a specially constructed scale. Subjects underwent direct observation by one expert examiner to determine iris color and each was assigned to one of four color categories. HTL's for each subject were obtained using standard audiometric procedures and instrumentation calibrated to

ANSI-1969 reference levels. Pure tone thresholds for air-conducted stimuli were recorded for the frequencies 500, 1000, 2000, 3000, 4000, and 6000 Hz in each ear.

Results

Multivariate analysis techniques were utilized to examine the relationships between iris color and other variables including age, sex, race, time on the job, and HTL's. A variety of HTL indices were considered for each ear of all subjects including the following: (1) mean of all test frequencies; (2) mean of 500, 1K, and 2KHz; (3) mean of 3K, 4K, and 6KHz; (4) mean of 500, 1K, 2K, and 3KHz; (5) mean of 2K, 3K, 4K, and 6KHz; (6) maximum hearing loss at any test frequency.

Overall, the control group demonstrated significantly more sensitive hearing than the experimental group. No statistically significant relationship between iris color and HTL was observed in the control group. For the experimental subjects, a significant (p 0.002) relationship was found between iris color and HTL. One iris color group always demonstrated more sensitive hearing than any of the others, while another always demonstrated less. The remaining two groups changed order depending upon the dependent variable under consideration. Those indices emphasizing HTL's above 2KHz more consistently reflected iris color group classification than did the low frequently dominated HTL indices.

In an attempt to further define the elements of observed relationships between iris color and HTL in the noise-exposed subject group, more detailed analysis was conducted. Results revealed that while the relationship between iris color and HTL was significant, it was greatly influenced by other important variables. The relationships among all these variables will be presented, and the data will be discussed relative to their implications for industrial hearing conservation programs.

TRACOUSTICS CONTEMPORARY AUDIOLOGY WORKSHOP

One day Contemporary Audiology Workshops will be conducted in 1982 by James Jerger, PhD, Jerry Northern, PhD, and Susan Jerger, M.S. The overall test battery for both pediatric and adult audiology will be reviewed including speech audiometry, impedance and ABR. The workshops are approved by ASHA and AMA for Continuing Education credit. For further information and reservations, contact Gloria King, Professional Services Coordinator, Tracoustics, Inc., PO Box 3610, Austin, TX 78764, or call 800-531-5412. In Texas, call 512-444-1961.

Places and Dates:

San Francisco, CA	February 19, 1982
New York, NY	April 16, 1982
Boston, MA	September 17, 1982
Atlanta, GA	October 29, 1982

JANUARY 1982 18-21

MIDWINTER MEETING OF THE ASSOCIATION FOR RESEARCH IN OTOLARYNGOLOGY, Dolphin Beach Resort, St. Petersburg Beach, Fla. CONTACT: Donald Neilsen, Ph.D., 7036 E&R Bldg., Henry Ford Hospital, Detroit, Mich. 48202.

MAY 1982 1-8

COMBINED OTOLARYNGOLOGICAL SPRING MEETINGS, The Breakers, Palm Beach, FL. CONTACT: Harry V. McCurdy, M.D., COSM Coordinator, American Council on Otolaryngology and Head and Neck Surgery, 1100-17th St. N.W., Suite 602, Washington, D.C. 20036/call 202-659-4591.

OCTOBER 1982 17-20

AMERICAN ACADEMY OF OTOLARYNGOLOGY AND HEAD AND NECK SURGERY ANNUAL MEETING, New Orleans, LA. CONTACT: Ruth C. Enquist, Director of Meetings and Membership, AAO, 15 Second St., Rochester, MN 55901/call 507-288-7444.

OCTOBER 18, 1982

ANNUAL MEETING OF THE AMERICAN AUDITORY SOCIETY, New Orleans, La. CONTACT: LaVonne Bestrom, M.D., Room 32-34 Rehab, UCLA, 1000 Vetran Ave., Los Angeles, CA 90024.

APRIL 1983 9-16

COMBINED OTOLARYNGOLOGICAL SPRING MEETINGS, The Fairmont, New Orleans, LA. CONTACT: Harry V. McCurdy, M.D., COSM Coordinator, American Council on Otolaryngology and Head and Neck Surgery, 1100-17th St. N.W., Suite 602, Washington, D.C. 20036/call 202-650-4591.

OCTOBER 1983 23-27

AMERICAN ACADEMY OF OTOLARYNGOLOGY AND HEAD AND NECK SURGERY ANNUAL MEETING, Anaheim, CA. CONTACT: Ruth C. Enquist, Director of Meetings and Membership, AAO, 15 Second St., Rochester, MN 55901/call 507-288-7444.

NOVEMBER 17, 1983

ANNUAL MEETING OF THE AMERICAN AUDITORY SOCIETY, Cincinnati, Ohio. CONTACT: Robert W. Keith, Ph.D., University of Cincinnati Medical Center, Division of Audiology, Cincinnati, Ohio 45267.

NOVEMBER 1983 18-21

AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION ANNUAL CONVENTION, Cincinnati, OH. CONTACT: Frances J. Johnston, Ph.D., Director, Convention and Meetings Div., American Speech-Language-Hearing Association, 10801 Rockville Pike, Rockville, MD 20852/call 301-897-5700.

MARCH 1984 5-9

7TH SHAMBAUGH WORKSHOP ON OTOMICROSCOPY AND THE 4TH SHEA FLUCTUANT HEARING LOSS SYMPOSIUM, Northwestern University's Thorndike Hall, Chicago, IL. CONTACT: National Hearing Assoc., 107 Jorie Blvd., Suite 308, Oak Brook, IL 60521/call 312-323-7200.

MAY 1984 5-12

COMBINED OTOLARYNGOLOGICAL SPRING MEETINGS, The Breakers, Palm Beach, FL. CONTACT: Harry V. McCurdy, M.D., COSM Coordinator, American Council on Otolaryngology and Head and Neck Surgery, 1100-17th St. N.W., Suite 602, Washington, D.C. 20036/call 202-659-4591.

OCTOBER 1984 16-20

AMERICAN ACADEMY OF OTOLARYNGOLOGY AND HEAD AND NECK ANNUAL MEETING, Las Vegas, NV. CONTACT: Ruth C. Enquist, Director of Meetings and Membership, AAO, 15 Second St., Rochester, MN 55901/call 507-288-7444.

NOVEMBER 1984 16-19

AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION ANNUAL CONVENTION, San Francisco, CA. CONTACT: Frances J. Johnston, Ph.D., Director, Convention and Meetings Div., American Speech-Language-Hearing Association, 10801 Rockville Pike, Rockville, MD 20852/call 301-897-5700.

1982 Membership
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Our Renaissance Man
J. Donald Harris Saluted
Page 2

CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 7, No. 2

Spring/Summer 1982

Dossena Describes

CENTRO RICERCH E STUDI AMPLIFON

The AMPLIFON CENTER FOR RESEARCH AND STUDIES (C.R.S.) was founded in 1971 as a non-profit organization, solely funded by the Amplifon company.

During the first 10 years of activity, C.R.S. has fulfilled the original ambitious targets, and succeeded in enlarging its scope, and thus significance, and the practical benefits to the Italian medical profession.

During the first 10 years, 216 meetings, round tables and seminars were organized, dealing with audiology, phoniatrics, speech and hearing, noise exposure, surgery of the ear, auditory diagnosis and amplification. 185 continuing education courses in audiology, electronystagmography, impedance audiometry, phoniatrics, audiological testing techniques comprising evoked responses were attended by 3700 between medical doctors (mostly ENT's) and paramedical professionals.

In 1978 the program "the danger noise: causes, effects and remedies" was one of the first and few occasions to bring together the health authorities, the concerned industry and union representatives, the medical specialists and the governmental and regional experts, to discuss the problems of noise exposure and noise pollution, and the possible remedies. In a country such as Italy where there is no specific regulation or law, such as OSHA, the CRS program visited every one of the 20 regions; the exhibit displayed the various aspects of noise and hearing and the state of the art both in research and in effective protection and noise abatement, to all concerned and to the general public. The round tables succeeded in providing hopefully the basis for a start to a future noise protection program throughout the country.

Continued on page 13

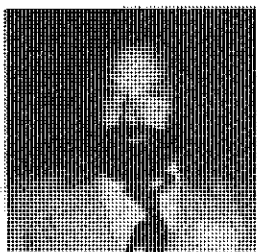
AAS Member Ely Passes Away



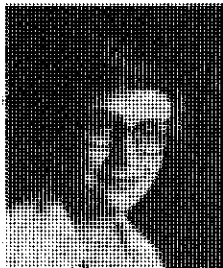
Bill Ely,
Vice President
at Maico Instruments

Bill Ely, Vice President at Maico Instruments, passed away on Saturday, March 10. Bill had been a member of AAS for the past 5 years. He was an active supporter of The Society and a regular reviewer for manuscripts dealing with hearing aids for Ear and Hearing. He is survived by his wife Laurel, and his two children.

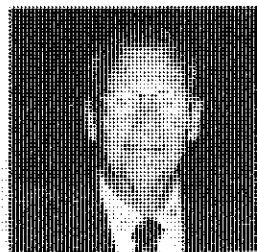
1982 Meeting On Oct. 18th To Be The Best Yet



Mike Seidemann
Local Arrangements
Chairman



La Vonne Bergstrom
1982 Program Chairman



Merle Lawrence
1982 Carhart Memorial
Lecturer

La Vonne Bergstrom, 1982 AAS Program Chairman, and Mike Seidemann, local Arrangements Chairman, are finalizing plans for the 1982 Annual Meeting of AAS, and it looks as if it will be one of the biggest and best so far.

A full days presentation of papers is planned for the October 18th meeting and the meeting will again extend into the evening hours with festive social events. This year's Carhart Memorial lecturer is Dr. Merle Lawrence; his lecture is entitled "Otologic Research and the Zeitgeist." Tracoustics has graciously agreed to sponsor a river boat tour from 6-8:00 p.m. on the well known Cottonblossom that will allow members to unwind as they tour the historic Mississippi River front. Following the river tour, those wishing to join the group can partake in a sumptuous meal at one of the most elegant French restaurants in New Orleans. Arnaud's, located in the French Quarter, is internationally known as one of the culinary delights in New Orleans. A special meal has been selected by the program committee. Featured entertainment is also being planned.

Hearing Loss In Alaska



David R. Canterbury

By
David R. Canterbury,
Carl Dixon, Keith Gish,
B.D. Kimball, M.A. Lopez,
Thomas McCarty, and
Pearl Byrant

For the past 7 years clinical services for the hearing impaired in all areas of Alaska have been provided by the 4 Regional Offices of the Alaska Communicative Disorders Program, Department of Health & Social Services, and the Audiology

Continued on page 14

Presidents Message

Audiologists "take-over" the American Auditory Society

So ran the rumors at a recent national otolaryngology meeting, boding poorly for the health of an organization conceived, established and so far, kept moving by an interdisciplinary group comprising audiologists, otolaryngologists, physicists, teachers of the deaf, and others whose sole concern is the welfare of the hearing impaired. The by-laws of the Association were built to insure that no one group could "take-over", — and during its nine years of life we have had otolaryngology Presidents for five years. But Audiology is going to take over; Audiology will take the reins in hand and guide the Society; Audiology will dominate the field of auditory rehabilitation and habilitation if otolaryngology continues its present trend towards withdrawal from the Society while the Society maintains its present growth-rate, strength and influence.

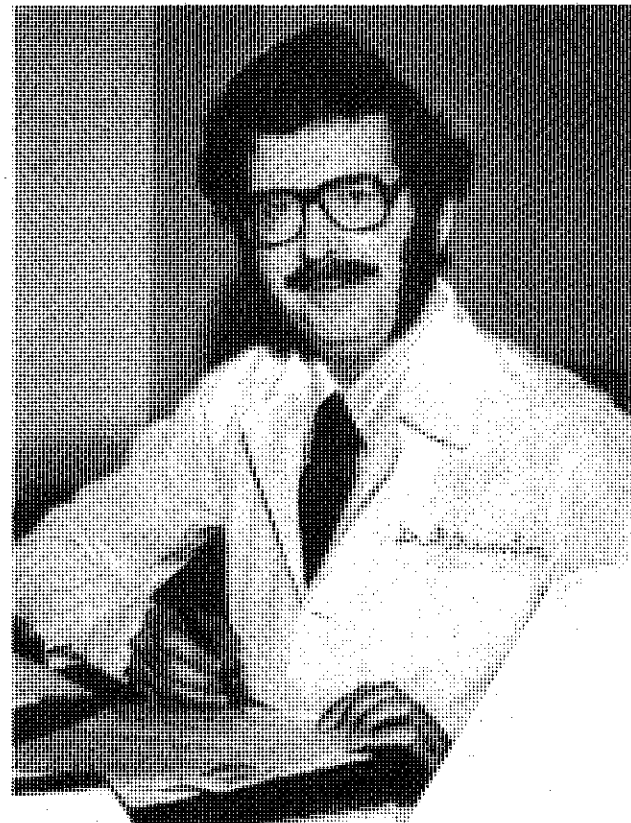
The Society was established to serve the professional interests of no particular individuals other than those sharing concern for the prevention and treatment of hearing impairment, and for the rehabilitation of the hearing impaired. It was established most carefully to avoid any sense or reality that it was to undermine any existing society or association; it was established to serve an unmet need, — that of an interdisciplinary forum.

The importance of interdisciplinary liaison to the broad topic of deafness prevention, treatment and rehabilitation was dramatically illustrated by the recent International Cochlear Implant Conference held under the auspices of the New York Academy of Sciences. The faculty of this exciting conference included a breath-taking array of specialists in audiology, biomedical engineering, computer science, electrical engineering, language science, otolaryngology, pathology, physiology, rehabilitation, and speech science.

On the other hand, otolaryngologists are becoming increasingly concerned over their diminishing involvement in biomedical research, — witness another recent superb conference "Research Goals and Methods in Otolaryngology".

The time is almost past when the solidarity scientist or clinician could make palpable progress in improving disease prevention or treatment; "interdisciplinary collaboration" at all levels is the key for the future improvement of patient care.

It would be presumptuous to insist that otolaryngology needs the American Auditory Society; on the other hand, it is abundantly clear that the American Auditory Society needs Otolaryngologists if its present strength as a non-partisan professional society concerned with the welfare of the hearing-impaired is to continue.



President Ralph

We Salute Our Renaissance People



J. DONALD HARRIS

In a book review in 1976 J.D. Harris was designated as a most distinguished Renaissance Man. Herein, with a review of a new book that J.D. has just published, is further confirmation of the infinite variety of this exceptional man, who is formally being nominated as our Renaissance Person.

Editorial

Upon Retirement

As of this month Ye Senior Editor is retiring from full-time clinical work — on, presumably, to a more active life of what she laughingly calls her mind. She will work on the odd research project, write the odd book, read the odd journal, or contemplate the odd navel whenever she jolly well feels like it. The only mandatory things in life will be four tennis matches and 12 miles' running per week. An enviable schedule you will concede.

There will also be grandchildren to get to know better — where did the time go? Some of them are already college graduates; some, fortunately still young enough to stand still for a grandmotherly snuggle.

Some things remain yet to do — but may take more than this lifetime. How can we guarantee all children, regardless of socio-economic status or ethnic origin, their right to a full chance at adequate language development? Knowing what we know about the urgency of early language stimulation; knowing that too many are denied their full language potential not by Genes but by Means — what are the real priorities for those of us who know these things down deep in our inner reaches? I'm afraid to look.

Oh well — there goes my retirement. MPD

CORTIS ORGAN is a quarterly publication of the American Auditory Society, processed in Dallas, Texas.

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Few people in the field have been as productive as J.D. Harris, both in professional activities and in avocational fields. He early saw a need for a journal that would publish papers exclusively on auditory investigations, and founded the Journal of Auditory Research. Young investigators who might not otherwise publish were encouraged by the availability of this journal to write up their research and submit it. J.D.'s careful editing and personal suggestions to the authors guided and encouraged them in their scientific endeavors.

No one person can estimate the depth of J.D.'s other interests, which we listed in 1976 as concert piano, classic literature, natural history, philosophy of art and of science. If one reads his non-audiologic books (reviewed here) one recognizes that J.D.'s overriding concern is the Study of Man and His Relationship to the Earth. Young people who are "into" some of the current movements of human ecology, increased personal awareness or international understanding, will do well to seep themselves in J.D.'s works. For here lie the great deeps of man's relationship to his environment, and contemplation of them cannot help but tap profound feelings of insight.

It is with great pleasure and not a little awe that J.D. Harris is saluted and named AAS's Renaissance Man.

Reflexions in an Herb Garden, by J. Donald and Barbara N. Harris, The Amphora Press, Box N, Groton, Connecticut 06340.

Amplifon Center For Research And Studies



The awarding ceremony to Dr. Jean Marie Aran (on the right in the picture) and to Prof. Haim Sohmer (on the left). On the centre, Ing. A. Charles Holland, President of the Amplifon Center for Research and Studies.

1981 AMPLIFON CENTER FOR RESEARCH AND STUDIES INTERNATIONAL PRIZE AWARDED IN MILAN, ITALY (Ex-aequo prize winners: Dr. Jean Marie Aran, Bordeaux University, France — Prof. Haim Sohmer, Hadassah University, Jerusalem, Israel)

The recording of auditory evoked potentials represents an extremely important breakthrough in audiology, and offers new diagnostic frontiers in the field of neurology and in the assessment of several lesions in the neural pathways and in the CNS.

Dr. Aran and Prof. Shomer were awarded the AMPLIFON CRS International Prize in Milan on March 31st, at the Press Club. The CRS prize is intended to identify, amongst researchers fighting against deafness, those whose results have proven most beneficial and, as it is in this particular case, have resulted in a clinical fall-out.

The Prize, at its 11th year, has become an international prestigious recognition, and was endowed with approximately \$4000 per researcher. (See page 1 for the history of CRS).

AAS Annual Meeting
October 18th
New Orleans, La.

Let no one assume that this book is comprised merely of nature observations in the Harris garden and descriptions of the "small wonders which abound here". For reading any book by J.D. Harris (and in this case also by his charming wife Barbara, the "Reference Librarian") is to roam at length through J.D.'s incomparable mind, sometimes even to roam through that unique collection of neurons. In a series of small essays, each inspired by some observation of flora or fauna in the garden, J.D. gently expounds on the Harris philosophy of man and nature.

The flora range from dogwood and laurel to finnel and thyme, his essay on the latter herb being titled "Thyme out of Mind". J.D. quotes Culpepper, born the year Shakespeare died, as stating about thyme, "It is a strengthener of the lungs; a good remedy for the chin-cough in children. It purges the body of phlegm, and is an excellent remedy for the shortness of breath. It kills worms in the belly, and being a notable herb of Venus, provokes the terms, gives safe and speedy delivery to women in travail, and brings away the after-birth."

J.D. comments "It is hard to see how a reasonable competent housewife could maintain her establishment without it. Expectorant, vermifuge, emmenagogue, splenetic, anodyne, and carminative, it seems in those times to have been well-nigh universal prescription. It was, however, not said to knit broken bones."

And this brings up the impressive Harris vocabulary. Someone once said upon reading J.D.'s last book "It was good reading but I just had to go to the dictionary too often". My young friend, there is no such thing as "going to the dictionary too often". Someday I hope you will understand, as J.D. does, that language is the generative fountain of the human mind, and the more we dip into it the more exalted our humanity becomes. What you should also understand about J.D.'s use of English is that he applies it as a paean of joy, and we can imagine him tasting, nuzzling, relishing each word and spouting out each one with a crescendo of Hosannas. Once you join with him in these exultations you will never be the same.

The title of the book is apt, for what the Harrises are doing truly reflecting upon what meets their eyes and assails their noses and ears. (Reflexion is an accepted spelling, reflection, and of course the pixie-ish Harris mind would prefer the former spelling.) As they state, "Should we in fact view these sights and facts with any emotion at all other than curiosity? Should we admire our hive bees because of the complex social behavior reflecting the highest development of brain in their order, or should we denigrate them because they are so stupid they cannot find their way back to the hive if it moved more than three feet left or right? Should we not rather accept all things, describing them as accurately as patient research and advanced instrumentation will allow, finding nothing repugnant in and of itself since it must have at least

Continued on page 1

Letter To The Editor

(Editor's note - The following letter and reply was sent Robert C. Cody, Associate Professor and Director of the Speech and Hearing Clinic of the West Virginia University Medical Center, Morgantown, West Virginia)

Dear Mr. Cody:

It is with shock and dismay that I have read the following excerpt from an article authored by Dr. Kenneth W. Berger in the Summer issue of *Audicibel*:

"The traditional hearing aid evaluation, modified, mangled, and maligned over many years, has served purpose historically. It has outlived its usefulness. At worst, the hearing aid comparison procedure probably permitted the clinician to discard the least effective of the preselected hearing aids. At its best, it may have done little more."

This abrupt dismissal of the traditional method of selecting hearing aids through trial by exhaustion (sometimes known as the "Russian Roulette system") has thrown confusion in the face of those of us who regard ourselves as professionals in solving the problems of the hearing impaired.

It leaves a vast vacuum and — since nature abhors a vacuum — there is danger that the result may be a profusion of competent rather than scientifically accurate fittings.

For the past three months, we have been working to find more scientifically sound system and have finally come up with a method which we call, for the sake of convenience,

Continued on page 1

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Malcolm D. Graham
Bruce Graham
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Yash Pal Kapur
Johanna Kingsland
Carl William Krouse
Sabina A. Kurdziel
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Luana M. Proctor
Deborah Richard-Edwards
William F. Rintelmann
Suzanne Shiftman
Cindy Ann Simon
Constance Spak

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Richard K. Brown
Bruce E. Bures
Gayle Rogers Cousins
Karen Sue Cranmer
James Curran
William G. Ely
Jennifer L. Fox
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Barbara R.B. Garrett
Earl R. Harford
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Gilmour M. Peters
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Constance Spak

NEVADA

Robert E. Hanyak

DOSSENA

(from page 1)

As a basic tool for the continuing education programs, CRS has published both basic text books in Italian and the proceedings of the meetings, round tables and international symposia. Since 1966, the CRS Notizia rio Bibliografico provides the specialist of the auditory function with a complete bibliography and summaries in Italian of all articles appearing in the world literature on the auditory function. Today, its analytical index provides over 10 thousand bibliographical notes and summaries. This service is further implemented by ad hoc bibliographical research, which, in these 10 years, has scored over 20 thousands works.

Furthermore, to promote direct interfacing with the leading researchers, CRS has organized several "tours of Italy" bringing to all the main Italian universities and medical schools invited speakers, such as

Earl Harford, in 1974
Arthur Boothroyd, in 1975
Geary McCandless, in 1977
Wolfhart Niemeyer, in 1977
Jack Vernon, in 1978
Dave Preeves, in 1981.

The CRS yearly prize, assigned to the researcher who, in the world, has most contributed to the advancement of studies on deafness and auditory impairment, has been awarded to:

1971 Tokuro Suzuki, Japan
1972 Erik Wedenberg, Sweden
1973 Hallowell Davis, U.S.A.
1974 Suzanne Borel Maisonne, France
1975 James Jerger, U.S.A.
1976 Josef J. Zwislocki, U.S.A.
1977 Michele Arslan, Italy
1978 Atore Gloria, U.S.A.
1979 Ettore Bocca, Italy
1980 Horst L. Wullstein, West Germany

The future targets for CRS broaden the area of interest to comprise neurological and communication disorders, and the sensory and motor handicaps. CRS will thus extend its services to other medical specialties, such as neurology, neurophysiology, psychiatry, intensive care and newborn medicine. Because of the impact of technological developments in these areas, as well as in the latest evolution in the auditory prosthesis and auditory evoked responses, CRS programs are enlarged to all technological and bioengineering aspects and the contributions of bioengineers has become a vital and essential part.

Considerable parts of the activities and efforts will be devoted to the research in the area of early detection of the motor, sensory and neurological handicap, as well as to aids for independent living and communication.

The first steps to this effect were taken in 1981. In June, a joint meeting with the Italian Rehabilitation Therapists Association was organized to discuss communication methods and aids for the disabled. In November an international meeting is being held to bring forward the international scenario of aids, research and rehabilitation programs, and to discuss the future trends.

As a result CRS looks forward to the constitution of some sort of a liaison group to foster international contacts for the benefit of joint efforts aiming at greater success in this extremely difficult area, which is fully underfinanced by the Italian

responsible health, education and welfare authorities.

In the past 10 years, CRS has invested in its activities, and with a progressive increase in the yearly budgets, the equivalent of 350 thousand US dollars.

CRS 1982 budget strikes for 450 thousand US dollars, thus bespeaking of Amplifon's firm will to broaden the range of activities and provide the remarkable services of CRS also to the other areas of medicine and rehabilitation. The main items in 1982 budget are:

continuing education courses	70,000
international symposia on auditory function, neurophysiology, sensory, motor rehabilitation, non vocal communication, with leading experts from all over the world	25,000
grants to ad hoc research groups, comprising trips and visits to the leading world laboratories	80,000
CRS prize	7,000
publications, text books and proceedings	43,000

This means that Amplifon is investing 1.5% of its total turnover in CRS, to provide these educational activities, that have no match within the official state and regional supports and that offer unique stimulating opportunities for the Italian medical profession.

The CRS continuing education courses are officially recognized by the Milan State University.

CRS prize committee: Antonio Antonelli, Director ENT Clinic, Brescia State University; Emanuele Biondi, Director, Bioengineering Faculty, Milan State University; Silvano Boccardi, Director, Psychiatry, Ospedale San Carlo, Milan; Marcello Cantoni, President, Italian Society for school medicine, Milan; Giuseppe Cavallazzi, Associate Professor, Speech and Hearing Institute, Milan State University; Italo De Vincentis, Director, I ENT Clinic Rome State University; Massimo Del Bo, Director, Speech and Hearing, Milan State University; Aldo Dufour, S.E.N.T. C. Besta, Institute of Neurology, Milan; Franco Ferrero, Associate Professor, Language Laboratory, Padua State University, Rome; Fabio Giaccari, Director, Speech and Hearing Institute, Florence State University; Giorgio Grisanti, Director, Speech and Hearing Institute, Palermo State University; Antonio Ottaviani, Director, II ENT Clinic, Milan State University; Giovanni Rossi, Director, Speech and Hearing Institute, Turin State University; Gino Sacerdote, former Director, Acoustics Laboratory, Turin; Carlo Sirtori, Carlo Erba Foundation; Luigi Vignolo, Associate Professor Neurology Clinic, Milan State University; Angelo Zanibelli, Amplifon.

CRS Board and Council: Antonelli, Cavallazzi, Dufour, Ferrero, Vignolo, Boccardi, Biondi, A.C. Holland, Chairman. Furthermore, the prize committee seeks advice from following international societies: Int. Society of Audiology; American Auditory Society, American Speech and Hearing Association. —Elda Dossena

Letter To The Editor

Continued from page 2

"Eeny" system. The technique is showing considerable promise and has many distinct advantages.

We recognize, however, that with our very limited means it is difficult to probe all the possible ramifications, side effects, and commercial values of the system. With the vast resources at your command, it struck us that you are uniquely capable of such exploration and we now solicit your aid.

Very briefly, the system works thusly:

On a medium sized table - one which does not exceed arms length - place a number of different hearing aids. Experience has indicated that this number should be odd rather than even - 15 rather than 16; 19 rather than 20.

To select the aid for Candidate A, the operator starts with the aid furthest to his left on the table and begins pointing at each aid in succession while chanting the old rhyme "Eeny, meeny, miny, mo." He allows one word to each aid and completes the whole rhyme. The aid designated by the final "Mo" becomes the selection.

Among the advantages we have found are:

1. **Simplicity.** No extensive educational background is required. The system can be taught to anyone over the age of three in just a few minutes.

2. **Economy.** No expensive furniture or equipment are required. It eliminates sound proofed rooms, audiometric equipment, and involved tally sheets. The only requirement is a table - although it was found desirable to provide a chair when the clinician is going to spend a significant amount of time in selecting aids for a large number of candidates.

3. **Speed.** Sixteen seconds is the average time needed by the clinician. It should be noted, however, that these studies were conducted by clinicians with a Mid-West background. It is quite possible that the selection time may increase by five or six seconds if the clinician has a Southern drawl.

At any rate, the clinician is freed from the arduous - and time consuming - task of fitting a variety of aids to the candidate and repeating an endless category of unrelated words with each one.

4. **Equity.** We have found that if we blindfold the clinician immediately after selecting the aid for candidate A and have him move the aids on the table before him with random motions before selecting one for Candidate B, then Candidate B will have a different aid when the "Eeny" formula is carried to completion.

This eliminates any possible charge of favoritism to any one manufacturer or model since - in time - every aid will have its time of selection.

5. **Improved image.** We have found that the clinician's image is much improved if the candidate is allowed to see the clinician select a large number of aids for the table but is not allowed to see the clinician go through the selection process.

The candidate is impressed with the speed at which the clinician can select the proper instrument from the vast array carried to the selection room.

6. **Candidate satisfaction.** Since it is no longer necessary for the hearing aid candidate to spend long periods of time isolated in a sound proofed booth - and since he is no longer required to respond to a seemingly endless litany of (to him) irrelevant words, we find the candidate to be less physically and mentally fatigued. He is thereby more receptive to the aid. He no longer is apprehensive that its wearing will subject him to additional suffering and actually look forward to wearing it.

7. **Accuracy of fitting.** In a study of 486 1/2* cases, it was found that the aid selected by the "Eeny, Meeny" system was more acceptable and satisfying to the user than that selected by the former Russian Roulette system.

The only difficulty we have experienced thus far with the new "Eeny, Meeny" system is some carping from the Civil

*The 1/2 case concerns a non-candidate with no hearing impairment whatever. This non-candidate had accompanied a hearing impaired friend and was so taken by wit, charm, depth of knowledge, and breadth of understanding of the clinician that she insisted on purchasing an aid anyhow.

Continued on page 16

Geographic Listing (from 12)

T. Walter Carlin
Gus Casas
Carol Cascio
Walter S. Charlip
Sandra L. Clarkson
John Cobb
John C. Cooper
Karen Bradford Cox
Capt. Robert C. Filer
Terese Finilzo-Hieber
Lt. Col. Donald C. Gasaway
Janie Fairchilds Gebheim
Irvin J. Gerling
Nelda Goode
David W. Granitz
Terry S. Griffing
Adele Gunnarson
Mary Lynn Hackleman
Hugh W. Hamlyn
Scott Haug
Oeborah Hayes
Thomas Michael Heller
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Madelene H. Hoffman
George D. Holland
G. Richard Holt
Pamela Huber
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Todd H. Porter
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Dianne P. Smith
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Gayle Stout
Richard W. Stream
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Laurie Taddeo
Paul A. Waryas
M. Jane Watson
H.N. Williams
Phillip Lee Wilson
Wende Yellin
UTAH
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Geary A. McCandless
Judi K. Pedersen
Martin S. Robinette
Derin C. Wester

VIRGINIA
Paulette Albright
Carol Maynard Barber
Philip A. Bellefeur
Glen L. Bull
Roxanne Chandler
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Dey-Sigman
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Janet Evans
Milege J. Hahn
Henry Hecker
Margaret E. Holtzclaw
Mary T. Howard
Lynn Tartton Jock
Steven E. Lewis
Douglas Radman Lorber
Ali Moghtader
Cary N. Moon
Barbara B. Ringers
Roger A. Ruth
Brenda Morgan Ryals
Zahri G. Schoeny
Daniel M. Schwartz
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Comelia C. Serota
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Robert W. Hartenstein
Mitchell B. Kramer
Marsha Pfeil
WASHINGTON
Gail D. Chermak
Gwen Cottingham-James
J. Markin Craig

Warren R. Dawson
Joan Dengerink
Robert A. Dobie
J. Richard Franks
Carol A. Killingsworth
J.P. Lynch
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Eileen Malsch Peterson
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Richard L. Voorhees
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Betty Ritchie
Richard C. Sauer
James Shaw
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Michael Thelen
Willard R. Thurlow
Gregory N. Wiersma
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Daneen Pacifico
David Smith
Rosemary Lynn Smith
James T. Spencer
Richard L. Squires
Charles M. Woodford
WYOMING
Robert R. Harmon
Arian Walter

GEOGRAPHIC LISTINGS OUTSIDE U.S.

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Jenny Rosen
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Gail Argatoff
Hannah Ayukawa
David R. Bellaire
J.C. Booth

Susan H. Brainard
Louise Brunelle
Kathy Campbell
J.O. Darbyshire
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Claude C. Fuller
Marsha Lee Gardner
Isidor Glener
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Jeannette S. Johnson
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Marilyn Leighton
Daniel Ling
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INDONESIA
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ISRAEL
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ITALY
Elda Dossena
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PORTUGAL
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PUERTO RICO
Regino Rodriguez Flores
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Ismael A. Martin
Mark T. McDowall
Enrique A. Vicens

Raymond M. Hurley
SPAIN
Enrique Salesa
SWEDEN
Alfred G. Constam
Ulf Rosenhall
THAILAND
Poonpit Amatayakul
VENEZUELA
Edgar Chiossone

HEARING LOSS from page 1

Unit of the Federal Alaska Native Medical Center, Indian Health Service. As has been noted in previous publications (Canterbury (1978); Kimball (1977); the amount of hearing impairment in Alaska appears to be considerably greater than found in most other parts of the United States. This higher prevalence of hearing problems is largely due to serous, acute and chronic otitis media. Noise induced hearing loss also contributes to the problem and appears to be occurring at an earlier age than was once suspected. The prevalence of chronic tympanic membrane perforations has been steadily reduced over the past decade due to the development of a village based health care system which receives backup support from centrally and regionally based ear specialists, public health nurses, physicians assistants, and audiologists. Additionally, an active surgical program has performed nearly 4,000 tympanoplasties during the past decade; Tower (1978). The existence of a productive medical component has no doubt reduced but certainly has not eliminated existence of a large number of hearing impairments as will be documented in this paper. Surgeries often leave residual hearing impairment; the surgical option is sometimes refused by the patient or is not recommended by the ear specialist, and other factors such as noise exposure also contribute to the ranks of the hearing impaired.

This article is a descriptive effort to examine the characteristics of the population served and is not an experimental design. This is being accomplished with the realization that one of the first steps in problem solving is an accurate description of the problem itself. Efforts have been made to describe and quantify the extent of hearing impairment from time to time; however, basic problems previously existed regarding commonality of terms used in describing the hearing loss and in the control of variables affecting the reliability and validity of such reports. Because of these problems, in 1976 the audiologists employed by the State and the Federal Indian Health Service programs in Alaska agreed on certain training, testing, reporting, and referral standards including the use of standard audiometric forms. Similarly, agreement was made to code these forms in a uniform manner regarding amount of hearing loss, type of hearing loss, impedance findings, referral recommendations, hearing aid use, and patient identifying information. This information is processed by an audiologic data system which provides information on a scheduled basis for client management, planning, reporting, and statistical analysis. Each year for the past 3 years from 5,900 to 10,000 entries have been made into this system. To date 32,479 audiograms have been entered on a total of 21,465 clients. The following information is an analysis of the test findings for one year, the period ending June 30, 1980 on 5,986 clients. Although many clients were seen on several occasions, only the last entry per client was used in the compilation of these data in order to avoid duplications of reporting. These are statewide data and great variability exists from region to region and, in fact, even from village to village. All audiologic testing was done by clinically certified audiologists or by nurses or technicians directly trained and supervised by certified audiologists. Equipment used was electroacoustically calibrated annually to ANSI 1969 Standards and daily biological calibration checks were done each day the test equipment was in use. Each audiogram was clinically coded by the audiologist who did the testing or by the supervising audiologist according to the detailed coding criteria which is consistently used statewide. Copies of all tests were then sent to the Central Office of the Communicative Disorders Program for inclusion in the data system.

Analysis of this information should be done with the clear realization these are not prevalence data but an examination of the various parameters of test findings obtained from clients seen in our clinics during the year. Most of the school age subjects were referred from school screening programs conducted by public health nurses, school nurses, or other school screening personnel. (Screening is done at 20db ANSI for the frequencies of 500, 1000, 2000 and 4000Hz). The failure rate for screening varied from 10.3% to 36.6% depending upon region with the more remote areas having the highest failure rate. Other referrals of children were from medical care providers or were made because of known hearing impairment. The adults were not screened routinely but were seen on self referral or on medical referral. As a consequence of the case selection process, it should be evident that this is not a random sampling of the Alaska population but is primarily made up of individuals who have been seen at our clinics with complaints of hearing problems. Such data could be compiled from the records of any busy audiologic clinic however the population served by the Alaskan programs allows comparison of native and non-native populations for the specified variables. The percentage of problems in certain categories is not as significant as is the relationship between variables such as age, race, amount of hearing loss, type of hearing loss and impedance findings. Comparisons with other similar reports

such as the Colorado study; Weber (1967), might also provide insight concerning problems unique to Alaska.

DESCRIPTION OF POPULATION

A total of 5,986 clients were seen during the reporting period ranging in age from less than 1 year to 99 years of age. The largest percentages (58.6%) were seen in

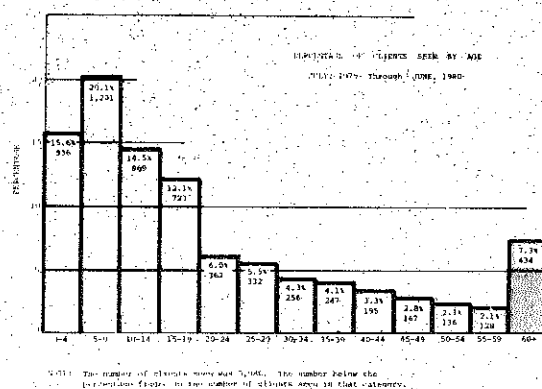


FIGURE 1

the age bracket between 2 and 19 years inclusively. Three and seven tenths percent of the children seen were under one year of age. The age breakdown is detailed in Figure 1.

Fifty-six percent of the clients seen were male and 44% were female. Race was established from the health records or by questioning the clients. Fifty-eight and nine tenths percent were Alaskan Native (Eskimo, Indian, other Native or Aleut. See Figure 2.

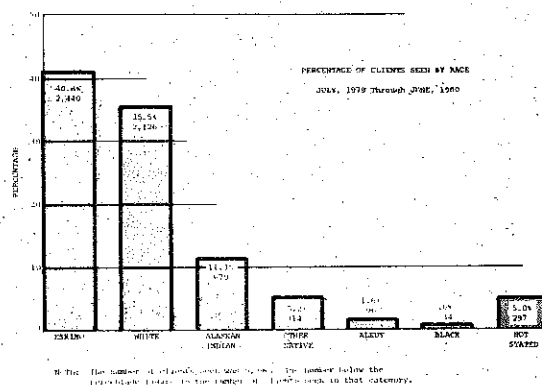


FIGURE 2

Clients seen during this year were from 247 different communities. Eleven and three tenths percent of the 5,986 clients were from communities with population less than 250 people, 25.4% were from villages with population of from 250-1000 people, 26.5% were from communities ranging in size from 1000-4000 and 36.8% were from towns and cities larger than 4000 people. Many rural villages are entirely Alaskan Native but the ratio of native to non-native varies widely from region to region in the state. Overall, the rural communities have a much higher percentage of natives than the urban areas and the standard of living including health care access is not comparable to the urban centers.

Significant differences were not observed between the right and left ears. Percentages on the charts below indicate the occurrence of each condition within each age group. The percentages are for the total number of ears tested within each age group.

TYPE OF HEARING LOSS

Each audiogram done during the year was coded by type of impairment for each ear. The categories were conductive, mixed, sensorineural, indeterminate and normal. Establishment of both air and bone conduction thresholds was a requirement for determining type. Inability to accomplish this task on the under 2 years of age population results in underestimation of percentage figures of type of impairment for the 0 through 4 age group. Below is a discussion of the findings in the 3 major hearing impairment type categories.

Conductive loss (A 15dB air bone gap or more at 500, 1000, 2000 or 4000Hz). Analysis of test findings confirms our clinical impression that conductive hearing loss is by far the most common finding in the 5 through 9 age group for both native and non-native groups. Twenty-two and four tenths percent of the natives tested and 15.4% of the non-natives tested were so classified, see Figure 3. The testing limitations for young children mentioned above cause underestimation of type of impairment in the 0 through 4 age group. Forty-two percent were in the indeterminate category. The impedance findings for the 0 through 2 age range are probably a better indication of the extent of pathology in the early years. Those figures are cited later in this paper. The difference in percentage is established by 5 years of age and becomes more and more prominent until age 35 when the margin between the two groups again narrows.

This inordinate number of Alaskan Natives with conductive ears at all ages is no doubt due in large degree to the lingering effects of middle ear pathology during their earlier years of life; Kaplan (1973). This is also reflective of the continuing rehabilitation efforts being directed at this group since known cases of chronic otitis media are likely to be seen on a recurring basis.

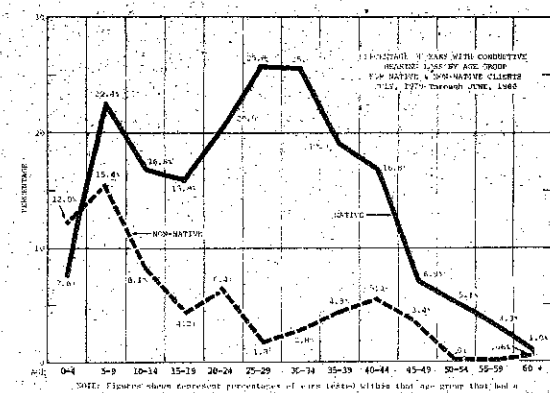


FIGURE 3

Sensorineural loss (Bone conduction loss of more than 25dB at 500, 1000, 2000 or 4000Hz). The existence of sensorineural loss of clients seen for both native and non-native populations increased progressively with age from .02% of the 0 through 4 age group to more than 50% of those over 55 years of age. (See Figure 4). Non-natives had slightly higher number of pure sensorineural problems. Many Alaskans are exposed to insurmountable amounts of high intensity noise from light aircraft, rifle fire, chain saws, snowmobiles, etc. In a separate survey done over a 4 year period; Kimball (1977), it was found that from 9 to 17% of Alaskan Natives entering high school had some degree of sensorineural impairment.

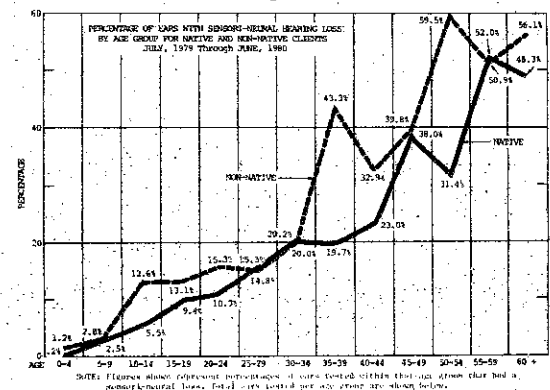


FIGURE 4

Mixed loss (Presence of both the conductive and sensorineural criteria as described above). The percentage of mixed loss impairments seen for both racial groups was quite low until age 20. Above age 20 the occurrence of mixed loss increased steadily for the natives to 25% of the clients served at age 54. The non-natives did not show similar increase with age (See Figure 5). As was shown in the above reference to pure conductive and sensorineural loss, the non-natives have a similar or higher occurrence of sensory loss, but the probability of the necessary conductive component being present in adults in order for the results to be labeled "mixed" greatly diminished. Also note that by combining the number of mixed and sensorineural losses it becomes evident that percentages of Alaskan Natives with some degree of sensory deficit (sensorineural or mixed) is more than that of the non-native population seen.

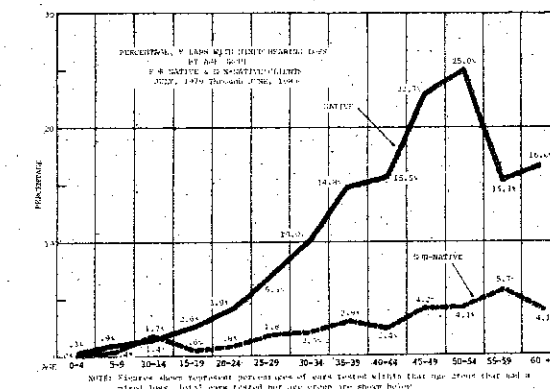
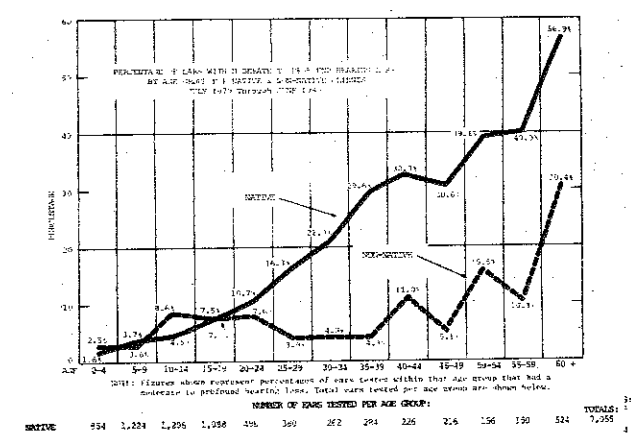
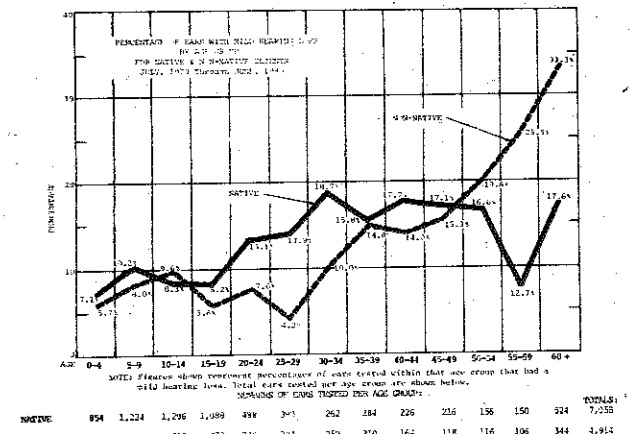
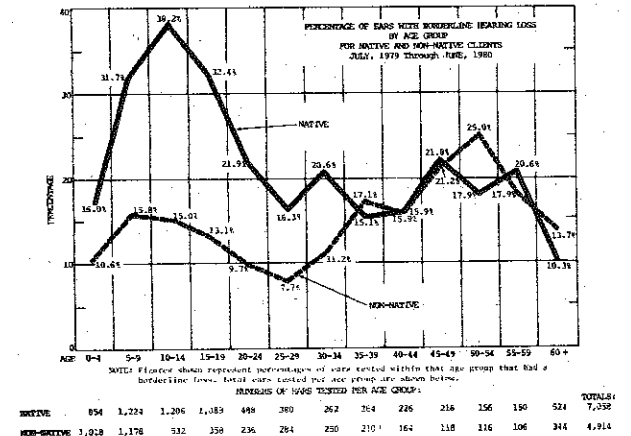
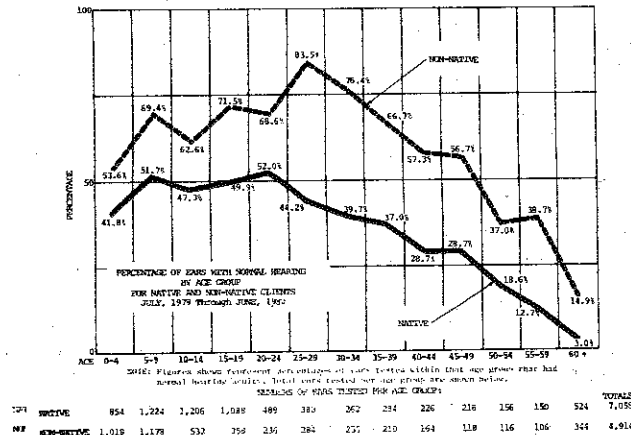


FIGURE 5

AMOUNT OF HEARING LOSS
The amount of hearing loss for each client was classified into one of six categories according to severity based upon the pure tone average (average of 500, 1000 and 2000Hz). The classifications are listed below.

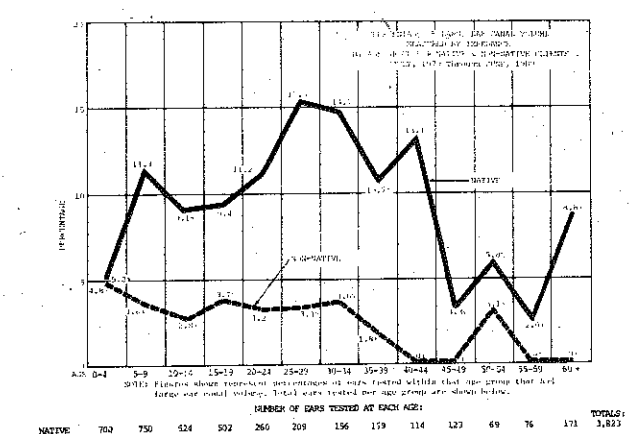
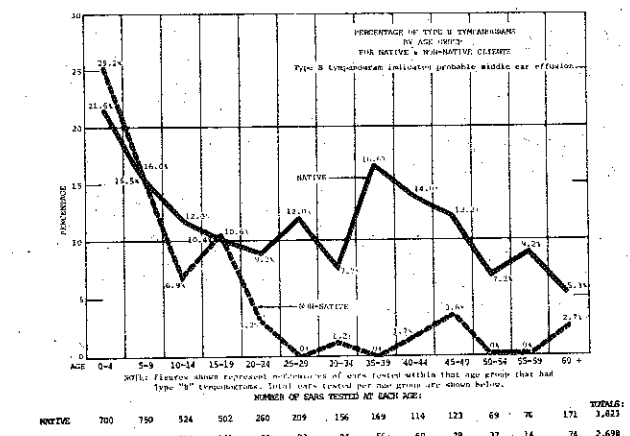
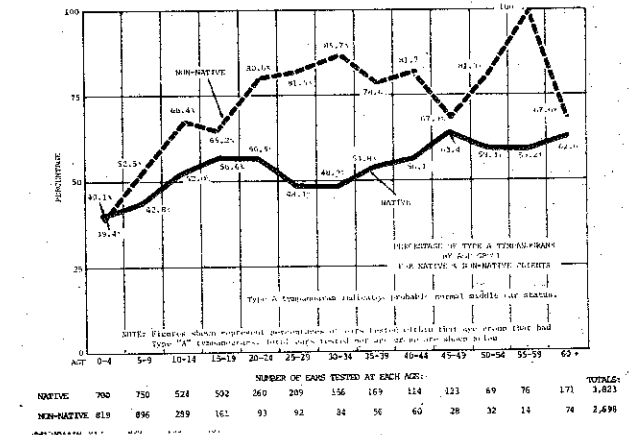
Normal	PTA 15dB or less
Borderline	PTA 16dB to 25dB inclusively
Mild	PTA 26dB to 40dB inclusively
Moderate	PTA 41dB to 60dB inclusively
Severe	PTA 61dB to 80dB inclusively
Profound	PTA 81dB or more

Figure 6, 7, 8 and 9 shows the comparison of native versus non-native by age and indicate marked differences in the acuity throughout the span of ages tested. The differences between racial groups narrows with age for normal and borderline categories. The difference is slight for more severe losses until age 20. Beyond that age the margin between the groups widens substantially with the frequency of loss in natives being in excess of non-natives.



BILATERAL HEARING STATUS
The figures mentioned previously are for the total number of ears tested. It was determined that 61.2% of those with conductive losses had bilateral conductive losses. The remaining 38.8% had various combinations of conductive loss and of other types of loss. Eighty one and five tenths percent of the sensorineural losses were bilateral in nature while 53.5% of the mixed losses occurred in both ears. When level of hearing acuity was evaluated in terms of bilateral symmetry it was found that 82% of the clients with normal acuity in one ear also had normal acuity in the other. Sixty-one and seven tenths percent of the borderline (PTA 16dB to 25dB), 43.5% of mild (PTA 26dB to 40dB), 46.9% of the moderate (PTA 41dB to 60dB), 32% of the severe (PTA 61dB to 80dB) and 34.9% of the profound (PTA 81dB +) were bilateral losses of the same degree.

IMPEDANCE FINDINGS
Of the 5,986 clients seen 3,264 received impedance testing including 1,912 natives and 1,351 non-natives. Findings indicate that abnormal middle ear status was common in both young native and young non-native clients. Problems greatly subsided for the non-natives, however in the middle and upper age brackets, while the Alaskan Natives continue to demonstrate ongoing middle ear difficulties when seen for audiological evaluations and are far more likely to show at all ages test findings of large middle ear volume characteristic of tympanic membrane perforations or patent vent tube. Because of difficulty in medical followup in rural areas, vent tubes are not used as frequently with the natives as with non-natives. Results were classified according to criteria developed by Jerger; Jerger (1970), and are summarized below. (See Figure 10, 11 and 12).



DISCUSSION
The data presented in this study clearly indicates that Alaskan Natives seen in our clinics during the past year have:

1. A higher failure rate on hearing screening tests.
2. A much higher occurrence of conductive loss and

abnormal impedance findings at an early age. These conditions were also seen far more often in older Native clients than is true for non-natives.

3. A higher occurrence of sensory impairment (sensorineural and mixed).
4. A dramatically higher occurrence of mixed loss.
5. More hearing loss of every degree and substantially more individuals in the moderate to severe hearing loss categories beyond age 20.

One of the primary variables used in the study was the race of the clients served. It would however be a serious error to assume that the reason for high numbers of hearing impaired individuals who are the Alaskan Natives is solely because of race. The remote environment of many Alaskan Natives results in numerous differences in life style and health care from the urban dwelling, non-native Alaskans. Other variables which should be taken into consideration are differences in housing, nutrition, sanitation, climate and health care.

The past 7 years have been a time during which the quality and quantity of audiologic services available in Alaska have increased rapidly. The diagnostic programs for the hearing impaired are now largely in place. The next area of concern should clearly be the further development of comprehensive aural rehabilitation programs which address the needs of all ages. This effort should be closely linked to the existing clinical programs but should draw upon the resources of both the educational and health system in the state. The geography and cultural diversity of Alaska will indeed make this a challenge. Our efforts in the future will be toward this goal.

Acknowledgements
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WE SALUTE from page 2

the beauty of utility, and finding everything beautiful, either sensuous because of color, form, or motion, or intellectual because it illustrates one or more of the great laws to which natural objects conform, than which nothing could be more sought for by an inquiring mind."

Occasionally the audiologist in J.D. cannot be suppressed and he launches upon a knowledgeable exposition on "Ears from Fish to Man" revealing his profound insight into the hearing process and its development. A description of how bats fine-tune their vocalizations to the limitations of their discrete hearing of a certain frequency leaves one breathless with awe.

And for those of you suffering from ennui: "A visitor sits with me for a time in our gardens, and admits being bored with the summer. Bored! With life teeming here, and everywhere, in untold profusion; with sights, properly seen, to stun the brain or engage it fully; with great questions unanswered and not even properly phrased; with a plethora of activities appropriate to the season crying to be performed which there is never enough time to do! It is as if one were to spend time at the Louvre and not be touched by the Winged Victory or the feast that awaits one, but sits in a corner and reads Mad magazine. Our task is to pry open the lid of the skull of that visitor, little by little, and pour in first a drop or two, then a dipperful, of curiosity in an effort to get some sort of meaningful exchange between our visitor and the real world, for surely nothing could be more fascinating than to explore the world in which we actually live"

After this the following invitation is irresistible: "If you are ever in the Noank area please to call and we will sweep off the patio and lay another place mat. It may be we could become fast friends. But come soon."

I for one can't wait to do so.

M.P.D.

Letter To The Editor

Continued from page 13

Rights people to the effect that the formula contains an unacceptable ethnic reference. We tried substitution of the word "Honkey", but found this to be grating on the ear and thereby aesthetically displeasing. The substitution of the phrase "Uh, oh!" for the offending word destroys the natural rhythm of the formula and sometimes results in an incorrect selection as the clinician treats the phrase as two words rather than one.

We would appreciate your comment.

Yours,
Ralph E. Hoover
Professional Hearing Center
Wheeling, WV

Answer To Hoover

Upon reading your letter of 5 October, 1979, I was also shocked and dismayed. The shock was from touching an exposed hot wire on my newly purchased HALO (Hoover Automatic Letter Opener, from a Wheeling firm of dubious reputation). The dismay was from finding you were dismayed by Ken Berger's statement. After all, haven't you been saying the same thing for many, many years and decades???

The study you conducted with the "EENY" method was certainly interesting and apparently resulted in a large number of satisfied hearing aid users. It is gratifying to me that you realize your limited means of carrying on a truly scientific study and your failure to probe all facets of the method. It is even more gratifying that you recognize my unique capabilities and resources and that you have stated, "...and we now solicit your aid."

By the word "aid," you—of course—meant my "help" and "assistance." Because, as you know, I am not now, nor have I ever been engaged in or hold an interest in any concern involved in the design, manufacture, or marketing of aids. Contrary to some people's beliefs, I am not directly associated in any manner with my wife's CODYTONE SPECIAL INSTRUMENTS COMPANY.

I must say, you have certainly come to the right person for expert assistance. My position with the university affords me the opportunity to review many proposals for more scientific methodology for fitting hearing aids. For example, I just recently reviewed a proposal which involved scattering a number of hearing aids about the floor of a motel room and having a scantily-clad young lady pick them up with her toes (called the CODY method). Another involved juggling 4-5 hearing aids from hand-to-hand and selecting the first one that fell to the floor (called the TRADITIONAL method). One ridiculous proposal involved placing 7 hearing aids, turned to Full-On gain, under a quart Mason jar and selecting whichever one "squealed the loudest" in SPL... divided by 1.7...add 8 dB for conductive losses (called the BERGER method). You couldn't possibly believe some of the more bazaar proposals I have reviewed and likewise rejected.

But, GOOD NEWS FOR YOU! Your proposal arrived at the most opportune "CODY" moment. After carefully weighing the merits of the "EENY" method to the "CODY"—my wife has pointedly expressed which she feels I should accept. You're in Luck!!! She has moved, secondly and unanimously decided that I investigate the "EENY" method!!!

We have finished the study and I will not bore you with all the finite details but, following are comments, conclusions, remarks, etc., on our replication of your "ENNY" method of hearing aid selection and fitting. We most certainly do not wish to offer an criticisms of your fine study involving 486½ subjects, however, you must realize that there were certain weaknesses in your experimental design which definitely biased your conclusions. You must always, Ralph, keep in mind that scientific research should always be left in the hands of the truly pure scientists!

The most obvious weakness in your design was that you always selected "MOE" (or its equivalent) as the aid to be fitted—thus, you violated the sacred principle of randomized sampling. So, our first task was to randomize the rhyme in the following fashion:

Each of the 8 verbal presentations were recorded in a professional radio studio using the highest quality equipment. The speakers were selected so as to represent samples of all known ethical, racial, semantical, lingual, political, regional, etc., groups. Both male and female recordings were made synchronously and simultaneously for each of the aforementioned groups.

The recorded tape cassettes were then stored in a specially designed playback machine which was computer-controlled so the person to be fitted merely spoke a few words into a microphone and the appropriate tape cassette would be selected automatically and instantly by the computer. This relieved the clinician from a lengthy search through 14,326 tapes.

First, though, in cooperation with Alleghany Airlines, we

RANDOM TABLE NUMBER FOUR

	EENY	MEENY	MINEY	MOE
EENY	1	2	3	4
MEENY	3	4	1	2
MINEY	2	3	4	1
MOE	1	2	3	4

© CODY SPECIAL INSTRUMENTS COMPANY

1. EENY MEENY MINEY MOE
2. MOE EENY MEENY MINEY
3. MINEY MOE EENY MEENY
4. MEENY MINEY MOE EENY
5. MOE MINEY MEENY EENY
6. MINEY MEENY EENY MOE
7. MEENY EENY MOE MINEY
8. EENY MOE MINEY MEENY

(Footnote: Since we are an Equal Opportunity Employer and Affirmative Action, we eliminated the remainder of the rhyme. By using just the first four words, we reduced the selection time by 74.0%.)

conducted a pilot study to see if the computer could be used to select the hearing aid rather than a human clinician. This did not work out at all!!! We threw all out hearing aids into the computer, closed the lid, plugged in the machine, turned on the power switch, and called the Fire Department! Believe you me, this was 120 times more shocking than Ken Berger's statement!!!

Thus, it became obvious even to the most wild-eyed liberal scientist that we could not eliminate the human element in hearing aid selections (with the single exception of the clinician that turned on the computer in the pilot study).

In this study, the clinician was strapped into a "spin-chair," carefully blind-folded twice (this is a double-blind study), then the chair was spun (?) around clockwise and then counter-clockwise (clinicians with digital watches could not be used) in a random fashion for about two minutes. The chair was then stopped in the position facing a table which contained the hearing aids. The aids are stored in a large, hermetically sealed, temperature-humidity controlled jar when not being used for evaluations. When the chair stops, the hearing aids are automatically poured from the jar onto the table which has a 1 3/16 inch lip around the outer edge to prevent the aids from falling off.

We certainly agree with you that it is absolutely critical that the table dimensions be such that the clinician can easily reach any point on its surface with ease. This seemed simple enough until we realized that the "reach" of our clinicians differed quite drastically. The average reach of the ten clinician's right arms was 25.6 inches; the range was 21.0 to 33.8 inches. These measurements were made by placing a yardstick in the armpit, stretching the arm out frontward on the yardstick, then reading off the length to the 1st joint of the middle finger. (The investigators were very careful to place the end of the yardstick with the little numbers in the armpit and not vice-versa!) Each clinician's reach was measured 5 times by 3 different investigators. Each arm was measured again prior to each hearing aid selection (this is called "field calibration").

Due to the very wide range of clinician reaches, a simple table would not do. A Special multi-dimensional table was designed so that all dimensions (height, width, length) would be infinitely adjustable. The prototype is computer-controlled and automatically adjusts itself for any "reach" and height by having the clinician hold his (or her) right arm straight out in front at a comfortable height for about 200 m/sec.

The equipment set-up would be as illustrated in Figure 1 (below). Notice the procedure whereby the prospective hearing aid user steps up to the wall of the HEARING AID SELECTION AND FITTING ROOM, speaks a few words into a microphone, the computer-controlled tape player selects the correct tape cassette for "EENY, etc." appropriately randomized, activates the control that spins the blindfolded clinician's chair, then plays the tape through the loudspeaker. The clinician, when the chair has stopped spinning, reaches his arm out over the table and randomly picks up a hearing aid each time a word is spoken. He does not worry about starting to either the right or the left side of the table. After spinning for

two minutes he is lucky to be able to even find the table.

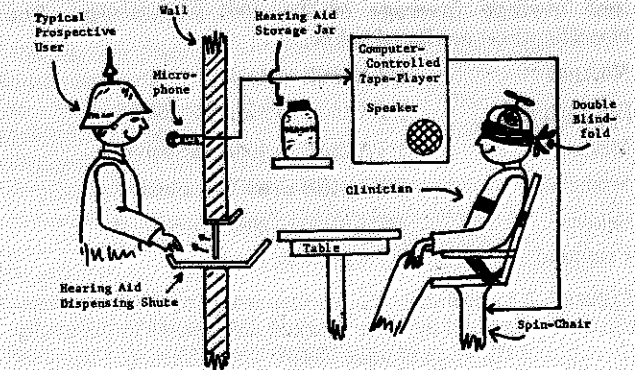


FIGURE 1: Schematic of HEARING AID SELECTION AND FITTING ROOM.

Ralph, believe me, this system has worked beautifully. We have fitted 1984 (apologies to George Orwell) hearing aids with your "EENY" method and we are completely satisfied with the preliminary results. Now, speaking of the results, we have some interesting observations to report (Figure 2).

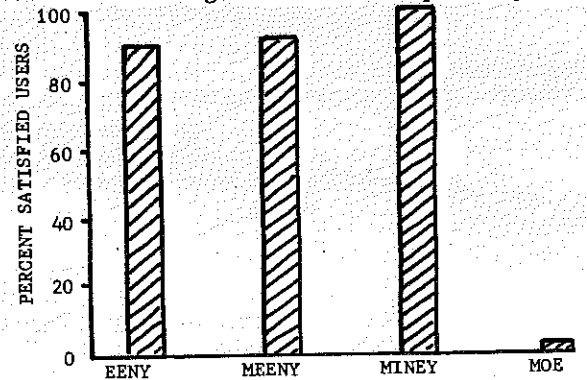


Figure 2:

Extensive follow-up interviews were conducted with all subjects to determine if they were satisfied with their hearing aids. You will notice that those aids selected by the words "EENY" and "MEENY" provided about 90-91% satisfaction to the users. We feel this is a good percentage but can surely be improved as we further refine the procedure and design more sensitive evaluation equipment.

The "MINEY's" were, without a doubt, the most satisfied. We feel that 99% exceeds our fondest hopes and desires. Of course, we feel there may be some population bias with the "MINEY's" since the majority of our users were West Virginia coal MINERS and may have misunderstood the word. Another possible theory may be that the "MINEY's" were all very selfish, self-centered individuals and the most important word to them is "MINE"!!!

Now we come to the "MOES". We were astounded to find that 98% of the MOE's were completely unhappy with their aids. An exhaustive, in-depth interview was held with each MOE and we finally found the underlying reasons for their dissatisfaction. It is obvious that with the high cost of living, the energy crises, the nuclear power debates, the smog, severe winter warnings, high interest rates, etc., that these people just DIDN'T WANT NO MOE!!!

RECOMMENDATIONS FOR FURTHER INVESTIGATION:

From this study we have several recommendations to make for further investigation of this interesting means of selecting and fitting hearing aids.

1. Eliminate the word "MOE" from the hearing aid selection tapes.
2. Although it is tempting to use only the word — "MINEY" — to achieve 99% satisfaction, this should NOT be done because it might:

- a. adversely affect the clinician with its monotony;
- b. cause the clinician to become so self-possessive they refuse to toss the selected aid into the dispensing shute;
- c. reduce hearing aid selection to a pure science and thus upset the multitude of clinicians and dispensers who pride themselves on the "art" of the process; and
- d. cause clinicians to question the need for their extensive and expensive academic coursework, clinical practicum, and their certification and/or licensing requirements which are designed to help them make decisions between two or more entities.

We should continue using "EENY" and "MEENY" along with "MINEY." After all, if we don't have some unhappy hearing aid users we will begin wondering what we've done wrong, Right? Right!!

Thank you, Ralph, for your interesting proposal. Perhaps we could publish this reasearch jointly in order to share the fame. Our problem, of course, would be to determine whether the author credits should read: "Cody & Hoover," "Hoover and Cody," "Cody, et al." or "Hoover, et al." To settle this in a friendly manner, may I suggest you visit my research lab — we will program the hearing aid selector for the above choices and let the computer decide.

NO MOE,

Robert C. Cody

See You In New Orleans October 18th

Abstracts
From 1982 AAS
Annual Meeting
Begin Page 9

AAS Executive
Committee Meets
See Page 4

The President's Message

It is hard to believe that we are beginning our tenth year of the American Auditory Society, that it has been nine years now since Aram, Marion, Dix, Bruce, and the others organized what was then the American Audiology Society. The soundness of that planning is most certainly confirmed by the growth and recognition of the AAS here in 1982.

The very successful meeting of the Society in New Orleans on October 18th, the dedication and contribution of the key individuals who comprise the Executive Committee, and the recognition of EAR and HEARING as the ideal forum for medical audiology further proves the need for such organization and the foresight of the founders. We cannot adequately recognize the contribution which Ralph Naunton has made as President these past two years or the efforts which Ross Roeser makes to the society both as Secretary-Treasurer of the organization and as Editor of EAR and HEARING. And, let's not overlook the work done by Susanne Kos and by Sharon Roeser and by the Editorial Board throughout the year. And, someday maybe we can find a way to express our appreciation to our Number 1 flag waver and Editor of Corti's Organ, Marion Downs.

At the Executive Meeting preceding the Technical Program in New Orleans, Ross reported that membership is now up to 1147, that the Society continues on a sound financial footing, and that the quality and quantity of manuscripts submitted for publication in EAR and HEARING are very good. And, certainly we had another excellent Carhart Lecture by Merle Lawrence as well as outstanding invited and contributed papers by members.

So, where does this leave us now? I believe that it leaves us in with the obligation and opportunity to share the benefits of membership in the American Auditory Society with the Audiologists, Otolaryngologists and other hearing healthcare professionals who are not now with us. During my term as President I shall devote my efforts to the expansion of our membership to include all of those individuals who could benefit from this association.

And, I would like to count on each of you to help with this effort. Look around and see who you know that should be a member; give them an application and sign them up. You can reach me at 800-531-5412 (512-444-1961 in Alaska, Hawaii and Texas) if you need application forms or if I can be of help.

Charlie Anderson,
President, AAS

Lawrence's Address Gives Scholarly Tone To Annual Meeting

The Carhart Memorial Address of 1982 entitled "Otolitic Research and the Zeitgeist" was delivered by Merle Lawrence at the annual meeting in New Orleans. It was the most scholarly of all such presentations in that he developed the theme that it takes the accumulation of many scientific elements to come together before any particular research demonstration can be made. For example, he postulated that there were two lines of scientific thought that had to be brought to full fruition before cochlear implants could even be envisioned. The two lines were physics and morphology of the ear.

An elegant review of the backgrounds of these two lines was given, which included the history of the development of electricity through Weaver and Gray's demonstration of electrical stimulation giving rise to the acoustic effect, but it was not until the morphology of the ear was completely understood that all the elements of the Zeitgeist were together and cochlear implants could begin. He credited Simmons (1966) with the first report on implants, describing Simmons' very intense work with a subject, followed by House's and others' further experimentation on cochlear implants. Lawrence points out that speech perception has not been secured by the cochlear implants and demonstrated that the reason is that there may be only occasional dendrites or occasional ganglion cells remaining to transmit the desired message. He felt that the remaining question left to fulfill the Zeitgeist in this area is how does one stimulate the organ of Corti to produce coding of speech?

Lawrence's address will be published in EAR & HEARING. In addition to this address, a number of outstanding papers were presented at the annual meeting, most of which are abstracted in Corti's Organ this issue. (See page 9.)

CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 8, No. 1

Fall/Winter 1982-83

International Audiology Congress: AAS Visits Sweden, Finland and Russia

May is the month to go to Northern Europe. It is a sweet, sunny time in Sweden, Finland and Russia, as some 35 Americans found out when they attended the International Audiology Congress. Two events were appended to the Helsinki Congress: A Pre-Congress meeting in Gothenberg, Sweden, and a Post-Congress tour to Leningrad.

The Pre-Congress meeting was organized by Gunnar Liden, who heads a magnificent audiology clinic in Gothenberg. With a staff of 40 people and apparently unlimited equipment, he showed visitors an impressive facility. The program of the meeting included presentations on Electrophysiologic measures in Paedo-Audiology with many representatives from the U.S.

The International Congress of Audiology took place in the splendid Sibelius convention center in Helsinki. Dr. Tauna Palva hosted the Congress in true Finnish style, with colorful events and lavish food. The highlight of the program was a Round Table chaired and organized by Joseph Zwislöcki, on Cochlear Mechanics. The speakers, A. Flock of Sweden, D.W.

Nielson and R.G. Turner of Detroit, B.M. Johnstone of Perth and D.T. Kemp of London, presented clearly and articulately the science of the mechanics of the inner ear.

Another Round Table was presented by Francis Catlin of Houston, with Dixon Ward of Minneapolis, J. Karja of Finland, Ole Bentzen of Denmark and Marion Downs of Denver. The topic was Evaluation and Measurement of Hearing Handicap.

The focus of the International Society has been directed toward Third World problems. The new Society of Physician Audiologists is planning to establish a training center for Third World audiologists in Bad Nauheim, Germany. Funds are being solicited to carry on this school.

A tour to Leningrad climaxed the Congress for an international group of audiologists, who drove by bus and spent three days touring Leningrad. The group was awed by the vast art collection at the Hermitage, the beauty of the Summer and Winter Palaces of the Tsars, and the impressive architecture of this city of canals. (See pictures Pg. 2)

Mayor of Cincinnati Invites AAS

(Editor's Note: Chairman Robert Keith received the following invitation from Cincinnati's mayor, David S. Mann.)

Dear Dr. Keith:

As Mayor, I am privileged to invite the American Auditory Society to hold their November, 1983 meeting in Cincinnati.

Cincinnati's central geographic location, "Overnight from Everywhere", makes it an ideal city for meetings and conventions. Following a dynamic, action blueprint, our City is enthusiastically supporting a nearly completed multi-million dollar renovation of its downtown and riverfront areas. Cincinnati's residents and visitors alike mingle on Fountain Square, dine in our numerous restaurants, and shop in our vibrant, alive downtown area.

This invitation extends to your association the warm hospitality of the people of our City, and this office.

Sincerely,

David S. Mann
Mayor

Keith plans for 1983 meeting



The Executive Committee of the American Auditory Society is pleased to present 1983 AAS convention chairman Robert E. Keith. Details of the 1983 meeting will be provided in the Spring issue of Corti's Organ.

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Letter from England

There was a successful Symposium of the Collegium Otolaryngologicum in the Hague which has attracted many members from all over the world in honour of Leonard Jongkees. He has been General Secretary of the Collegium and Professor of Otolaryngology at the University of Amsterdam. A man of great charm, a linguist and musician — he will have more time to play chamber music on his cello after his retirement later this year.

The U.S.A. were well represented by Frank Sooy, both Howard and Bill House, Hal Schuknecht, John Bordley, Merle Lawrence, Joe Hawkins, Brian McCabe, David Lim, John Snow, Bob Ruben and others adding lustre to the occasion and there were several new members from South America and Europe. The coveted Shambaugh prize was awarded to T. Palva from Helsinki, so well merited.

To mention a personal achievement, if I may, our Book (Pathology of Granulomas and Neoplasms of the Nose and Paranasal Sinuses; I. Friedmann and D.A. Osborn, Churchill Livingstone, 1982) has been well received. Regretfully, my co-author and former Colleague at the Institute has died before the publication of the book to which he has greatly contributed.

Retirement was in the air everywhere. In London an excellent Symposium on the Inner Ear was held to mark the retirement of John Ballantyne from his post as Consultant Otolaryngologist at the Royal Free Hospital Medical School. He will, of course, continue as Editor of the Journal of Laryngology which will appear in a new format in the New Year.

A great deal has been happening in our Universities and Hospitals; much of it rather depressing — but that is another story.

I. Friedmann

Gerber Appointed XV Congress President

Santa Barbara will be the scene of the next International Audiology Congress in September, 1984. To host this meeting Sandy Gerber has been appointed Congress President.

This will be the second time since 1950 that a Congress has been held in the U.S., since Aram Glorig hosted the meeting in Dallas. The job of the hosts has been greatly simplified by the decision of the Executive Committee not to require simultaneous translations. Previously translations were made in French, Spanish, Italian, and English, but by 1982 only English was required. English will be the official language of the Congress from now on. This should make it more interesting for Americans to attend in 1984!

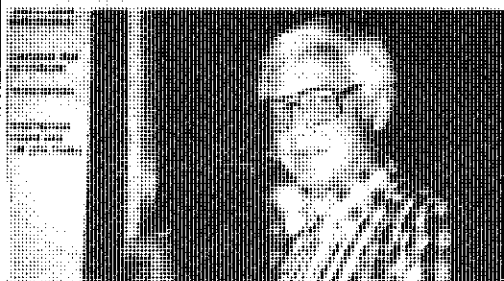
Glorig Honored by Congress

To add to his many international honors, 1st AAS President Aram Glorig will now have his name on an annual prize being developed by International Congress individuals. A group is soliciting contributions for the Glorig Award for audiology and otologists throughout the world. Dr. Bentzen of Denmark, president of the International Society, spear-headed the drive for the Award, which in the U.S. is handled by Sandy Gerber.

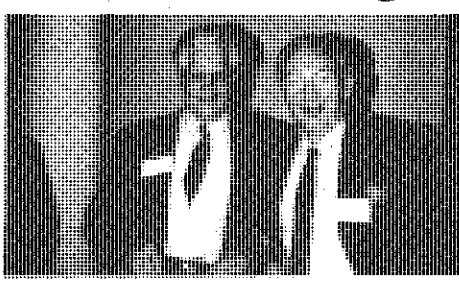
Please make donations to:

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University of California
Santa Barbara, California 93106

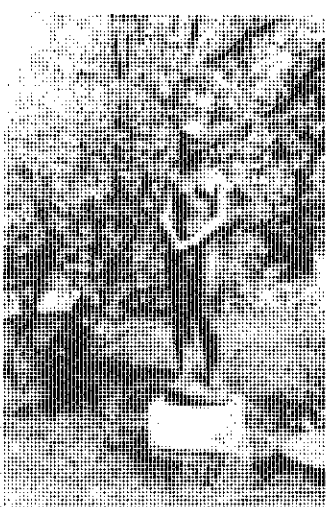
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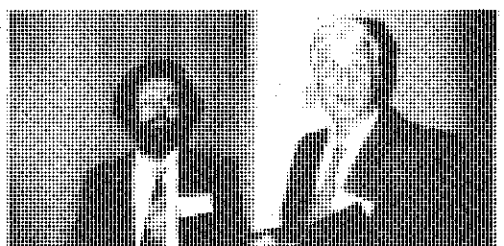
John Peterson looking at exhibits.



The new president of the International Audiology Society, Ole Bentzen of Denmark and the outgoing president.



Statue in the Clinic park at Gothenburg, Sweden.



Dr. Stevens of England with Dr. Palva



Alf Axelsen at mobile hearing testing unit he mans in Gothenburg.



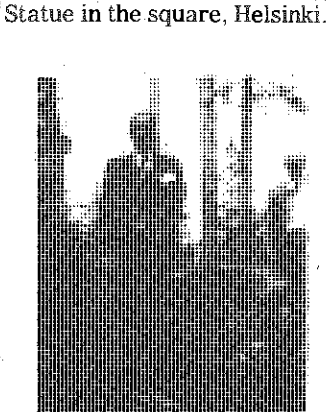
Statue in the square, Helsinki.



Dr. Tauna Palva, Pres. of the Congress, Dr. Francis Caltin, Marian Downs.



Joe Miller, Gunnar Liden, and Dr. Jean Causse of Beziers.



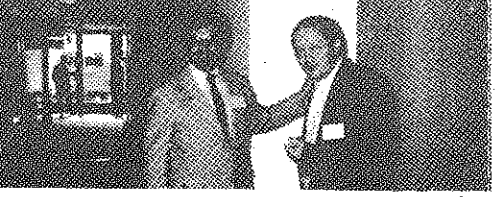
M. Rainville, France.



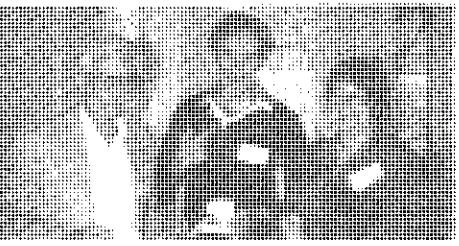
Don Worthington and his wife.



Sandy Gerber, Marian Downs & Dix Ward representing AAS at IAS.



Sandy Gerber with Jean Marie Aran of France.



John Peterson and Lee Urison at exhibits of Congress.

Workshops

Tracoustics Inc. of Austin, Texas is pleased to announce the schedule for Tracoustics sponsored Contemporary Audiology and ENG Workshops for 1983. These include AMA and AAS approved workshops in Contemporary Audiology and Electroneurophysiology presented at convenient locations throughout the United States.

In addition, we have announced plans for two Audiology Evoked Potential Workshops to be held in Houston, Texas in May and September of 1983. Additional information on these will be released shortly.

CONTEMPORARY AUDIOLOGY: One-day workshop in contemporary audiology presented by Dr. James Jerger. Jerry Northern and Ms. Susan Jerger covers new ideas in Speech Audiometry, Physiological Testing, Speech Diagnostic Testing in Children and the Contemporary Approach to Diagnostic Auditory Evaluation.

January 28, 1983: The Callier Center, Dallas
April 22, 1983: Loews L'Enfant Plaza Hotel, Washington, D.C.

December 2, 1982: Los Angeles

ELECTRONEUROPHYSIOLOGY: Two-day workshop in electroneurophysiology and the dizzy patient presented by Dr. Darrell L. Teter and Dr. Dennis G. Pappas covering complete review of the ENG Test Battery and interpretation of the results.

February 4-5, 1983: The Atlanta Hilton, Atlanta
May 31-June 1, 1983: Hyatt Regency on Union Square, San Francisco

September 9-10, 1983: Memphis
December 9-10, 1983: San Antonio

HIA and AARP Announce Hearing Education Program

Washington, D.C., June 22, 1982 — In a joint effort to provide information about hearing loss and hearing aids to 13.25 million older Americans, the Hearing Industries Association (HIA) and the American Association of Retired Persons (AARP) announce the development of an educational outreach program. Entitled "Have You Heard?: Hearing Loss and Aging," the program will include an automated, 33-mm slide/tape presentation, a group leader's manual and consumer materials about hearing loss and hearing aids. To be distributed through AARP's national network, the program will be promoted for use at AARP's 5,000 community-based chapters and other community groups throughout the United States.

This joint effort is part of AARP's Health Advocacy Services and a component of HIA's comprehensive Market Development Program.

In announcing the program, AARP Senior Program Coordinator, William C. McMorran, and HIA President William A. Austin, noted that "this is an unprecedented opportunity for our associations to bring hearing health awareness to the segment of the American population with the greatest incidence

of hearing loss. Our objective is to provide useful information about the identification, correction, and treatment of hearing problems for this age group." Both McMorran and Austin emphasized the importance of this endeavor, as individuals 65 years and older represent nearly 62% of America's 22,000,000 hearing impaired citizens.

"Have You Heard?: Hearing Loss and Aging" is scheduled for distribution by September, 1982. The multi-media program will be promoted through the publications of both associations and AARP pharmacies throughout the country. The complete kit will be available, on loan at no charge, for older adult groups wishing to conduct this educational program on hearing loss.

The content of the program was reviewed and approved by a joint AARP/HIA advisory committee which met in Duluth, Minnesota, on June 21. The committee is co-chaired by Carl Hofland, Assistant State Director of the AARP in Minnesota, and Marjorie D. Skafte, Editor & Publisher of Hearing Instruments magazine. Ms. Skafte is also the Chairman of HIA's Market Development Committee and the Association's Secretary.

The American Association of Retired Persons is a nonprofit, nonpartisan organization dedicated to helping older Americans achieve retirement lives of independence, dignity and purpose.

Founded in 1958 by the late Dr. Ethel Percy Andrus, AARP is today the nation's largest organization of older Americans, with a membership of more than 13 million. Membership is open to anyone age 55 or older, whether retired or not.

AARP's motto is "to serve, not to be served." Members give meaning to that motto through active involvement in community, state and national affairs.

The Hearing Industries Association represents firms which manufacture or distribute hearing health care products or their component parts. As a major focus of the association, HIA conducts a market development program which is designed to increase the appropriate use of hearing aids by individuals with hearing losses. In addition, HIA publishes and distributes publications for physicians, technical professionals and the public on amplification and the proper use of hearing aids.

Midwinter Research Meeting

The annual Midwinter Research Meeting of the Association for Research in Otolaryngology will be held January 24-26, 1983 at the Dolphin Beach Resort in St. Petersburg Beach, Florida. In addition to contributed papers, symposia are planned on the chemosenses and developmental and comparative aspects of speech production and reception. People wishing to register should contact Donald W. Nielson, Ph.D., Secretary-Treasurer, Association for Research in Otolaryngology, Otological Research Laboratories, 7036 E&R Building, Henry Ford Hospital, Detroit, Michigan 48202.

Audio 83 Hyatt Regency

First tri-annual conference on audiology and neuro-audiology. Program includes basic physiology, current and proposed techniques of audiologic evaluation, and introduction of pathology profiles using a new strategic format and electronic audience response system. Concurrent otology meeting.

PROGRAM DIRECTORS:

Connie Jordan, MS
Rodney Perkins, MD

CONTACT:

Project HEAR
1801 Page Mill Road
Palo Alto, CA 94304
415/494-2000

Audiological Resource Association Meeting

The Audiological Resource Association held its summer meeting in Savannah, Georgia, May 15-16, 1982. Dr. Dan Schumaier, Watauga Hearing Conservation, Inc. Johnson City, Tennessee, presented an informative lecture on Industrial Hearing Conservation. Dr. Schumaier has a long-standing program of hearing conservation within his area. He shared many of the practical aspects of noise survey analysis, engineering and administrative controls, audiometric testing, ear protection and educational programs for employees. He further presented procedures for contacting industries to plan programs which would reduce occupational noise induced hearing loss among our employees, meet state and federal regulations regarding industrial noise, and obviate any medical/legal problems developing from hearing impairment. Finally, he discussed the Occupational Safety and Health Act, pointing out new regulations and the requirements for meeting these roles.

Ms. Faye M. Churchill, Brookwood Hearing and Speech Clinic, Birmingham, Alabama, gave a very informative presentation on current methods and research in extended high frequency testing. As part of her presentation, she introduced and displayed the Demlar model 20 K extended high frequency audiometer. This unit provides capability for hearing assessment from 8,000 to 20,000 Hz. Information gained from testing in this range can assist in the ability to predict hearing loss in the speech frequencies and to determine the effects of ototoxic drugs. Ms. Churchill pointed out that the addition of this audiometer makes it feasible to expand and up-grade the scope of hearing and speech services at a low cost and pre-

sents an unprecedented opportunity to assist a larger clientele with new audiometric techniques thus, advancing the goals of the audiology profession. Furthermore, research by Dr. Charles Berlin in Kresge Hearing Research Laboratory indicates that in some types of hearing loss it is critical to be fully aware of the amount of residual high frequency hearing before an adequate amplification system can be provided. This information, of course, can only be obtained through the use of extended high frequency audiometry.

In addition to attending the informative meeting, the members enjoyed historic Savannah and its friendly residents. The association looks forward to the October meeting in Wintergreen, Virginia where Dr. Jerry Northern will be the guest speaker, discussing pediatric audiology and impedance testing. This meeting will be open to all interested individuals, and students are encouraged to attend. Information about the association or the fall meeting may be obtained by writing the ARA secretary, Ms. Faye Churchill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama 35209.

OTO 83 Hyatt Regency

Third tri-annual conference on otology, neuro-otology and laser microsurgical techniques. Format integrates basic science with practical surgical and medical therapy using a comprehensive syllabus, electronic audience response system and illustrated technique tricks. CME Credit: 24 Hours Category I. Concurrent audiology meeting. Program Director: Rodney Perkins, MD.

Project HEAR, 1801 Page Mill Road, Palo Alto, CA 94306
415/494-2000.

"Prof. Stelio Crifo" International Prize

In memory of its former President, Prof. Stelio Crifo, the Italian Audiology Society has instituted an international prize of 5 million lire (approximately 4000 U.S. dollars). This prize will be awarded on 26 October 1983 during the XVIII National Congress in Rome.

The prize will be awarded to unpublished research carried out by a single worker (or a joint work) that makes a truly positive contribution to any one of the following subjects:

Applied acoustic physics - Psycho-acoustic - Embryology of the auditory system - Microscopic or ultrastructural anatomy of the auditory system - Biochemistry or histochemistry of the auditory system - Physiology or electrophysiology of the auditory system - Experimental or clinical deafness - Diagnosis of deafness - Medical treatment of deafness - Surgical treatment of deafness - Prosthetic treatment of deafness.

The papers must be written in English.

Entries will only be accepted from persons aged 35 or under on 26 October 1983.

Each paper must be identified by a pseudonym and sent in 6 copies to reach the following address:

Prof. Giovanni Rossi
Head, Department of Audiology
3, via Genova - 10126 Torino (Italy)

not later than 30 June 1983.

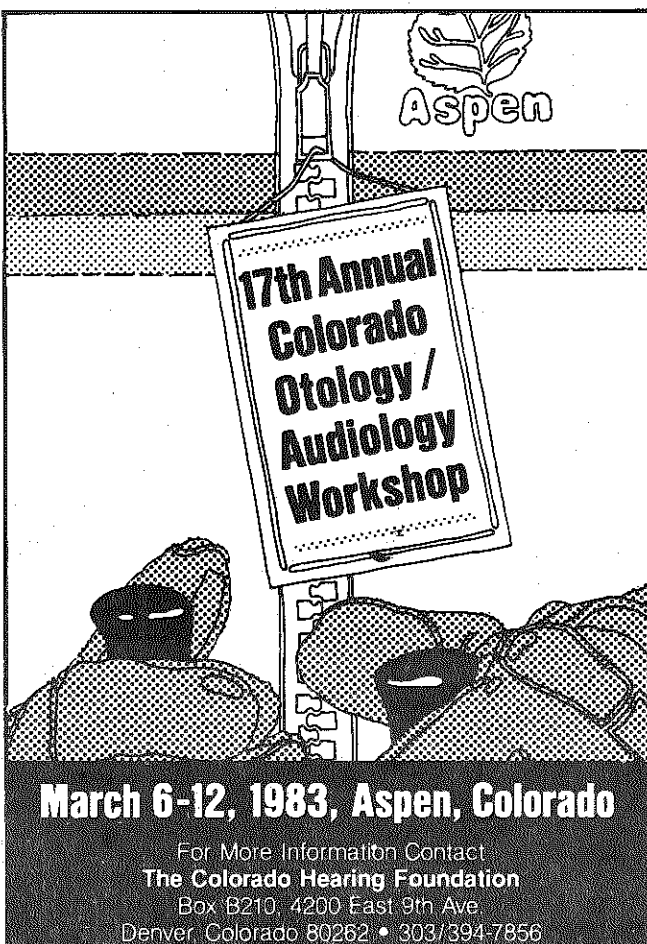
Each paper must be accompanied by a sealed envelope bearing the pseudonym identifying the work. This envelope must contain the first name, the surname and the address of the author(s) and an official document showing the age (s) of the author (s).

The Jury will be composed by the following persons:
Prof. G. Rossi (Turin), Chairman; Prof. J.C. Ballantyne (London); Prof. B. Calogero (Naples); Prof. M. Del Bo (Milan); Prof. F. Giaccari (Florence); Prof. G. Grisanti (Palermo); Prof. G. Motta (Naples); Prof. C.R. Pfaltz (Basle); Prof. M. Portmann (Bordeaux); Prof. A. Quaranta (Bari); Prof. H.F. Schuknecht (Boston); Prof. J. Tonndorf (New York).

Each member of the Jury shall supply the Chairman not later than 15 September 1983 with a list of three papers in order of merit. Three points will be assigned to the first choice, two to the second and one to the third. The prize will be awarded to the research so scoring the highest number of points.

In the event of a tie the prize will be divided equally among the winning papers.

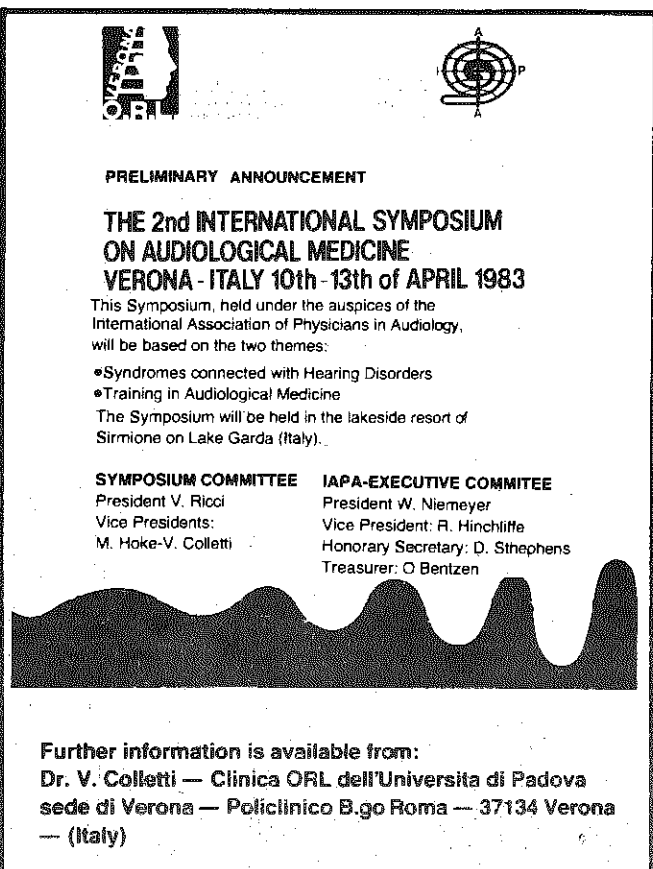
Prof. Giovanni Rossi
President of the Italian Audiology Society



17th Annual Colorado Otology / Audiology Workshop

March 6-12, 1983, Aspen, Colorado

For More Information Contact
The Colorado Hearing Foundation
Box B210, 4200 East 9th Ave.
Denver, Colorado 80262 • 303/394-7856



PRELIMINARY ANNOUNCEMENT

THE 2nd INTERNATIONAL SYMPOSIUM ON AUDIOLOGICAL MEDICINE
VERONA - ITALY 10th - 13th of APRIL 1983

This Symposium, held under the auspices of the International Association of Physicians in Audiology, will be based on the two themes:

- Syndromes connected with Hearing Disorders
- Training in Audiological Medicine

The Symposium will be held in the lakeside resort of Sirmione on Lake Garda (Italy).

SYMPOSIUM COMMITTEE	IAPA-EXECUTIVE COMMITTEE
President V. Ricci	President W. Niemeyer
Vice Presidents: M. Hoke-V. Colletti	Vice President: R. Hinchliffe Honorary Secretary: D. Stephens Treasurer: O. Bentzen

Further information is available from:
Dr. V. Colletti — Clinica ORL dell'Università di Padova
sede di Verona — Policlinico B.go Roma — 37134 Verona
— (Italy)

Ear & Hearing Editorial Board Meeting

DATE: October 17, 1982

PLACE: L.S.U. Speech & Hearing Clinic, New Orleans, LA
MEMBERS IN ATTENDANCE: Irvin Gerling, Deborah Hayes, Robert W. Keith, Ross J. Roeser, Eugene Sheeley, Bruce Weber

MEMBERS ABSENT: Philip Bellefleur and William Meyerhoff

1. The meeting began at 10:00 a.m.

2. The changes for the 1983 (Volume IV) Editorial Board were announced. The 1982 Section Editors will remain the same, but three Editors will be added. Mrs. Eleanor Goodspeed will serve as the Managing Editor. In this capacity she will handle the day-to-day operations of the journal, including logging in manuscripts, following manuscripts, and taking care of problems with the editorial flow of manuscripts. Dr. Deborah Hayes will be the Section Editor for a section on Speech Audiometry. Dr. Hiroshi Shimizu will be the Section Editor for a section on Hearing Science. The addition of the hearing science section changes the philosophy of the journal somewhat in that this section will review papers that are not necessarily clinical in nature. However, the addition of this section reflects the broader philosophy of the American Auditory Society. This Section will allow basic hearing scientists to publish their data in the journal.

3. The special issues for 1983 will include issues on Pediatrics, to be published in January/February (Dr. Laszlo Stein, Guest Editor), and Dichotic Listening (Dr. Robert W. Keith, Guest Editor), to be published in November/December. Suggestions for future special issues include: an issue on topics in otolaryngology, vestibular function, digital processing in hearing aids, genetics of hearing loss, and speech audiometry. A 75 page supplement will be distributed to the readers of the journal on the effects of unilateral hearing loss. Dr. Fred Bass is the Editor of this supplement. It is the summary of findings obtained on a grant and will be paid for out of grant funds.

4. At the 1981 meeting the possibility of having survey papers was discussed. A survey paper was defined as a paper that would review the past five to six years of literature on specific topics, and/or present relevant clinical information on a specific topic. Two survey papers are presently in the editorial review process. One on the pitfalls in ABR audiometry by Dr. Bruce Weber and the other on the physiological aspects of sensorineural hearing loss by Drs. Salvi, Hammernick, Henderson, and Ahroon. It was suggested that other topics for survey papers might include temporal aspects of the acoustic reflex, neuroradiological techniques, Meniere's Disease, and cochlear emissions.

5. The procedures for identifying outstanding articles for the 1981 issue resulted in five papers being selected. After reviewing the process, it was felt that it was equitable and a similar process would be followed for articles appearing in the 1982 Journal. Deborah Hayes wanted to go on record that she opposes the concept of giving awards for outstanding articles.

6. Mr. Ken Startt, Business Manager for the Williams and Wilkins Co., presented information to the Editorial Board regarding the Journal. First and foremost was information that the journal was becoming financially sound and the future looks good. Prior to 1980, the Journal of the American Auditory Society had lost approximately \$42,000. In 1980 Ear and Hearing lost an additional \$22,000, primarily due to development, but in 1981 a turnaround was seen and a loss of only \$477.00 was seen. In 1982, the Journal is expected to turn a profit for the first time, earning about \$5,000. Beginning 1983 there will be a design change that will use slightly smaller type and will save approximately 10% of space. This 10% will generate approximately 30 more printed pages of material within the present page allotment.

7. Following Ken Startt's presentation each Section Editor gave a report on his Section.

Phillip Bellefleur had written a letter to the Section Editors to be read. The essence of his letter was that he is not getting enough material to give audiologists the information that he feels is adequate. He suggested the possibility of doing a reader survey. Although he felt that his section would rate low with regard to the number of papers submitted, he felt that is an important section and should be continued.

After reviewing Dr. Bellefleur's letter the Editorial Board felt that he should personally encourage his colleagues to submit their work to the journal in an effort to bolster the number of manuscripts submitted. This would probably be the most expeditious way of generating material.

Irvin Gerling reported that his primary responsibility is to provide full support to the editor in any capacity deemed appropriate by the editor. He also indicated that his goal continues to be to reduce costs and that there is concrete data suggesting that his work has been successful, as the recent financial report indicated that redaction costs were being reduced as compared to previous reports. In addition, minor style changes have been initiated with the objective of increasing readability and optimizing Journal space.

Robert W. Keith reviewed the manuscripts he had received in the past year, since the Editorial Board met. He indicated that he has reviewed approximately 26 manuscripts and that his acceptance rate is about 46%. The type of manuscript he has been receiving has been different than at first, in that he is

now receiving more manuscripts that are truly clinical. Ross Roeser pointed out that by far Dr. Keith has the greatest volume of manuscripts.

William L. Meyerhoff (was not present at the Editor's meeting, but reported later at the Editorial Committee Meeting) indicated that his problem was manuscripts had been submitted in Otolaryngology during the year. It was suggested that he solicit manuscripts from his colleagues in order to bolster the flow of manuscripts. In addition, a special issue on otolaryngology should help to identify the journal to the otolaryngological community as the place to publish their work.

Eugene Sheeley provided a summary of book reviews Volumes I-III. It is quite apparent that the number of reviews has increased over the past three years and the addition of the "Noted in Brief" and "New and Forthcoming" sections have generated a great deal of information of interest. Dr. Sheeley also suggested sending out a style manual to the Editorial Board.

Bruce Weber reviewed the process by which he handles reviews for his section. It was indicated that he is now sending each manuscript out to three readers, as there are instances of only getting one review back when reviewers are selected.

Ross Roeser expressed his deep appreciation to the Section Editors for their continued support in working on the Journal. A discussion was held regarding the general review process for each section. It was stated that each Section Editor handles specific details somewhat differently, but there is general uniformity in handling reviews. In instances the reviewer is anonymous, but the author is known to the reviewer(s). Although some question was raised regarding the appropriateness of this procedure, the general consensus was that it was acceptable. It was also suggested that 2-3 months should be the target for completing the review process.

9. It was agreed that an Editorial Board meeting will be held during the ASHA meeting in Cincinnati in 1983. There being no further business, the meeting was adjourned at 12:25 p.m.

Ross J. Roeser, Ph.D.
 Editor-In-Chief

**COMING SOON-THE 1983
 AAS MEMBERSHIP DIRECTORY**

Minutes of the AAS Executive Committee Meeting

DATE: October 17, 1982

PLACE: L.S.U. Speech & Hearing Clinic, New Orleans, LA
TIME: 1:30 p.m.

MEMBERS PRESENT: Charlie D. Anderson, LaVonne Bergstrom, Marion P. Downs, A. Bruce Graham, Ed Johnson, Susanne Kos, William Meyerhoff, Ralph F. Naunton, James Nunley, Ross J. Roeser, Hiroshi Shimizu, W. Dixon Ward, Don Worthington.

MEMBERS ABSENT: Malcolm Graham, Earl Harford
GUESTS: Irvin Gerling (Editorial Assistant-Ear & Hearing), Michael Seidemann (local arrangements chairman), Ken Startt (Business Manager, The Williams & Wilkins Co.), and Bruce Weber (Section Editor-Ear & Hearing).

1. President Naunton opened the meeting at 1:30 P.M.

2. The minutes of the 1981 Executive Committee Meeting were reviewed and approved with no corrections.

3. The Income and Disbursement Statement for the period January 1, 1982 through September 30, 1982 was reviewed and discussed.

4. A list of 230 applicants for membership was presented and sponsors for those applicants not previously having sponsors were provided. All applicants were approved for membership. This list will be published in the next issue of Corti's Organ. (See pg. 8).

5. The site for the 1983 Annual Meeting was confirmed and plans for the meeting were reviewed. Dr. Robert W. Keith is the Program Chairman and has already secured the meeting room and made arrangements for the dinner. A letter from the Mayor of Cincinnati was circulated to the Committee. It was suggested that J. Donald Harris be the Carhart Memorial lecturer. President Anderson will contact Dr. Harris to

request his acceptance of the award.

6. Considerable discussion was held regarding the 1984 meeting. One possibility is to meet with the 17th International Congress of Audiology, to be held August 26-30 in Santa Barbara, California. Dr. Sanford E. Gerber had written requesting AAS to hold its meeting in conjunction with the Congress, but the specific details were unknown. That is, it was not known what time would be allotted to AAS, whether or not a separate admission fee could be charged, whether AAS would be requested to provide financial support to the International Congress, etc. The other possibility would be to hold the annual meeting in conjunction with the AAO-HNS, as it is presently scheduled.

Some concern was voiced over holding the AAS meeting with the International Congress, as registration fees usually are approximately \$200. This, it was felt, would eliminate many of the AAS members from attending. Concern was also raised regarding having the meeting with AAO-HNS, as it is only two or three weeks after the International Congress Meeting and members attending the Congress might not be able to attend the AAS meeting due to their close proximity in time. It was decided that Ross Roeser would contact Sandy Gerber and discuss the specifics of holding the 1984 AAS meeting with the International Congress. Once the details are worked out, a decision will be made by the Program Committee.

7. Ross Roeser was appointed Secretary/Treasurer for 1984. By vote of the Executive Committee his allowance was set at \$150 per month.

8. Susanne Kos was appointed Assistant Secretary/Treasurer for 1984.

9. At the 1981 meeting of the Executive Committee a motion was passed to retain Ralph Naunton as President for a second

term. The reason for extending the term was to allow President more time to have an impact on the direction of the Society. In accordance with the spirit of this motion, the Executive Committee agreed to reappoint Dr. Naunton for one year following the first year he served in Office of President. Along similar lines, it was agreed that the term of President, beginning with president Anderson's term, will extend from Annual Meeting to Annual Meeting. President Anderson will assume Office October 19, 1982, and will retain his Office until the 1984 Annual Meeting.

10. A membership drive was held during July, August, and September, 1982. Brochures were sent to approximately 6000 ASHA certified audiologists. To date, 108 new members have been generated as a result of this effort. It was decided that future efforts will be directed at otolaryngologists and educators of the deaf. It was suggested that rather than sending brochures to all 6000 members of the AAO-HNS, interest groups should be considered first. Specific interest groups that were mentioned included: The American Auditory Society, The Neurotology Society, The Academy of Otolaryngology, and The Society of University Otolaryngologists. Charlie Anderson pointed out that the company will be sending a mailing to Otolaryngologists in the near future and indicated that it may be possible to include information in this mailing. It was decided that Dr. Naunton would compose a letter to the Otolaryngologists which would be signed by Drs. Meyerhoff and Roeser, pointing out the benefits of membership in the American Auditory Society, and this would be included with the 11. The American Speech-Language-Hearing Association (ASHA) Related Professional Organization (RPO) Meeting was held in the Summer of 1981, resulted in guidelines for the future.

(cont.)

Meeting of AAS

(cont. from p. 4)

were reviewed by the Executive Committee. Generally, these guidelines allow RPO's such as AAS an opportunity to be identified within the ASHA structure and hold meetings during the annual meeting of ASHA. It appears as if they will permit AAS to schedule its meeting in a more organized fashion when it meets with ASHA in the future.

12. A report was given on Ear and Hearing. Ross Roeser reviewed the highlights of the Editorial Board Meeting that was held several hours before the Executive Committee Meeting. Three members will be added to the Editorial Board. Eleanor Goodspeed will be the Managing Editor, Deborah Hayes will be the Section Editor for Speech Audiometry, and Hiroshi Shimizu will be the Section Editor for the Hearing Science Section. Special issues planned for 1983 are Pediatrics (January/February) and Dichotic Listening (November/December). A supplement will be circulated to the readers on The Effects of Unilateral Hearing Loss. Dr. Fred Bess will be the Editor.

Mr. Ken Startt, Business Manager for Williams and Wilkins, presented information to the Executive Committee. Financially, the Journal made a turnaround in 1981. In that year the Journal lost \$477.00, making the total indebtedness approximately \$63,000. For 1982, the Journal is expecting to turn a profit for the first time. If forecasts are accurate the Journal will earn approximately \$4500.00. For 1982, if forecasts are accurate the Journal will earn approximately \$11,000.00. There will also be a design change in the format that will save space. Basically, the size of the type will be reduced.

Ross Roeser also requested that \$1000.00 be transferred from the AAS account to the Ear and Hearing account, as it has been done for the past two years.

13. Marion Downs reported on Corti's Organ. She asked whether or not there was any objection to publishing the newsletter 2 or 3 times per year as has been done in 1981 and 1982. There was no objection to this.

14. A nominating committee was formed to replace seven members of the Executive Committee. Those members being replaced are: Charlie D. Anderson, Bruce Graham (appointed replacement for Susan Conway-Fithian), Malcolm Graham, Ed Johnson, Ralph Naunton, Hiroshi Shimizu, and John Sinclair. The nominating committee appointed was: Don Worthington (Chairman), Hiroshi Shimizu, Jim Nunley, and William Meyerhoff.

15. The point was raised that the American Auditory Society does not have standing committees. Thus, many times certain activities that should be carried out by the Society are overlooked. Based on this, it was decided that a committee on committees be formed, with Ralph Naunton as the Chairman. Dr. Naunton was given the responsibility of appointing chairmen of standing committees that would deal with certain issues of the Society. Examples of committees included a Membership Committee, Professional Relations Committee, Program Committee, and Credentials Committee. Dr. Naunton will report on his recommendations at a later date through written correspondence.

16. Don Worthington was appointed Vice President/President Elect. Due to the change in the term of the President, Dr. Worthington will assume this position for the remainder of 1982, 1983, and until the annual meeting in 1984, at which time he will become President from 1984 through 1986.

17. The ASHA long range planning committee had written to

inform AAS of its existence. It is expected that AAS will be contacted in the future to input that committee.

There being no further business the meeting was adjourned at 5:20 p.m.

Ralph F. Naunton, M.D.
President

Ross J. Roeser, Ph.D.
Secretary/Treasurer

NOISE-CON 83 TO BE HELD AT MIT

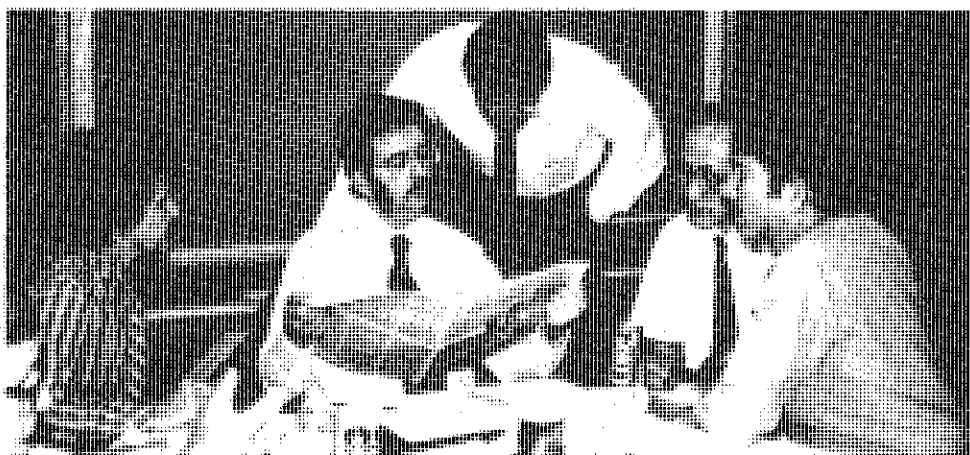
"Quieting the Noise Source" will be the theme of NOISE-CON 83, the 1983 National Conference on Noise Control Engineering. NOISE-CON 83 will be sponsored jointly by the Institute of Noise Control Engineering and the Massachusetts Institute of Technology.

To be held on 21-23 March 1983 on the MIT campus, NOISE-CON 83 will emphasize a physical understanding of noise generation and noise reduction at the source.

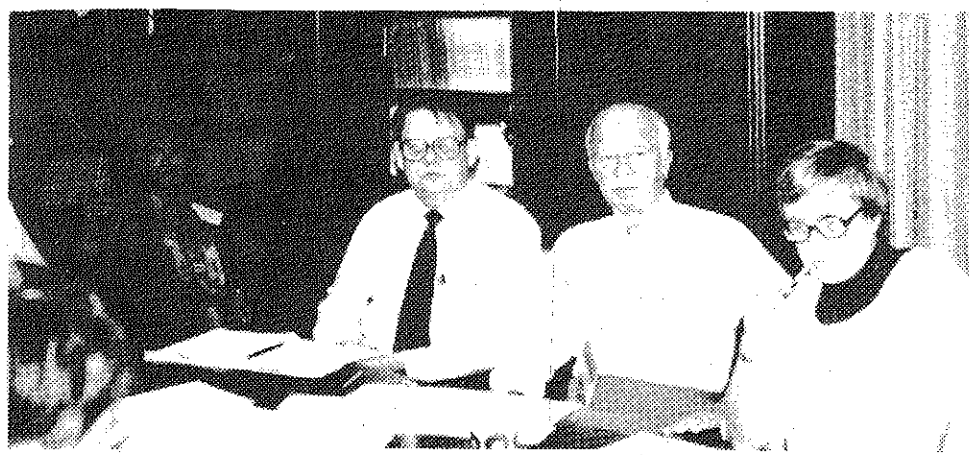
NOISE-CON 83 is the sixth in a series of national conferences on noise control engineering devoted to specialized topics in the field. Other conferences have been held jointly with the National Bureau of Standards, the NASA Langley Research Center, Purdue University and the North Carolina State University.

For further information on NOISE-CON 83, contact the Institute of Noise Control Engineering, P.O. Box 3206 Arlington Branch, Poughkeepsie, NY 12603, U.S.A.

Executive Committee and Editorial Board Meet



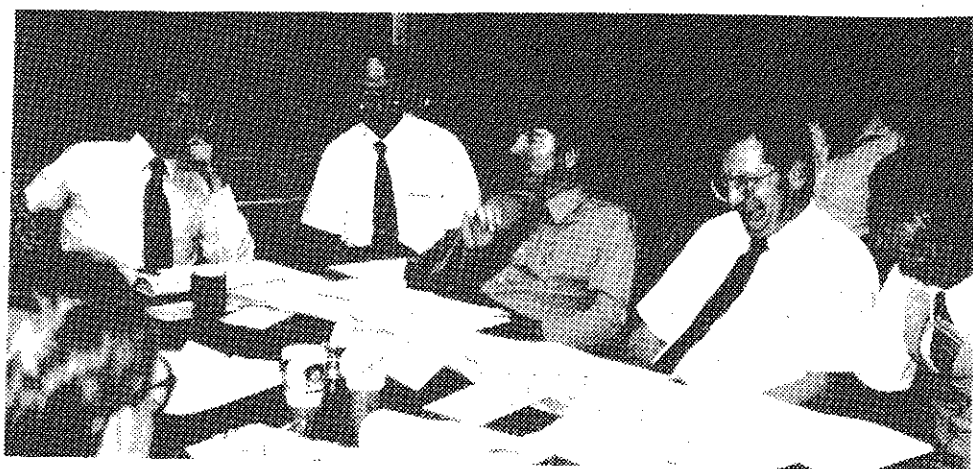
Susanne Kos, Ralph Naunton, Bill Meyerhoff, Hiroshi Shimizu and Ross Roeser.



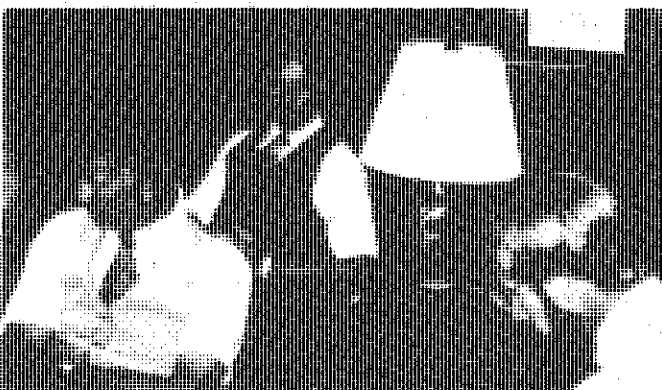
Marion Downs, Charlie Anderson, Ed Johnson, and LaVonne Bergstrom.



LaVonne Bergstrom, Bruce Graham, and Susanne Kos.



Ralph Naunton, Hiroshi Shimizu, Ross Roeser, Don Worthington, and Jim Nunley.



Jim Nunley, Irving Gerling, and Bill Meyerhoff.



Irvin Gerling, Bruce Weber and Ken Startt.



Don Worthington and Jim Nunley.

Tympanometry and Fistula Test

by Bernard Causse, J. Bel and Jean R. Causse

Otology Clinic
34325 BEZIERS—France

ABSTRACT

"Fistula test" is a major cause which may lead to an erroneous diagnosis in tympanometry testing, particularly after stapedectomy for otosclerotic stapedia fixation. In fact, fistula test is conducted when an abnormal opening between the vestibule of the inner ear and the middle ear cavity is suspected, either after a trauma or after stapedectomy. Tympanometry, recorded on ENG tracing, frequently shows a fistula sign after a correct stapedectomy, without any fistula. No less frequent is the absence of a fistula sign in the case of perilymph fistula.

The authors explain the reasons for this paradoxical response in tympanometry testing and draw the conclusions from this apparent abnormality.

Fistula sign is very well known and has been, since HENNEBERT described it in 1911 (1). The detection of this sign is extremely helpful in the diagnosis of labyrinth hydrops of medical origin and of perilymph fistula which may occur as a complication of stapedectomy. In both cases, the commonest symptoms are fluctuating hearing loss, tinnitus, a feeling of fullness inside the ear, and imbalance or vertigo. After stapedectomy, it is of the greatest importance to determine in the event of such symptoms whether they are to be related to the failure of the operation itself or to an eventual labyrinthine fluid hyperpressure. For the leakage of perilymph from the vestibule of the inner ear into the middle ear cavity after stapedectomy is a serious complication which may lead to a profound and irreversible cochlear loss and even to a risk of meningitis, if the perilymph fistula is not immediately detected and if a revision operation is not performed urgently. For this reason, the best choice must be made at once: either medical treatment or surgery according to the diagnosis.

For a long time the detection of perilymph fistula has been difficult because of the lack of efficient and reliable testing methods. In fact, to detect this condition, Valsalva maneuver, tragal compression and pneumatic otoscopy were previously considered helpful in the diagnosis of fistula in combination with the search of nystagmus and Romberg testing, but of these, only pneumatic otoscopy proved to be reliable, whereas Valsalva maneuver and tragal compression

are too often inconclusive. A useful improvement in the detection of fistula sign has been afforded by the combination of Impedance Bridge measurement and Electronystagmography, introduced to make the fistula test more sensitive and more accurate (2,3).

FISTULA TEST USING IMPEDANCE BRIDGE AND ELECTRONYSTAGMOGRAPHY

The results of ENG in the early detection of the presence of perilymph fistula have been so inconsistent that many authors have tried to find a more reliable method (2,3,4,5,6,7,8,9). Even when performed with care, routine vestibular tests may reveal a direction-fixed positional nystagmus or a canal paresis, rarely a spontaneous nystagmus, but these findings cannot always be relied upon as a certitude of a fistula (2,3,5). And the "ENG fistula test, using impedance bridge for pressure change and electronystagmography to aid the establishment of nystagmus and dizziness" was presented by DASPIT, CHURCHILL and LINTHICUM (2) in January 1979, as "a quick and reliable procedure", whereas in September 1978 (6), we ourselves were far less enthusiastic about the safety of this test, which "may lead to an erroneous diagnosis" (6,7,8,9). Such a difference of opinion is certainly based on a number of conditions which deserve to be investigated.

1/ Test procedures were similar. ENG recordings were made with a six-channel R.A.C.I.A. system 74 Model CFDP 77, equipped with a preamplifier PRT 74 C. Recording speed was 15 mm/sec. Calibration was standardized to 10 mm deflection on the recorder for 10 degrees of eye deviation. Electrodes were placed for recording horizontal (CC) and vertical (AC) nystagmus in accordance with the Geneva agreement. All examinations were made with closed eyelids, even at the time of the investigation for rotatory nystagmus, since we can record the horizontal and vertical nystagmus thanks to two channels.

The fistula test was elicited by means of the MADSEN Model Z073 Impedance Bridge, after having checked the patient for spontaneous nystagmus by recording and having asked him to inform us as soon as he felt any imbalance or condition similar to his symptoms. Pressure was progressively increased to +400 mm H₂O, held at this level for approximately 20 seconds and then gradually decreased to -400 mm H₂O, maintained at this level for 20 seconds, and finally brought back to zero rapidly. An ENG recording was made throughout this procedure, which was repeated three times,

unless the patient experienced dizziness or vertigo. In case, the procedure was performed on both the suspect and the non-suspect ears. The elicited nystagmus may be (positive test) or absent (negative test) either on only one or on both positive and negative pressure, or on both positive and negative pressure (Fig. 1). Neither accident nor incident has ever been caused by this procedure, even in ears previously operated by stapedectomy. In this study, we only selected and accounted significant tracings, and rejected questionable tracings such as those altered by artifacts.

2/ Subjects. This number was inevitably restricted by the fact that our otology clinic is specialized in otosclerosis, and to a lesser extent in Meniere's disease. Our consultants have rarely to examine patients suffering from post-trauma or post-otorrhea sequelae. Moreover, the use of a living tissue graft for stapedectomies (teflon-valve technique, originated by one of us (10 to 18) greatly reduced the number of postoperative perilymph fistula. Finally, certain cases were eliminated from this study because of incomplete history or the lack of sufficient investigation. Thus, of 65 cases were selected in this study, ranging from January 1970, date of the first tympanometry for detecting fistula, till the end of 1981. The control-group was constituted of 25 normal subjects without any history of vertigo or surgery and 10 post-stapedectomy ears (Tab.I).

3/ Test results. Our findings were so various that a systematization was difficult to establish, but we can summarize them as follows:

a) All ENG fistula tests elicited by tympanometry were negative on normal subjects.

b) There was no correlation between symptoms, ENG findings, caloric responses and ENG fistula test. Some patients with surgically confirmed fistula had normal ENG findings, but patients suffering from vertigo or imbalance usually showed modifications to their ENG tracing showing either abnormally reduced responses or no response at all. Likewise, some patients, whose symptoms started when blowing the

(cont.)

Group Develops Standards For ABR

—H. Shimizu

In February of 1982 a group of clinicians and scientists representing diversity of backgrounds (Neurology, Audiology, Otolaryngology, Pediatrics, Electroencephalography) met together in Laguna Beach California, under the auspices of the Department of Neurology, University of California, San Diego, to consider recommendations for standardizing auditory brainstem response testing. In some areas it was easy to reach an agreement that standards are not yet possible at the present time. There were other areas where the consensus was that more information and further consideration would be required. The proceedings of the conference will be published by Sensus, Amplaid Scientific Publications, Milano.

A summary of our conclusions follows:

I) Scope

It was agreed that we would try to define the requirements for the equipment, and also conventional communication including nomenclature. We would not discuss only limited aspects of testing protocols as these would be very much in flux. We would not consider the requirements for technicians or interpretation of the results; these latter issues are the proper domain of the professional National Societies.

II) The ABR as a neurological test for brainstem assessment

Stimulus: Clicks are to be used, produced by a square wave pulse applied to an earphone with a flat frequency spectrum such as a TDH 49 or equivalent. Equipment should allow presentation of either single clicks (condensation or rarefaction) or alternating clicks, and also broad band noise to the contralateral ear for masking.

Intensity: A range of intensities in 5 dB steps up to peak equivalent SPL should be available. The intensity of clicks should be acoustically calibrated twice a year using a standard coupler and sound level meter. Intensity should be stated as "dB peak equivalent SPL."

Rate: Stimulus rates should be available from 1 to 10 per second.

Electrodes: Electrodes of relatively equal impedance should be applied to the scalp in the midline between the vertex and forehead and on the ear mastoid ipsilateral to the ear stimulated. The

(cont.)

AMERICAN AUDITORY SOCIETY Unaudited Statement of Income and Disbursement for 1982 9/30/82

Revenues		
1. Membership dues		
2. Interest on savings account	\$29,721.00	
3. Convention & registration	1,992.13	
Total Revenues	2,808.00	\$34,521.13
Expenses		
1. Supplies		
2. Postage — Office	\$1,035.38	
— Corti's Organ	1,320.97	
3. Duplicating costs	52.69	
4. Telephone	742.47	
6. Publication costs	325.77	
— Ear & Hearing		
— Corti's Organ	25,670.00	
7. Accounting & audit	931.41	
8. Contract services	250.00	
— Office		
— Corti's Organ	1,959.74	
9. Convention expense	145.00	
10. Secy/Treas. expense allowance	2,612.01	
11. Overhead	600.00	
	102.69	
Total Expense	\$34,894.76	
Net Income	(1,373.63)	
Assets		
Cash — Checking	\$7,251.87	
— Savings		
— Ready Assets Trust	\$19,958.74	
— Regular Group	1,082.05	\$28,292.66
Capital		
Balance December 31, 1981	\$29,666.29	
Income as of August 31, 1982	(1,373.63)	
Accumulated Capital Sept. 30, 1982		\$28,292.66

Tympanometry

(cont. from p.6)

had normal caloric responses and a questionably positive ENG fistula test. In one patient, fistula testing elicited strong nystagmus only on negative pressure.

c) The ratio of positive and negative ENG-fistula tests to positive and negative surgically confirmed cases is not so obvious in our series as the conclusions of DASPIT, CHURCHILL and LINTHICUM, evidenced in accordance with their series (2). Our findings showed that, out of 37 positive tests, only 18 were surgically confirmed and there was no fistula in 16 positive tests, whereas out of 28 negative tests, 12 fistula were found at the time of revision operation performed because of a strongly suggestive history of fistula. Negative ENG tests only corresponded to negative revision-operations at a ratio of 28 to 14, that is in the proportion of only 50% (Tab. I), far below the generally admitted percentages. We first assumed that it was a matter of a run of bad series, but the following findings were even more impressive.

d) Out of 10 stapedectomized patients, tested as a part of the control-group at the time of an audiometric check-up 6 months or more after the operation, 7 showed a positive ENG-fistula sign with any symptom of imbalance or vertigo and with a perfectly stable hearing functional result. All these 10 patients have been operated on by stapedectomy using the "teflon interposition technique", that is a small hole in the footplate and a teflon piston against a vein graft (10 to 18) (Tab. I).

These findings lead us to a possible explanation of such a great discrepancy between the test results, obtained by different authors (2,6,7,8,9,19 to 28), particularly those of DASPIT et al. (2) and our own (6,7,8,9).

COMMENTS

In order to find the explanation of these surprisingly contrasting results, we analyzed the most typical cases, 4 of which are reported below:

Case 1 (N 783162): a 41-year-old woman, who had previous stapedectomy on the right ear in 1967, complained of fullness and roaring, profound deafness in the operated ear and vertigo immediately after the operation. She experienced repeated episodes of dizziness, particularly at the time of nose and throat infection caused by colds, which led her to consult us. Romberg test was positive. Audiometric check-up showed a profound perceptive hearing loss on the right ear and normal hearing on the left ear. No spontaneous nystagmus. Torsion swing test revealed mild vestibular paresis on the right ear and 50% reduced response was demonstrated on right caloric testing. Gentle tragal compression and Valsalva manoeuvre only caused brief dizziness, without nystagmus, when the pressure change occurred on the right ear. ENG-fistula testing, repeated on two separate test dates, was negative on both ears, apart from when the pressure change from positive to negative occurred in the right ear. Surgery revealed a wide fistula around the shaft of the teflon-piston. The prosthesis was removed and the oval window sealed with a vein graft, without any replacement of the prosthesis. Dizziness and tinnitus progressively disappeared after surgery, but hearing evidently did not recover. The patient declined tragal compression and Valsalva, but surprisingly, ENG fistula test on the right ear was positive at the time of the third month control whereas it remained negative on the left ear, not operated on.

Case 2 (N 18439): a 56-year-old woman was operated on both ears in 1961 and 1962 with a satisfactory functional result in accordance with the poor cochlear reserve of stage III. Nine years after the left stapedectomy, the patient experienced a progressive sensorineural hearing loss on this ear, with occurrence of tinnitus and imbalance. In 1974, repeated episodes of dizziness led the patient to enter our clinic for full examination. Pure tone audiogram revealed severe discrimination loss on the left ear. The functional result obtained on the right ear remained unchanged. There was no spontaneous nystagmus, but positional nystagmus showed right beating nystagmus. Torsion swing test and caloric testing revealed reduced vestibular responses. Pneumatic otoscopy and Valsalva manoeuvre were negative. ENG fistula testing from +400 mm H₂O to -400 mm H₂O on the left ear established a mild nystagmus and the patient experiences slight dizziness. Surgery revealed a large perilymph fistula, constituted by a wide hole in the center of the vein graft, half closed by the fibrous tissue filling the inside of the polyethylene strut. The prosthesis was removed and the oval window covered with a vein graft, without any prosthesis. The patient has had no dizziness since surgery. Postoperative ENG fistula test was negative. Hearing levels have not improved.

Case 3 (N. 762175): A 47-year-old woman underwent previous stapedectomy on the right ear in 1968 in Italy, with a subsequent perforation of the tympanic membrane and persistent airborne gap. Two revision operations were performed.

First in 1976, a myringoplasty in order to close the perforation, — second in 1977, a stapedectomy on middle ear fibrosis and thick obliterative otosclerosis of the oval niche. The functional result was satisfactory for two years, but an otitis caused both an opening of the ABG and a sensorineural hearing loss in 1979, in spite of an adequate treatment. The progressive occurrence of tinnitus and dizziness and the persistence of the ABG + sensorineural hearing loss led us to consider performing a revision-operation. There was no spontaneous nystagmus, but positional testing showed dizziness and left beating nystagmus when suspect ear was downwards. Tragal compression and Valsalva manoeuvre were positive. Caloric testing demonstrated strong nystagmus and a great deal of subjective dizziness on both positive and negative pressures. Surgery revealed a considerable fibrosis of the middle ear cavity and a narrow perilymph fistula with a probably vestibulo-fibrosis because of the production of nystagmus by traction on the fibrous tissue invaginated into the narrow tunnel remaining from the previous fenestration of the obliterative otosclerotic stapedia involvement. The procedure using a vein graft covering the niche without any prosthesis led to a progressive relief of the dizziness and to some improvement of the hearing level. Postoperative ENG fistula test was slightly positive. A secondary sensorineural hearing loss arose two years after the revision operation, probably due to vestibulo-fibrosis.

Case 4 (N degrees 31887): A 61-year-old woman had previous stapedectomy in 1972 on the right ear, and in 1974 on the left ear with a satisfactory functional result on both ears. In 1976 she suddenly evidenced tinnitus and fullness in the left ear, dizziness, then vertigo, and finally a progressive sensorineural hearing loss in the left ear. ENG fistula test was strongly positive, as well as tragal compression, but the Valsalva manoeuvre was negative. As the patient had had Meniere's history and as the appropriate treatment cleared both symptoms and sensorineural hearing loss, a revision-operation was postponed. Repeated episodes of dizziness and sensorineural hearing loss in the left ear in spite of carefully observed treatment, led us to perform a revision-operation. ENG fistula testing on the left ear was positive, as well as tragal compression. Caloric testing showed a 50 percent reduced vestibular response on the left ear, and within normal limits on the right. Revision-operation did not reveal any fistula: the vein graft had neither dehiscence nor hole; it was supple. The teflon-piston shaft was well centered without adhesive fibrous tissue, and its length was well suited: 4mm25. The manipulation of the prosthesis produced neither dizziness nor nystagmus. At the time of the last checkup, eight months after the left revision-operation, the ENG fistula test remained positive. In short, we can say that surgical findings failed to confirm the diagnosis of perilymph fistula established by the positive ENG fistula test and the follow-up has been in favour of Meniere's disease of vascular origin. Only the suppleness of the vein graft covering the wide footplate fenestration can explain the positive ENG fistula sign, as it probably did in 7 out of the 10 normal stapedectomized ears taken as a part of the control-group.

In summary, the first case concerns a wide perilymph fistula, following upon a teflon-piston stapedectomy, with a negative ENG fistula test before the revision-operation and slightly positive after. The second case is that of a large fistula caused by a polythene strut, but half closed by the fibrous tissue overgrown inside the tube, with a slight response at the ENG fistula testing before the revision-operation and disappearing after. The third case shows a strongly positive ENG fistula test, related to a narrow perilymph fistula and probable enhanced by vestibulo-fibrosis, with a slightly positive ENG fistula test remaining after the revision-operation. The fourth case is demonstrative of a thoroughly positive ENG fistula test without any perilymph fistula at the revision-operation and with the same positive response after this revision; this case is closely related to the positive response in the postoperative testing of stapedectomized ears with satisfactory functional result and without any fistula (Tab. II).

These four typical cases, selected as representative of the wide range of the 65 cases reported in this study, as well as seven cases of the control-group (out of the total of 10), have the same common denominator, that is the inverse ratio of ENG fistula test positivity to the size of the perilymph fistula: the smaller the perilymph fistula, the more positive the ENG fistula test response.

EXPLANATION OF TYMPANOMETRY RESULTS IN PERILYMPH FISTULA

In accordance with the various findings reported above, which led us to formulate the rule of an inverse ratio of ENG fistula testing response to the size of perilymph fistula, we do believe that the reasons for this condition are clear (Fig. 2).

1/ In the case of a fistula, the changes of pressure produced by tympanometry from +400 to -400mm H₂O do not lead to corresponding pressure changes in the vestibule of the inner ear as the perilymph leaks through the fistula. If a stapedectomy has been already performed, perilymph leaks

around the shaft of the prosthesis into the middle ear when the pressure is positive. But the reversal of the pressure to negative may lead to bad side-effects by the introduction of mucus or atmospheric air into the vestibule. This is shown in Figure 2, explaining why a real perilymph fistula may not be expressed by a positive response at ENG fistula testing by tympanometry.

Thus it is quite conceivable that the leak of perilymph through the fistula (and around the prosthesis shaft if the ear has been operated upon), is in direct ratio to the size of the fistula. Therefore the response of the ENG fistula test elicited by tympanometry, depends on the size of the perilymph fistula, allowing a greater or lesser leak of perilymph, since the positive response is caused by the alternating hyper and hypopressures into the vestibule of the inner ear, produced by changes in pressures into the middle ear cavity. The greater the size of the fistula, the greater the leakage of perilymph, and thus the lesser the response of the ENG fistula test. Consequently the positivity of the ENG fistula test response is in inverse ratio to the size of the perilymph fistula (Tab. III).

These conditions easily explain the discrepancies in the results obtained by the authors who tried to find a reliable and safe test for the early detection of perilymph fistula (6, 7, 8, 9, and 19 to 28), particularly DASPIT et al. (2), whose case 8, concerning a negative ENG fistula test after a Cody tac procedure, was an enigma. These authors anticipated a positive test result "on the theory that the footplate would be displaced medially," whereas the perilymph leak and thus the negative response to the test, can in fact be explained by the fistula created by the tack. Moreover the destruction of the labyrinthine structures by the tack, could have prevented any ENG response.

2/ After a normal stapedectomy, the supple thin vein graft covering the oval window niche, and all the more the very thin membrane sealing the oval window after other types of surgery, allow the changes of pressure produced by tympanometry testing, to compress and decompress the labyrinthine fluids (Fig. 2). The positivity of the ENG fistula test after a satisfactory stapedectomy, depends in direct ratio on the size of the footplate fenestration performed by the surgeon. A total stapedectomy leads to a greater response than a small hole technique. These effects are the opposite of those encountered in the case of a perilymph fistula, because changes in pressure are totally transmitted to the vestibule of the inner ear, without any leak of perilymph, thanks to the suppleness of the graft or of the mucosa covering the footplate fenestration.

In summary, the alternating positive and negative pressures produced by tympanometry and recorded on ENG tracing, may show a fistula sign after a satisfactory stapedectomy without any fistula, whereas the response to ENG fistula testing by tympanometry may be negative in the case of a real perilymph fistula. (Fig. 2)

CONCLUSION

The "ENG fistula test", elicited by tympanometry and recorded on an ENG tracing, is a procedure of choice allowing an early detection of perilymph fistula. But the responses to this test must be interpreted in the light of the mechanical exchanges of pressure between the middle ear cavity and the vestibule of the inner ear. The responses strictly depend on the anatomical conditions existing on the site of these exchanges. The study of the perilymph fistula, easiest to investigate at the level of the oval window after stapedectomy, allowed us to schematize the various responses according to the size of the fistula and the seal of the window. The positivity of ENG fistula test, elicited by tympanometry, is: 2/ in case of fistula, in inverse ratio to the size of the perilymph fistula; - 2/ after stapedectomy, in direct ratio to the size of the footplate fenestration.

Interpreted in this way, the "ENG fistula test" produced by tympanometry is a valuable addition to the battery of the tests allowing an early detection of perilymph fistula, i.e. caloric tests, tragal compression, Valsalva's manoeuvre, pneumatic otoscopy, which are of lesser value. Only the combination of these tests can lead to an accurate diagnosis.

But one must keep in mind that an early tympanotomy is the only safe means of assuring the diagnosis in case of doubt and of allowing us to be in time to reverse the severe side-effects of perilymph fistula by means of an immediate revision-operation.

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(cont. on pg. 8)

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Kenneth Wolf
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Jerry L. Yanz
Karen D'Ellen Zu



From all of us at Corti's Organ — Merry Christmas and best wishes for the New Year.

Abstracts and Summaries from 1982 Annual Meeting

RESEARCH ON PATHOGENESIS OF CHOLESTEATOMA: IMPLICATIONS FOR TREATMENT

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Two of the biological features of cholesteatoma namely progressive, unrestrained skin growth and localized bone resorption have been the subject of several recent studies in our laboratory and in others. Although the understanding of the pathogenesis of cholesteatoma is still far from complete, what is known does have important therapeutic implications in a disease that causes significant hearing loss and often requires repeated operations for surgical extirpation.

Clinical studies have demonstrated the importance of negative middle ear pressure in the early stage of cholesteatoma development. Animal experiments in our laboratory and in others have shown that factors favoring skin growth include availability of blood supply, the presence of inflammation as well as compression and confinement of skin. These factors help explain the particular difficulty presented by children with cholesteatoma who have eustachian tube dysfunction, frequent otitis media, pneumatized temporal bones with numerous bony defects and crevices. Factors enhancing skin growth should be considered in forming a rational treatment plan in children and others with eustachian tube malfunction and pneumatized mastoids. Consideration of pathogenic factors help explain why retraction pockets occurring in childhood evolve into cholesteatoma many years later. Preventive treatment is both rational and indicated in certain cases of retraction pockets.

The second important feature of cholesteatoma is the occurrence of subadjacent bone resorption. Bone resorbing factors present in chronically inflamed connective tissue of cholesteatoma explain the potential for resorption. However, compression as well as factors present in epidermis and its products appear to play an exacerbating enhancing role in the bone resorption process.

These pathogenic factors in bone resorption have important implications in certain therapeutic problems including whether or not to leave the matrix over a semicircular canal fistula, whether to leave the canal up or down in mastoid surgery as well as the possible future role for medical treatment in cholesteatoma.

HEARING LOSS IN HUNTER SYNDROME — MUCOPOLYSACCHARIDOSIS II

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Hunter syndrome (Mucopolysaccharidosis II) is a genetic, metabolic disease of excessive mucopolysaccharide storage leading to mental and skeletal abnormalities, distinctive facial features and increase prevalence of hearing loss. However, the hearing impairment in MPS II has not been well described in the literature. This paper examines the auditory aspects of MPS II by reviewing the literature and by presenting two affected brothers. Each subject had mixed hearing disorders, fluctuating between moderate and severe degrees associated with recurrent middle ear effusions. Hearing loss appears to be a frequent concomitant of MPS II and may be conductive, sensorineural or mixed. The conductive component may persist after myringotomy. Aggressive audiological and otologic management are required to enhance communicative development.

SODIUM FLORIDE — EFFECTIVENESS OF TREATMENT FOR OTOSCLEROSIS

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Otosclerosis causes a progressive sensorineural hearing loss in many patients with this disease. This progression is caused by an active otospongiotic process in the bone surrounding the cochlea. We have treated patients with cochlear otosclerosis or stapedial otosclerosis who show marked progression of the sensorineural component, with sodium fluoride for just over 10 years. It is believed that sodium fluoride changes otospongiosis into its product — otosclerosis. This transformation arrests the deleterious effect of the active disease process.

Effectiveness of sodium fluoride in arresting progression of sensorineural hearing loss was examined in 98 patients with confirmed stapedial otosclerosis and 94 patients with cochlear otosclerosis. The rates of progression before treatment were also compared to control groups of 100 patients each. Duration of observation ranged from 3 to 25 years before treatment and 3 to 14 years after treatment.

In 63% of patients with cochlear otosclerosis and 46% of patients with stapedial otosclerosis, progression of loss was arrested entirely or the rate was slowed markedly. Some patients, however, did show increase in progression. 20 different variables were then examined to try to determine whether certain patients were more likely to respond positively to treatment. Sex, type of surgery, and type of otosclerosis (cochlear or stapedial) were all statistically significant variables. Males, and patients with cochlear otosclerosis had much more successful results overall. Also, patients who had stapes mobilization surgery responded poorly to sodium fluoride therapy.

In certain patients, then, sodium fluoride does positively affect progression of sensorineural hearing loss in otosclerosis.

"MONITORING OF AUDITORY BRAINSTEM RESPONSES DURING ACOUSTIC TUMOR SURGERY"

Connie Jordan
Rodney Perkins
Darcy Benson
John Winstead

California Ear Institute, Palo Alto, California

Auditory brainstem responses were obtained pre-operatively, intra-operatively, and post-operatively in 12 procedures of acoustic tumor removal by laser vaporization. Data were analyzed with regard to morphology, latency, and amplitude. Dynamic changes in the responses which occurred during the surgical procedure will be discussed. Specific measurement variables and the viability of the technique as a routine monitoring procedure will be addressed.

CHILDHOOD OTITIS MEDIA AFFECTS DEVELOPMENT OF WORD, BUT NOT SENTENCE, INTELLIGIBILITY

Susan Jerger, Baylor College of Medicine

The purpose of this study was to determine how recurrent conductive hearing loss due to otitis media may influence the development of speech intelligibility performance for both words and sentences. Subjects were 25 normal children and 25 children with recurrent otitis media. Ages ranged from 24-56 months. At the time of testing, all 50 children had normal hearing sensitivity on both ears. All children passed a neurologic screening test for developmental normalcy.

Speech intelligibility performance was assessed with the Pediatric Speech Intelligibility (PSI) test. Individual data were performance — intensity (PI) functions for PSI word and sentence materials in isolation and in the presence of a competing message. The message to competition ratio (MCR) was constant across intensity levels: 0 dB for sentences and +4 dB for words. Different MCR test conditions for sentences and words were selected to equate performance for the two different types of speech materials in normal children between 3 and 6 years old.

Individual maximum scores of the PSI-PI functions were used to construct developmental functions (average performance as a function of age) for word and sentence materials in isolation and in competition. In the normal control group, developmental functions showed two salient features. First, performance in isolation was relatively better than performance in competition.

With increasing age, performance in isolation reached a 90-100% correct level approximately 6 months before performance in competition. Second, performance in competition was relatively better for words than for sentences. With the exception of results at the "floor" and "ceiling" of the developmental functions, performance for words was about 10-20% better than sentence performance. These two features of PSI development functions in normal children were reminiscent of results of diagnostic speech audiometry in adults with CNS auditory disorders.

In the otitis media group, developmental functions were normal for both words and sentences in isolation and for sentences in competition. However, developmental functions were grossly abnormal for words in competition. For example, with increasing age from 24-30 months, performance for words in competition improved about 60% in the normal group, but only about 10% in the otitis media group.

The difference between groups may be highlighted by comparing the percent of children in each group achieving an arbitrarily defined criterion score of at least 80% correct performance. Performance for PSI sentence materials in competition reached the criterion score in 52% of the normal group and in 53% of the otitis media group. In contrast,

performance for PSI words in competition met the criterion score in 72% of the normal group, but in only 29% of the otitis media group.

In short, recurrent conductive hearing loss appears to be associated with abnormalities in the growth of word understanding in competition in some children. (Colleagues on this study were James Jerger, Ph.D.; Bobby R. Alford, M.D.; and Sue Abrams, M.S.)

EVALUATION OF SUB-CLINICAL EIGHTH NERVE DYSFUNCTION IN LEARNING DISABLED CHILDREN

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Researchers such as Kephart, Ayres, deQuiros and others have found that defects in the balancing mechanism contribute significantly to learning disabilities in children and adults. Disturbances in auditory areas also decrease the child's ability to function in the classroom. Many of these defects are sub-clinical in nature and therefore difficult to detect. A battery of tests was developed for evaluation of sub-clinical defects of eighth nerve origin. These tests include assessment of vestibular function related to balance, visual-vestibular perception, positional maintenance and evaluation of auditory figure ground (ability to screen out non-essential noise from essential elements of sound) abilities.

132 school aged children diagnosed as learning disabled by a child study team were evaluated using these procedures. 94% had abnormal findings on vestibular function testing. Of those 94%, 86% revealed unilateral hypofunction, 62% had optokinetic, pendular tracking, and/or positional maintenance deficits, and 32% had a combination of vestibular disorders. 21% had spontaneous nystagmus on positional testing. 22% of the children had auditory figure ground perceptual impairments.

Children who revealed hypofunction of the vestibular system were treated with therapeutic dosages of meclizine HCL and/or dyphenhydramine hydrochloride. Those who demonstrated deficits on the optokinetic or pendular tracking tasks were treated with a combination of phenobarbital and scopolamine. Children who demonstrated a combination of disorders were treated with a combination of the above drugs. Those who had deficits in auditory figure ground testing were referred to the child study team for development of the proper educational plan.

Subjects were monitored closely on a monthly basis to observe the effects of the medication. Areas of weakness were retested at 6 months and 1 year. 6 month observation revealed improvement in 79% of children treated for hypofunction of the vestibular system based on the battery of tests. 65% of the children with vestibular hypofunction showed from moderate to marked improvement in academic abilities according to respective child study teams at this interval. Medication was terminated. After re-examination in 1 month, 11 children were placed on medication due to the recurrence of vestibular dysfunction. Progress is presently being monitored.

51% of children demonstrating visual vestibular defects and/or positional maintenance difficulties showed improvement at 6 month testing. Child study team reports indicated that 35% of these children showed from moderate to marked improvement. 71% had improved by the 1 year testing interval.

Based on these findings, it is suggested that this testing should be included in the evaluation procedures conducted by child study teams for the purpose of devising the proper educational plan.

NEUROAUDIOLOGICAL TRENDS IN SPLIT-BRAIN SUBJECTS AND THEIR RELATIONSHIP TO CHILDREN WITH AUDITORY PROCESSING DIFFICULTIES

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It has been shown that subjects who have undergone complete, one-state commissurotomy demonstrate specific trends on certain central auditory tests. Among these are severe left ear deficit (for verbal report) on dichotic speech tasks and poor auditory pattern perception bilaterally for

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verbal report, but normal performance for humming these patterns. Also, these subjects perform normally on monaural low redundancy speech (i.e. low pass filtered speech, speech in white noise, etc.) and auditory fusion tasks.

In our investigations on children with auditory processing difficulties we have found some perform in a manner similar to split-brain subjects. Generally, these children do not demonstrate as severe effects as the split-brain subjects, but an obvious relationship seems to exist. It has been noted that approximately 20-25% of the children investigated for auditory processing dysfunction demonstrate this "split-brain effect". These findings have compelled us to theoretically entertain the possibility of abnormal auditory inter-hemispheric interaction in children who demonstrate this specific type of neuro-auditory profile.

Several audiological case studies showing relationships between split-brain subjects and children with auditory processing deficits will be discussed.

HEARING AID USERS AND MUSIC: A SURVEY OF LISTENING HABITS AND ATTITUDES

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Although extensive research has been devoted to the effect of hearing aid use on speech, essentially no research is available relating to hearing aid use and perception and enjoyment of music. The purpose of this study was to examine the listening behavior and attitudes of hearing aid users regarding music.

A questionnaire was developed and submitted to a population of hearing aid users ranging in age from 8 to 91 with a mean age of 62.3. Subjects were asked to respond to the questionnaire items by using equal-interval scales ranging from 1 to 7. The numbers were associated with appropriate modifiers such as moderately, greatly, etc. A rating of 1 was the most negative response and 7 was the most positive response. Responses were obtained from 178 subjects consisting of 95 men, 81 women, and 2 children.

In response to the inquiry regarding the importance of music before hearing impairment and aid use, 88% indicated that listening to music was at least moderately important to them. Twenty-nine percent indicated that listening to music was of great importance to them.

A comparison of the scaled responses for before hearing loss and after hearing loss and aid use revealed a statistically significant difference between the mean responses, supporting a significant reduction in music listening with hearing aid use. Similar differences were found for items examining the enjoyment of music. A statistically significant reduction in the enjoyment of music with aid use was found compared to enjoyment prior to loss of hearing. Furthermore, 58% of the subjects reported that the loss of enjoyment as of at least moderate importance; 15% indicated that the loss was of great importance.

The respondents were asked to indicate the degree to which hearing aids assisted the enjoyment of music in comparison to not wearing an aid. Sixty percent of the subjects reported receiving at least moderate help, and 35% indicated that the aid helped greatly.

Additional information derived from the survey indicated that those respondents who wore binaural amplification reported receiving a greater degree of assistance from amplification in their enjoyment of music compared to those who wore one aid. Also, those who had used aids longer indicated obtaining more help from their aids in listening to music. Finally, those respondents who indicated receiving the most help in listening to music also indicated a greater degree of overall satisfaction with their hearing aids.

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THE ACOUSTICS OF IN-THE-EAR HEARING AIDS

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The audiologist who recommends an ITE hearing aid for his or her client typically places the responsibility for selection of the amplification parameters upon the manufacturer. In most cases, unless an ITE oriented master hearing aid is used, the audiologist will provide the ITE manufacturer with an audiogram that indicates the lower limits of sensitivity and the upper boundaries of tolerance for the client. The manufacturer then evaluates the so-supplied information and selects the electronic components and casing style to be supplied with

the hearing aid. The success of the fitting of the instrument is usually dependent upon the client's acceptance or rejection of it.

Some recent work with KEMAR has provided a data set which should make the task of determination of amplification parameters easier for the ITE hearing aid manufacturer. This work has been oriented toward 1) establishing the differences in sound pressure levels created by earphones and canal-placed hearing aid receivers, 2) establishing the output characteristics of ITE hearing aids, 3) establishing the effects of venting ITE hearing aid cases on receiver frequency response, and 4) establishing the effects of these vents on the signals incident upon the hearing aid case.

The sound-field work has been conducted in a diffuse, rather than an anechoic sound field. The diffuse sound field provides a field-to-head acoustic transfer function which is equivalent to the average of all such functions for many angles of signal incidence in the anechoic sound field. Thus the response of a hearing aid measured in the diffuse sound field is independent of the effect of angle of signal incidence.

The data which will be presented will show the difference between the effects of venting ITE hearing aid cases and traditional earmolds, both on the signals provided by the receiver and incident upon the hearing aid case. The differences between frequency responses as measured in 2-cc couplers and the ear of KEMAR will also be shown for different types of hearing aid receivers used in ITE hearing aids.

COMMUNICATIVE DISABILITY ASSESSMENT USING AN ARTICULATION INDEX PROCEDURE

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The Articulation Index Theory (French and Steinberg, 1947) postulates that speech intelligibility is uniquely related to a quantity called "articulation index", which for any specified, normal hearing, speaker-listener pair, can be computed from the intensities of speech and competing noise reaching the ear of the listener. To test the applicability of the theory to communicative disability assessment when hearing loss is modeled as internal noise, the PB-word discrimination scores for different filtering and noise conditions (Table 1) were obtained for normal hearing, lesser hearing impaired and greater hearing impaired subjects. Mean thresholds for each group are shown in Figure 1. Figures 2, 3 and 4 depict the predicted (solid lines) and the mean observed discrimination scores for all three groups. Clearly, AI was a good predictor for normal and lesser hearing impaired group, but subjects from the greater hearing impaired group exhibited a disproportionate loss in speech discrimination, over and above that predicted on the basis of their hearing sensitivity.

As the reduction in the AI did not prove to be a good descriptor of the effective reduction in the auditory area needed for speech perception, an attempt was made to calculate this reduction R from the obtained speech discrimination scores. Further, R was correlated with two different measures of social handicap (Noble and Atherley hearing measure scale, 1970; and the subject's direct magnitude estimate of the handicap). Results, which are given in Table 2, when analysed reveal that: (1) Whichever functional relationship (linear, logarithmic or power) was supposed to exist between R and subjective measures, a statistically significant correlation was obtained ($p < 0.05$); (2) The difference between correlation coefficients for different functional relationships was not significant. This indicates that auditory handicap is a composite sensory continuum with both prothetic and metathetic components; (3) The magnitude of the correlation is not high but it is concluded that the method is worth further investigation.

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SPEECH DISCRIMINATION TASKS

Task Number	Task Code	Q - Quiet condition N - Noise added	Long-term overall rms signal level (if not filtered)	HP - High pass filtering LP - Low pass filtering blank - no filtering	Cut-off frequency (3dB attenuation)
1	DS (65)	Q	65		
2	DS (N)	N	65		
3	DS (HP65)	Q	65	HP	2000Hz
4	DS (HP75)	Q	75	HP	2000Hz
5	DS (HP85)	Q	85	HP	2000Hz
6	DS (LP2)	Q	65	LP	2000Hz
7	DS (LP1)	Q	65	LP	1000Hz
8	DS (LP2N)	N	65	LP	2000Hz
9	DS (LP1N)	N	65	LP	1000Hz

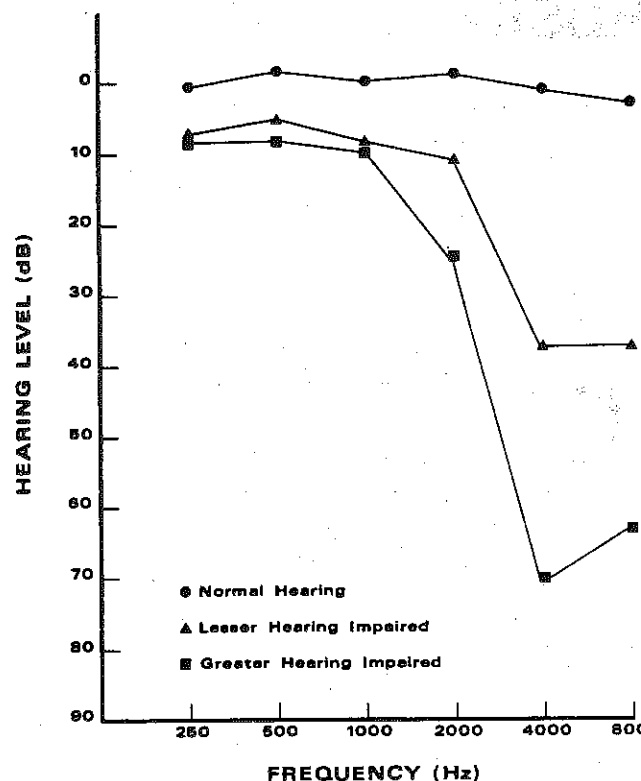


Fig. 1 PURE TONE THRESHOLDS

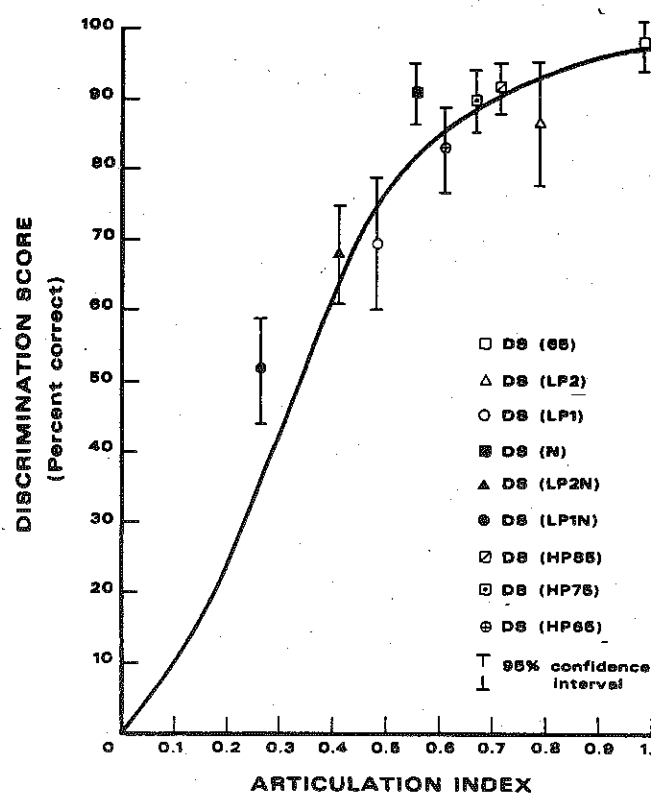


Fig 2 NORMAL GROUP

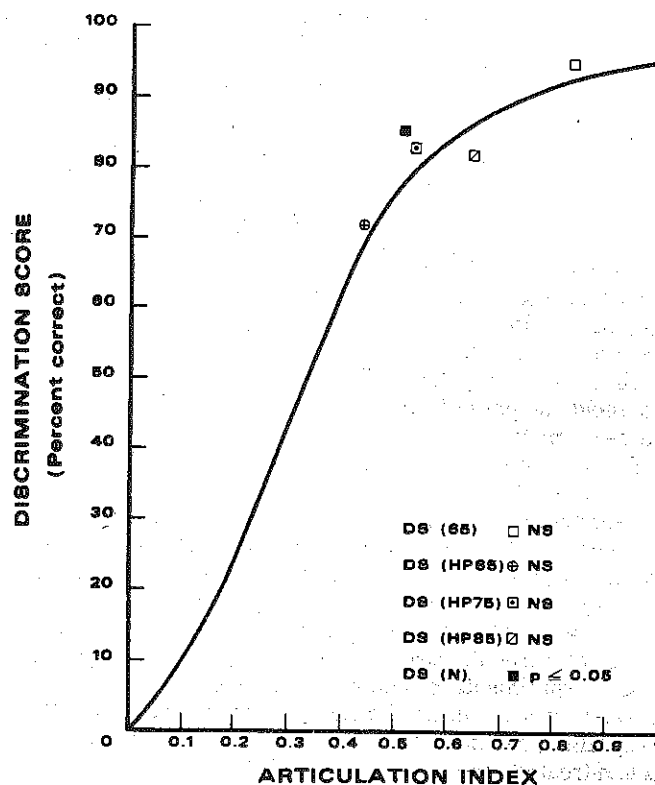


Fig 3 LESSER HEARING IMPAIRED

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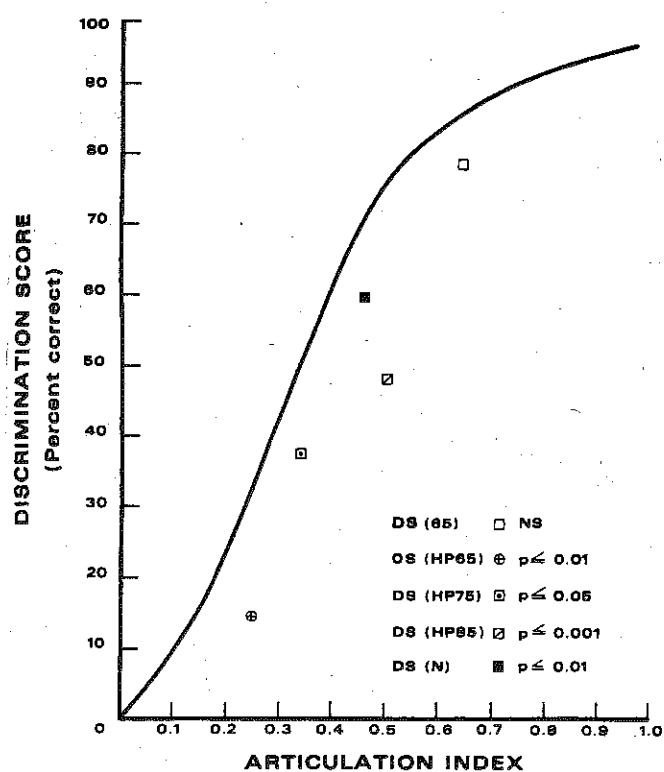


FIG 4 GREATER HEARING IMPAIRED

		The effective reduction in the auditory area (R)		The best-fit line
		R	log R	
Questionnaire score	Q	0.48		$Q = 8.17 + 15.01 R$
	Q		0.53	$Q = 6.02 \log (513.53 R)$
	log Q		0.56	$Q = 16.12 R^{0.25}$
The magnitude of the subject's direct estimate of his/her handicap (S)	S	0.49		$S = 15.55 + 37.7 R$
	S		0.56	$S = 10.21 \log (150.99 R)$
	log S		0.48	$S = 36.01 R^{0.33}$

Table 2 Correlation matrix between the subjective measures of hearing handicap and the effective reduction in the auditory area. All correlation coefficients are statistically significant ($p < 0.05$).

A COMPARATIVE PERFORMANCE STUDY OF THE LIBBY HORN VERSUS STANDARD #13 TUBING

Florence Davenport
Margaret A. Wylde

Recent studies of coupler (earmold) modifications in hearing aids have shown that a one piece tubing with a tapered internal diameter, called the Libby horn, can smooth and extend the high frequency response of a hearing aid compared to the frequency response of the same hearing aid coupled to standard #13 tubing.

Although investigators have reported the superiority of the Libby horn based on etymotic gain measures and clinical observations (Libby, 1981; Mueller, et. al., 1981) there has been little experimental data reported supporting the subjective preference of the Libby horn over standard #13 tubing (Mueller, et. al., 1982).

The purpose of this study was to determine whether normal hearing subjects and three groups of sensorineural hearing-impaired subjects could discern qualitative differences between the acoustic output of their hearing aids delivered to their ears through the Libby horn inserted in a Killion 8cR earmold compared to #13 standards tubing inserted in the same earmold.

Forty subjects, 10 normal hearing, 10 with flat sensorineural hearing loss, 10 with a sloping (12 dB/octave) sensorineural hearing loss, and 10 with normal hearing through 1000 Hz and a severe high frequency hearing loss participated in the study. The quality of sound produced by the hearing aid coupled with the Libby horn and with the #13 tubing was rated by each subject on 9 adjective scales (Gabrielsson et al., 1980) while listening to 4 taped programs. The 72 experimental conditions (2 couplers \times 4 programs \times 9 scales) were counter-balanced across subjects. The programs, presented at 65 dB SPL through a loudspeaker in a sound-treated room were music, continuous discourse, continuous discourse with a competition of multi-talker speech babble at a -10 dB signal-to-noise ratio, and a conver-

sation between two speakers.

A stock earlevel hearing aid was used with the normal hearing subjects. The hearing-impaired subjects used their own hearing aid.

Functional gain was measured (Pascoe, 1975) for each subject both with the Libby horn and with the #13 tubing.

The functional gain measures demonstrated a slight, but significant (.05) improvement in aided thresholds with the Libby horn. The results of the qualitative judgements were equivocal, some measures suggested the superiority of the Libby horn while others suggested better quality from the #13 tubing.

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HEARING AID FITTINGS IN UNILATERAL LOSS WITH POOR SPEECH DISCRIMINATION

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A widely held assumption among persons involved in the fitting of hearing aids is that ears with unilateral reduced discrimination (i.e. lower than 70 or 80% for Pb's) cannot benefit from use of a hearing aid. The accompanying rationale is that amplification of distorted speech (as measured by Pb's) will only further confuse the patient. This assumption has not been consistent with our clinical experience. We have found that the successful fitting of patients with this type of hearing problem does require some special attention to certain characteristics of the loss during the evaluation in order to achieve satisfactory hearing aid use, but should not be ruled out as "unaidable".

Eight satisfied monaural hearing aid users were evaluated. These subjects have unilateral hearing loss, with reduced speech discrimination in the aided ear. Average age of this group was 55 years, with etiologies including Meniere's, hereditary, toxic, sudden vascular, and cause unknown. The better ear in this group had an average SRT of 15 with 92% speech discrimination, the group's poorer ear had an average SRT of 75 dB with 43% maximum speech discrimination score. The average length of binaural aid use was approximately three years, with a range of 3 months to 6 years. Two subjects had initially worn a CROS arrangement routed to the better ear, before trying the hearing aid on the poor discrimination ear that they now prefer.

A fundamental issue in dealing with the reduced discrimination problem is whether single-word Pb scores are valid as an indicator of the usefulness of amplification in an impaired ear. Despite the fact that this group had 43% Pb discrimination, their discrimination of spondaic words at the same presentation level was typically over 80%, and their description of running speech was described as "understandable". In addition to evaluation with more redundant speech materials, evaluation indicated that these patients tended to have a more narrow dynamic range, with loudness tolerance problems. In some cases, prominent frequency distortion when listening to speech was observed by the patient, characterized as either "low-pitched" or "high pitched".

Elimination of objectionable factors in amplified speech by use of compression output limiting and variable frequency response were important to comfortable hearing aid usage.

An extensive review of literature has revealed no substantive data or research indicating that unilateral reduced speech discrimination (via Pb scores) will have deleterious effects on speech understanding in the binaural mode. Theoretical work on decreased frequency resolution as a source of reduced speech discrimination exists, however this has been shown to modify but not eliminate identification of multi-formant speech information. No research has indicated that the dichotic (modified and normal) presentation of speech produces reduced speech understanding.

Many patients with unilateral loss and good hearing in the remaining ear can function adequately with no major difficulty. However, the problems associated with monaural hearing are well known, and some persons in more demanding communication situations consider their problem significant. For the patient interested in maximizing speech understanding in professional and social situations, binaural hearing is clearly advantageous. The binaural effect, including aspects

of binaural fusion, summation, squelch effect, elimination of head shadow, localization, and an improvement of a subjective sense of "balance" are all advantages that the patient with both unilateral hearing loss and reduced speech discrimination can still obtain benefit from. This is consistent with the reports from the subjects evaluated in this group.

It is not the intention of this report to generalize that all patients with monaural hearing loss and reduced speech discrimination should wear an aid on the affected ear. The purpose of this study is to refute the generalization that these patients cannot wear an aid. Clinical experience has indicated that some patients can satisfactorily use an aid in preference to a CROS system. The characteristics of this group are presented. Complete audiometric data, descriptive data (including occupation), additional evaluation and speech testing results, functional hearing aid gain and frequency response data will be presented. A summary of each patient's report on the advantages/disadvantages of their hearing aid use will be reviewed. Supported by funds from the House Ear Institute, Los Angeles.

APPLICATION OF SILMAN AND GELFAND 90TH PERCENTILE LEVELS FOR ACOUSTIC REFLEX THRESHOLDS

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Silman and Gelfand (1981) reported acoustic reflex threshold data for a large sample of patients having hearing losses attributable to cochlear pathology. Included in their publication were 90th percentile levels to establish upper limits for reflex thresholds as a function of hearing loss at 500, 1000 and 2000 Hz. The purpose of our study is to report data for this type for a smaller group of patients with surgically-confirmed retrocochlear pathology.

Subjects were 30 patients having surgically-confirmed cerebellopontine angle tumors (26 neurilemmomas, 4 meningiomas). In addition, reflex results were reviewed for 30 patients with similar hearing losses not attributable to cerebellopontine angle tumors.

Acoustic reflex thresholds were obtained with an Amplaid Model 702 immittance unit. Responses were monitored on a strip chart recorder.

Results were interpreted as abnormal for 25 (83%) of the tumor patients and for 1 (3%) of the non-tumor patients. The non-tumor patient with abnormal reflexes had an elevated reflex threshold at 2000 Hz.

These results suggest that the upper limits for reflex thresholds as a function of hearing loss recommended by Silman and Gelfand are appropriate, at least as applied to these two samples of patients. Reflex decay was also measured for these patients. Implications of the reflex threshold and reflex decay results will be discussed.

COMPARISON BETWEEN AER AND BEHAVIORAL THRESHOLDS IN NORMALLY AND ABNORMALLY HEARING CHINCHILLAS

Robert I. Davis, John A. Ferraro.

At present, there is a lack of agreement in the literature regarding the use of a specific electrophysiological response that corresponds in order of magnitude and stability to behaviorally determined responses from experimental animals. Evidence from Henderson, et. al. (*J. Acoust. Soc. Am.* 46: 474-475, 1973) has shown that the auditory evoked response (AER) recorded from the inferior colliculus (IC) may be a valid indicator of hearing sensitivity in normally hearing chinchillas. For practical application as a research tool, however, correspondence between responses must also be demonstrated in abnormally hearing populations. The present study was designed to compare AER and behavioral thresholds from the chinchilla before and after acoustic overstimulation. A demonstration of correspondence between thresholds would provide support for the application of the AER technique as an alternative to the inherently subjective and time consuming procedures associated with behavioral conditioning.

Bipolar electrodes were chronically implanted in the IC of seven behaviorally conditioned chinchillas. AER and behavioral thresholds to 20 msec. tone bursts were determined for a range of frequencies before and after a 4 hour exposure to a 2000 Hz, 120 dB SPL pure tone for six of the animals. One subject served as a control and received no exposure.

Our results revealed a close correspondence between AER and behavioral thresholds in both the normal and abnormal

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ear of the same animal. In almost all subjects, the greatest difference between mean thresholds at any one frequency did not exceed 15dB. Post exposure thresholds displayed mild to moderate losses in sensitivity in the 1 kHz to 4 kHz range.

Our findings justify further development of this particular AER as an indicator of hearing sensitivity in the chinchilla. In particular, the application of the technique should be examined in populations with cochlear pathology in regions other than those observed in this study.
(Supported in part by a grant from the Ohio State University Graduate School).

VALIDITY OF NEWBORN HEARING SCREENING PROGRAMS: AN AUDITORY BRAINSTEM RESPONSE EVALUATION

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Introduction:

Recognizing the need for the early identification of hearing impairment, the Joint Committee on Infant Hearing (1970, 1972) recommended the use of a high risk register (HRR) and behavioral audiological follow-up for infants at risk. Although testing procedures and screening techniques have been modified and improved, only recently have means been available to accurately evaluate the validity of behavioral newborn screening. With recent advancements in electrophysiological measurement, recommendations have urged the implementation of auditory brainstem response (ABR) audiometry as a supplement to newborn screening. The purpose of this paper is to report the results of a newborn hearing screening program incorporating a high risk questionnaire, behavioral screening and ABR audiometry.

Methods and Procedures

Over a three year period, 13,374 were born at the Grace Maternity Hospital in Halifax. Newborns were classified into three categories: (1) at risk for hearing loss, (2) those admitted to the intensive care nursery (ICN), and (3) a normal control group. Based on the results of the HRR and a behavioral test protocol, ABR audiometry was completed on 350 newborns. Acoustic clicks were presented monaurally to each ear at intensities of 60 dB and 30 dB nHL. An ABR screening failure was considered the absence or prolonged latency of a Wave V response.

Results/Discussion

Discussion will include the incidence and pass-fail results of the 3 stage screening program. Of the 350 infants tested, 6 percent of those classified as "high risk" for hearing loss were found to have either unilateral or bilateral sensorineural hearing impairment. Emphasis will be placed on the large percentage of behavioral false-positives and the validity of newborn behavioral screening as demonstrated by ABR audiometry. Infant failures will be compared to normative absolute (Wave I, III and V) and relative (I-III, III-V and I-V) latencies and relative amplitude ratios (V/I) as a function of maturation and intensity (see attached tables). Finally, the incidence of hearing impairment by category and clinical considerations will be discussed.

References

1. Mencher, G.T. (ed.), Early Identification of Hearing Loss (Basel: Karger), 1976.
2. Gerber, S.E. and Mencher, G.T. (eds.), Early Diagnosis of Hearing Loss (New York: Grune and Stratton), 1978.
3. Jacobson, J., Seitz, M., Mencher, G.T. and Parrott, V. Auditory Brainstem Response: A Contribution to Infant Assessment and Management, in Mencher and Gerber (eds.), Early Management of Hearing Loss (New York: Grune and Stratton), 1981.
4. Jacobson, J.T., Morehouse, C.R. and Johnson, M.J. Strategies in infant auditory brainstem response assessment. Ear and Hearing, September/October, 1982.

"PROGRESSIVE" HEARING LOSS IN SCHOOL-AGED CHILDREN

Roslyn M. Bendet, Audiologist
Pittsburgh Public Schools

Educators of hearing impaired children generally assume that the congenital sensori-neural hearing losses exhibited by these children remain stable over time. Progressive sensori-neural hearing loss usually is associated by teachers with otologic disease processes. Over the past few years, the incidence of progressive hearing loss and subsequent changes in auditory function has been of concern to the educational and clinical audiologists as well as the teachers working with children in the Pittsburgh Public Schools. Teachers and audiologists working to habilitate hearing impaired children

need to be aware of any changes in hearing function in order to plan and carry out appropriate educational programming for these children.

This study will explore a number of parameters associated with progressive hearing loss in a population of hearing impaired children in a public school program. The population includes approximately 150 school-aged children in kindergarten through twelfth grade. The children are enrolled in self-contained classrooms, resource rooms, or in the itinerant program in the Pittsburgh Public Schools' Programs for the Hearing Impaired.

The following questions will be addressed in the presentation:

Incidence: Are the numbers of school-aged children exhibiting decreases in hearing significant?

Audiometric Testing: What differences in audiometric pattern and degree of hearing loss have been noted?

Hearing-for-speech Testing: What changes in speech recognition and discrimination have occurred?

Amplification: Has over-amplification contributed to progressive hearing loss? The Pittsburgh Public Schools programs to monitor user gain with classroom amplification as well as personal hearing aids will be discussed.

Medical-otologic: Have medical-otologic causes been identified for the observed decreased hearing?

Behavior Changes: What behavioral parameters have been associated with decreased hearing?

Educational Needs: How does a public school program alter or individualize rehabilitative programming for students exhibiting progressive hearing loss?

AUDITORY BRAINSTEM RESPONSE WITH DEMYELINATING DISORDERS

Hiroshi Shimizu and James M. McDonald
Department of Otolaryngology
The John Hopkins University School of Medicine
Baltimore, Maryland

Demyelinating disorders, such as multiple sclerosis (MS), are not unrelated disease entity in ENT practice because of its interesting affinity for the vestibular system. MS is one of the interesting diseases for the differential diagnosis of Meniere's disease and the symptoms sometimes resemble a CPA tumor. Therefore, auditory brain stem response (ABSR) testing can be an additional useful procedure for the differential diagnosis.

This paper is to report our experience with 64 cases of MS, 4 cases with metachromatic leukodystrophy (MLD) and 5 cases with adrenoleukodystrophy (ALD).

All patients underwent audiometric evaluation before the ABSR testing. Clicks were presented at a 20/sec repetition rate except for 11 MS cases which were subjected to a study on the effect of the click rate. The data on the presence or absence of wave I, III and V, the absolute latency, the interwave interval and interlatency difference in detail will be presented. Sixteen cases with MS (25.8%) showed the absence of all response components. The absence of wave V was found in 22 MS cases (35.5%).

ABSRs were abnormal in two of the late infantile-onset and one juvenile-onset MLD, including a 14-month-old child with normal neurological examination and normal peripheral nerve conduction. ABSR helped identify early pathology. A new high performance liquid chromatographic assay was used to quantitate the urinary sulfatide excretion at the picomole level.

All five cases with ALD showed either absence of the response or the prolonged absolute and interwave latencies. One of them gave clear normal slow vertex response (SVR), while no discernible ABSR was obtained. Two of them had little speech discrimination ability although no hearing sensitivity loss existed.

The issue on determining upper normal limit will be addressed by utilizing 2 SD and 3 SD for the criterion of the upper normal limit for the wave latency.

SUMMARY

Forty out of 63 MS patients had a provisional diagnosis of MS. The incidence of abnormal ABSR in the provisional MS group was 65.0% while 78.3% of the patients with definite MS showed abnormal ABSR. However, the incidence of abnormal ABSR in patients who subsequently developed definite MS was 71.4%.

We studied two siblings with late infantile onset of MLD and one with juvenile onset of MLD. ABSR's were abnormal in all patients. One patient was a 14-month-old infant who was asymptomatic, with normal neurologic examination and peripheral nerve conduction, but fibroblast arylsulfatase, an enzyme assay, was diagnostic of MLD. ABSR was apparently sensitive enough to detect brain stem involvement in this case.

The ALD group consisted of six patients with ALD and two ADL carrier. All patients, including two ALD carriers, except

one ALD patient showed abnormal ABSR. Like MS, the first and second order neurons are more often involved than the third and beyond.

The latency increased with faster repetition rate of click but no significant difference in the latency change between normal Ss and the study group as far as up to 60/sec. is concerned. There was no high correlation between abnormal ABSR and abnormal acoustic reflex in MS, MLD, and ALD.

In conclusion, the abnormal ABSR was positive in a substantial proportion of MS, MLD and ALD and the test helped identify a silent lesion in the brain stem. The abnormality was not specific to any of the disorders.

Standards (cont. from p.6)

electrode may be placed anywhere on the subject. The manner of application should follow customary laboratory procedures of an electroencephalographic facility, but special precautions must be followed for preterm or new born infants. (See section III.)

Amplifiers and filters: The amplifiers should meet customary standards of safety for application to patients. Their overall gain should be sufficient to utilize fully the computer's digitizing capability to achieve adequate resolution of signals as small as 50 nanovolts. The pass-band of the filters for the ABR should be approximately 30 to 3000 Hz (3dB-down points) and they should have slopes of at least 6 dB/octave.

Averaging Computer: The maximal dwell time should be 50 msec (20kHz sampling rate) when using a sweep time of 10 to 20 msec. Artifact rejection of traces above a certain amplitude should be provided.

Plotting convention: There should be notation of the electrode used as G1 input to the amplifier, i.e. the "active" electrode, and of the direction of display of the polarity of this electrode in the ABR. There was no consensus as to a single convention for the polarity of such a display.

Protocol for Neurological Assessment: Stimulus intensity should be approximately 90dB peak equivalent SPL. One slow rate of 25/sec or less and a faster rate of 50/sec or more should be used. All averages should be replicated until the latencies of principal peaks are within 0.2 msec of each other.

III) The ABR as screening test for audiological evaluation:

The same minimal requirements as for neurological evaluation are recommended with following additions and exceptions:

1. Sedation of infants may be necessary.
2. Capability to present bone-conducted signals should be available.
3. Collodion should not be used to affix electrodes to pre-mature or full-term newborn infants because of their fragile skin as compared to the skin of adults.
4. Earphone bands and standard earphone cushions customarily used in adults can cause collapse of the ear canal in neonates. Holding the earphone gently against the ear can void this problem.
5. Each ear should be tested separately, using contralateral noise masking if the thresholds differ significantly. Several intensity levels should be tested to cover both suprathreshold and threshold levels.

IV) The ABR as a frequency-specific audiological test:

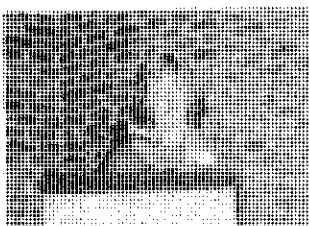
There are two general approaches to frequency selectivity, one by shaping the stimulus (tone bursts or filtered clicks), the other by masking undesired frequencies (notched noise, derived responses). There was no consensus on the method of choice but full agreement on the need for further experimental and clinical evidence to evaluate the compromises that are inherent in each method. There is the possibility that other evoked potential components may be more suitable for audiological testing.

Keith Chiappa, M.D., Ph.D.
Derald Brackman, M.D.
William Melnich, Ph.D.
Hiroshi Shimizu, M.D.
Alfred Coats, Ph.D.
Charles Berlin, Ph.D.
Roger Thornton, Ph.D.
Alex Salt, Ph.D.
Terence Picton, M.D., Ph.D.
Chaim Sohmer, Ph.D.
Jun-ichi Suzuki, M.D.
Erik Borg, M.D.

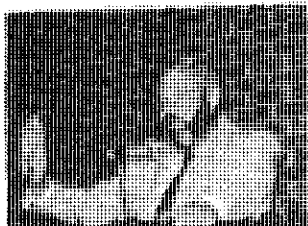
Other Participants

Hallowell Davis, Ph.D.
Manuel Don, Ph.D.
Robert Galambos, M.D., Ph.D.
Kurt Hecox, M.D., Ph.D.
James Jerger, Ph.D.
John Rowe III, M.D.
Arnold Starr, M.D.
James Stockard, M.D., Ph.D.
Aaron Thronton, Ph.D.

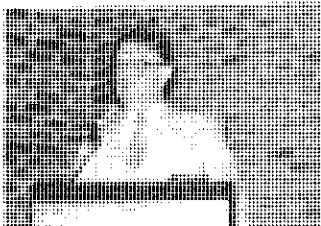
The Speakers



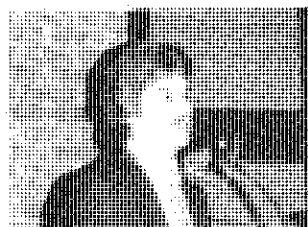
Florence Davenport



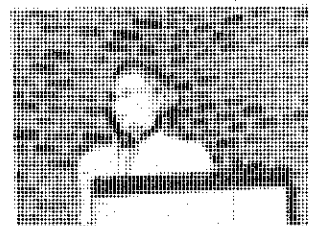
Mike Seidemann



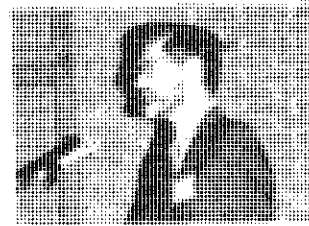
Charlie Anderson



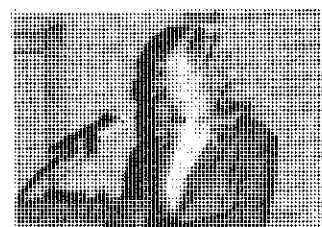
Robert Davis



Susan Jerger



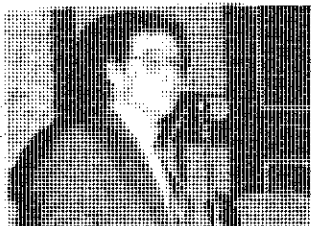
James Peck



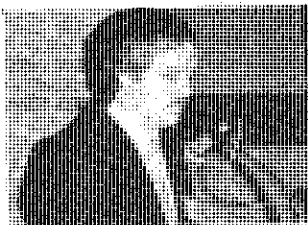
Liane Gilbert



Brian Forquer



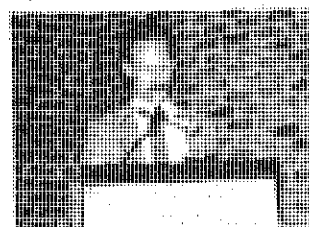
John Jacobson



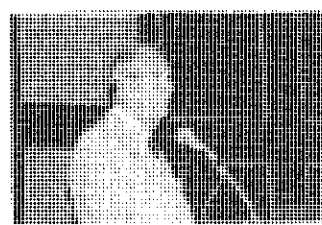
Christopher Bauch



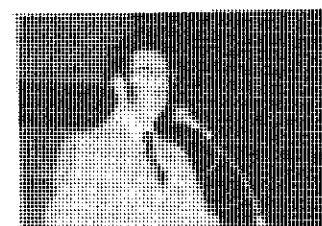
Ross Roeser



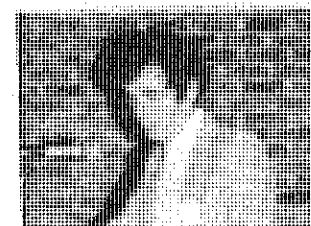
John Colemann



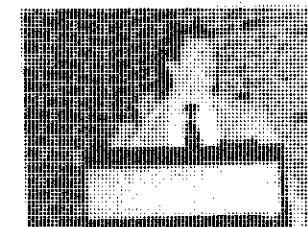
Merle Lawrence



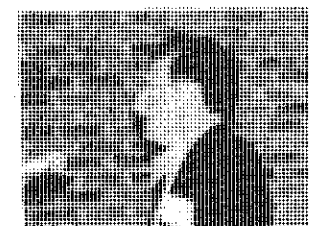
Ralph Naunton



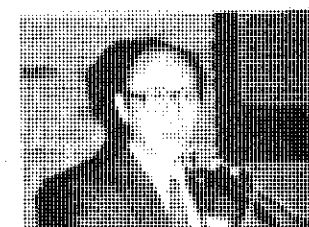
Chaslov Pavlovich



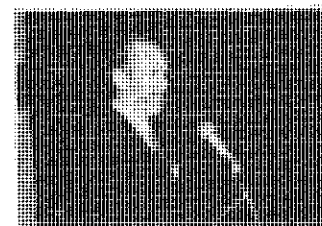
Frank Musiek



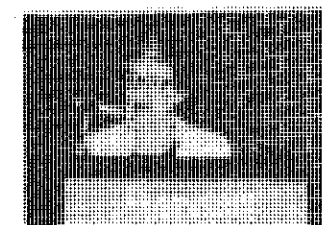
Peter Alberti



Hiroshi Shimizu



Maxwell Abramson



LaVonne Bergstrom

Officers Elected at First Meeting of AAO-HNS Board of Governors

The American Academy of Otolaryngology-Head and Neck Surgery's newly created Board of Governors held its first meeting October 17 in New Orleans. The function of this group is to provide communication between the Academy's Board of Directors and the membership through the approximately 120 local, state, regional, national and international otolaryngological societies. Each society has one delegate plus an alternate who serves a three year term which is renewable one time. It is anticipated that the Board of Governors will meet twice a year in conjunction with the national spring and fall meetings.

Dr. Marvin A. Singleton was elected Chairman of the Board of Governors. He is in the private practice of general otolaryngology and related allergies in Joplin, Missouri. Dr. Singleton is a Counselor for the Missouri State Medical Association and past President of the Missouri ENT Society. He will be an invited guest at the AAO-HNS Board of Directors meetings.

According to Dr. Singleton, "the Board of Governors will be the conduit for information from the grass routes of organized otolaryngology to the Board of Directors of the Academy. This process will make the Academy leadership more responsive

to the socioeconomic and political problems of the general membership. The Board of Governors will also request residents training in otolaryngology and the general good of the patients of our members. It can help the Academy become a more dynamic and democratic medical organization if the societies present their issues well in advance of the meetings."

Willard Fee, Jr., M.D. was elected Chairman-Elect. Dr. Fee is Chairman of the Division of Otolaryngology-Head and Neck Surgery at Stanford University School of Medicine in Palo Alto, California.

Robert J. Keim, M.D. of Oklahoma City was elected Secretary. Dr. Keim is in private practice and is the current Secretary at the American Neurotology Society.

The predecessor Academy merged with the American Council of Otolaryngology — Head and Neck Surgery on January 1 of this year. The new Academy, whose officers are in Washington, D.C., has more than 7,000 members. According to Executive Vice President Harry W. McCurdy, M.D., "the Board of Governors has the potential to be the most important addition to result from the merger."

ANNOUNCEMENT Practical Short Course in ABR offered

The Kresge Hearing Research Laboratory of the South, LSU Medical Center, will present A Practical Short Course in Auditory Brainstem Response, February 4-8, 1983, and again June 10-14, 1982, each with the last day as an optional additional practice day. The courses are co-sponsored by the Lions Eye Foundation of Louisiana, the Eye and Ear Institute of Louisiana and LSU Office of Continuing Medical Education. Featured will be morning lectures on Anatomy, Physiology, and Instrumentation as they relate to applied auditory physiology, and afternoon labs with hands-on, practical instruction in ABR. Special concurrent sessions will be available for people with no experience in electrophysiological measurement. Participants will have the opportunity to talk with representatives of major equipment manufacturers and to try their products.

The \$400 tuition includes, in addition to an educational opportunity of the finest quality: reduced room rates in the hotel in which the course will be held, a free evening jazz party featuring outstanding New Orleans musicians and hors d'oeuvres, and free coffee and refreshments throughout the course. Free transportation to and from the airport, courtesy of the Eye and Ear Institute, may be available.

The Lions Eye Foundation of Louisiana may once again provide some fall tuition scholarships for graduate students, residents, audiologists, etc. Enrollment in the course is limited to 40 paid participants, or 5 workers per available computer. For further information, application forms, and information on applying for scholarships, please contact Course Coordinator, Kresge Hearing Research Laboratory, 1100 Florida Avenue, Building 124, New Orleans, Louisiana, 70119, or call (504) 947-6641.

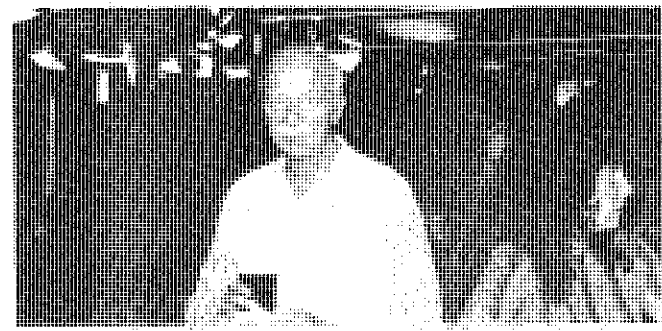
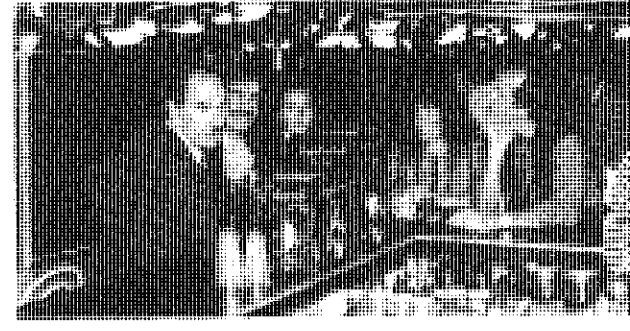
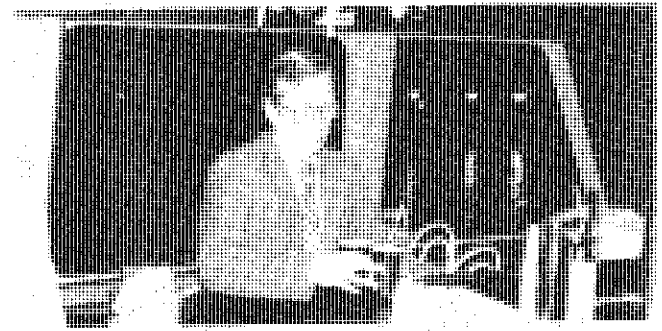
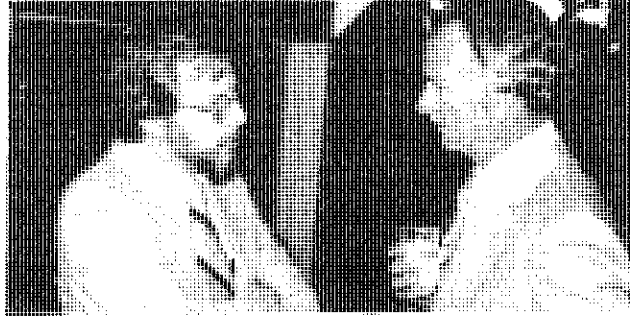
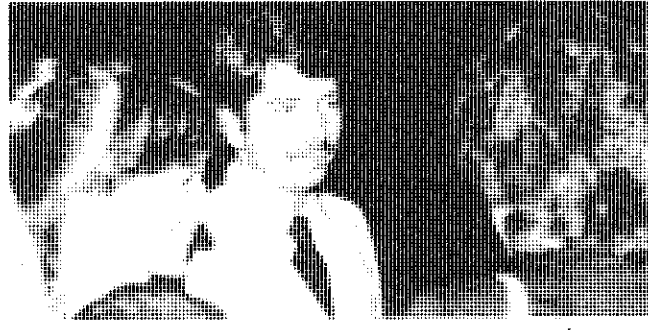
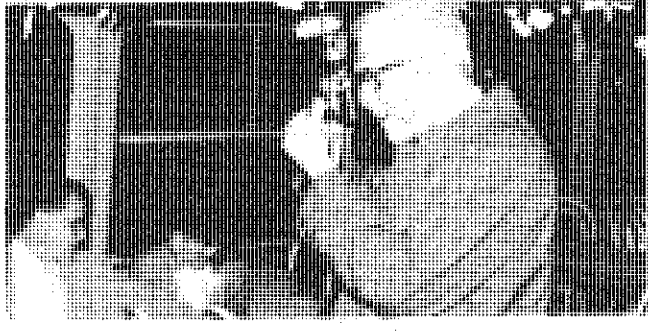
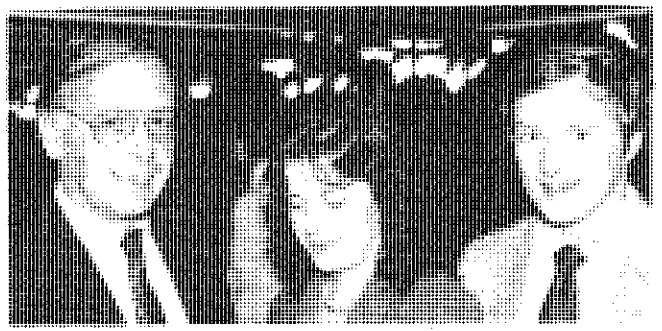
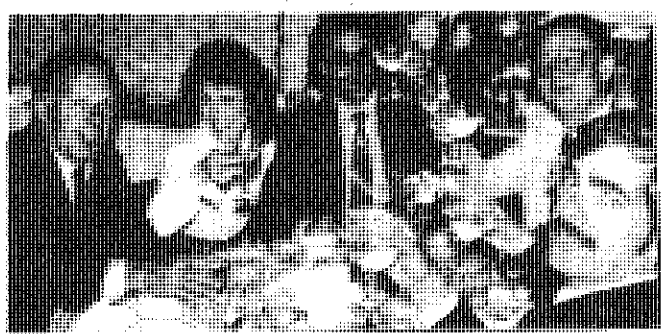
I/INCE Requests Research Items

The International Institute of Noise Control Engineering (I/INCE) was founded in 1974 as an organization dedicated to the application of noise control technology for the benefit of the public. It provides leadership through the organization of international conferences and seminars on noise control engineering, especially the INTER-NOISE series of conferences. I/INCE also seeks to develop interdisciplinary contacts between Noise Control Engineering and other related fields of work, and promotes international cooperation in research on noise control. I/INCE has twenty member societies in seventeen countries spread over five continents.

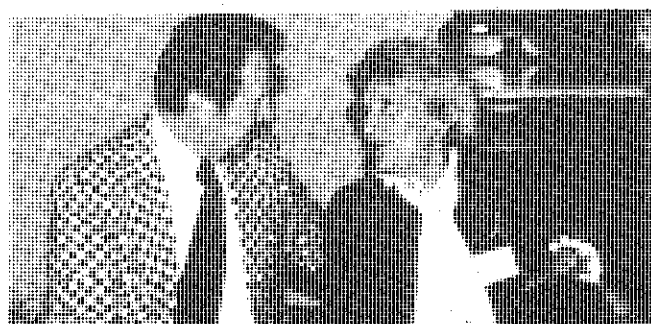
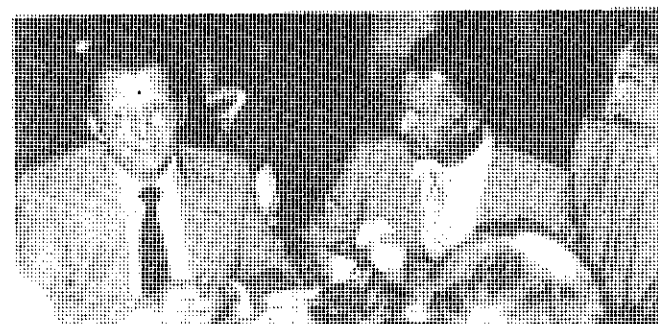
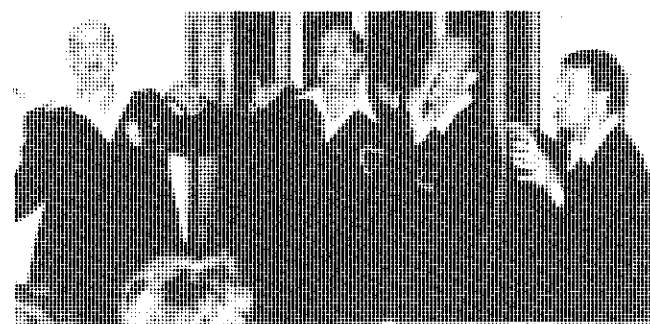
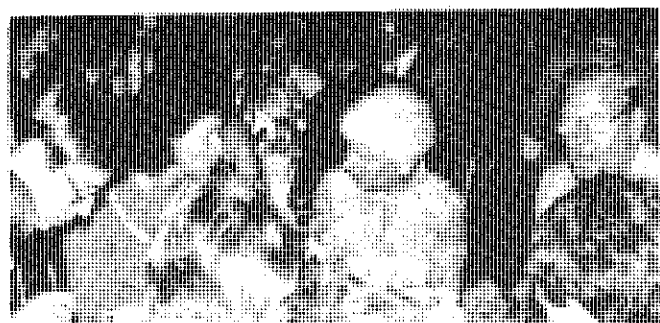
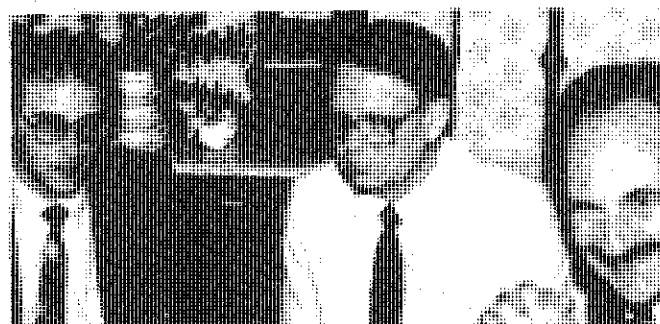
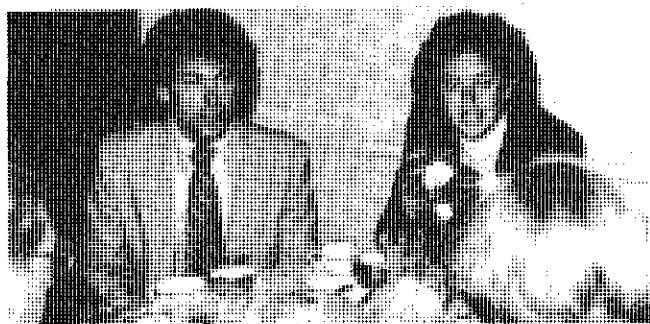
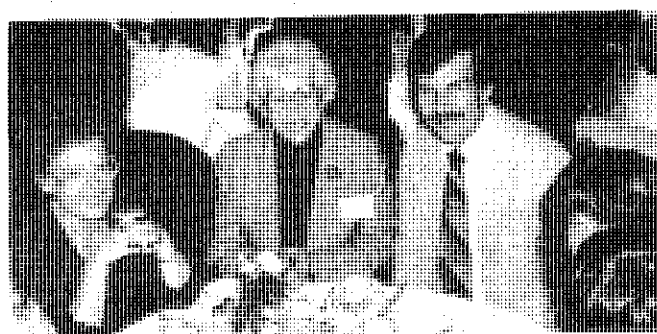
As part of its responsibility to promote cooperation in

research, I/INCE publishes a newsletter which contains news items of international interest. One of the objectives of the newsletter is to publish a survey of research in noise control in progress in laboratories throughout the world. These items will appear in a "Research" column of the newsletter. Individuals working in noise control research are encouraged to send such news items to the newsletter. It is not necessary to provide details of the results of the research; the scope and subject matter are sufficient. Information should be sent to Dr. A. Cops, Editor, I/INCE Newsletter, Celestijnenlaan 200D, B-3030 Heverlee, Belgium. Information on other I/INCE activities may be obtained from the I/INCE General Secretariat at the same address.

AAS Members Enjoy Old Mississippi..

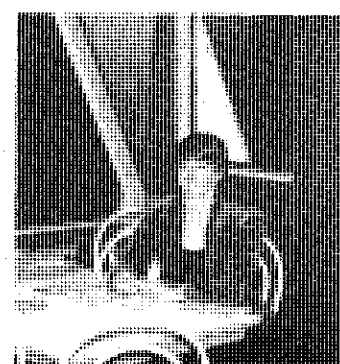
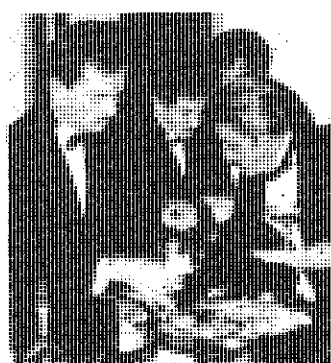
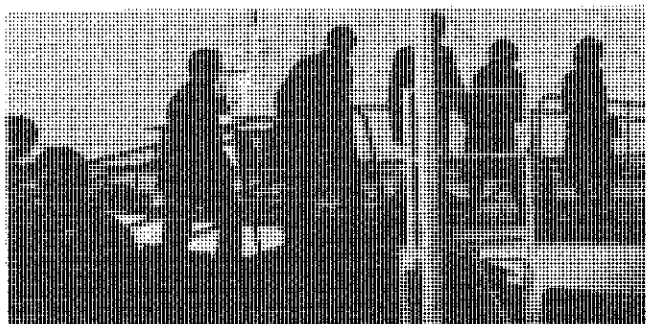


...And Dine In Style At Arnaud's



Pictures by Bill Carver

More AAS Fun In New Orleans



TEDER ELECTED CHAIRMAN OF HIA STANDARDS AND TECHNICAL COMMITTEE

On September 13, during a meeting in Washington, D.C., members of the HIA Standards and Technical Committee elected Harry Teder their chairman. The committee had convened for the purpose of this election and to review results of efforts thus far on the hearing aid/telephone compatibility standard. Mr. Teder recently testified regarding that standard before the Sentates Communication Subcommittee

on behalf of the HIA.

Mr. Teder is the Chief Engineer, Hearing Instruments, at Telex Communications, Inc., Minneapolis, M.N. He is a graduate of Dartmouth College and has been with Telex since 1963. Mr. Teder has been a member of the HIA Standards and Technical Committee he now chairs since 1969, and is also a member of ANSI working groups S3-48 (Hearing Aids) and S3-69 (Auditory Trainers). He is a member of the Audio Engineering Society and the Upper Midwest Chapter of the Acoustical Society of America.

ADVANCED ABR WORKSHOP March 25-27, 1983

The Kresge Hearing Research Laboratory of the South, part of LSU Medical Center's Department of Otorhinolaryngology, New Orleans, Louisiana, is offering an Advanced ABR Workshop especially tailored to people experienced in auditory brainstem applications. The course will be held March 26-27, 1983. The course will feature case reviews and participants will be encouraged to bring their difficult cases. Special attention will be given to ipsilateral vs. contralateral recording techniques, normal variability, binaural interaction studies, simultaneous masking studies, visual and somato-sensory potentials, and an opportunity for equipment updates. Attention will be given to storage, recall, and data handling techniques for certain kinds of computer configurations.

Tuition will be \$300 for new attendees, \$250 for previous attendees of a Kresge course. The tuition includes, in addition to the educational opportunity, reduced hotel rates, free evening jazz party featuring outstanding New Orleans musicians and hors d'oeuvres, free coffee and refreshments throughout the course.

Free transportation to and from the airport and between the hotel and course location may be available courtesy of the Eye and Ear Institute. The course is co-sponsored by the Lions Eye Foundation, the Eye and Ear Institute of Louisiana and LSU Office of Continuing Medical Education. For further details write to: Advanced ABR Workshop Coordinator, Kresge Hearing Research Laboratory of the South, 1100 Florida Ave., New Orleans, LA 70119.

Ear and Hearing Goes to Soviets

Editor's Note: Ross Roeser, Editor-In-Chief of Ear and Hearing, received this letter from The State Central Scientific Medical Library, MOSCOW, USSR.

Dear Dr. Roeser,

We should be most obliged if you could send us on a regular exchange basis your periodical "Ear and Hearing", which is of great interest to our specialists in this field of medicine.

We could offer you in exchange our medical journals (up to two titles) from the list attached to this letter.

Please note that almost all of them are supplied with English summaries of the original papers.

Looking forward to your early reply.

Sincerely yours,

N.A. Yakunin
Director
Cand. med. Sci.

It is a comforting thought to think that, in the midst of all the nuclear arms controversy, our profession maintains an exchange of knowledge.



Harry Teder

CHANGE OF ADDRESS ?
Notify the Home Office
AMERICAN AUDITORY SOCIETY
1966 Inwood Road
Dallas, Tx. 75235

**Meet the Candidates
for the
AAS Executive Committee
Page 3**

**Plan Ahead!
AAS Annual Meeting,
November 17, 1983**

**1983 Membership Directory
In This Issue
Begins Page 7**

CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol. 8, No. 2

Spring 1983

Beltone Begins Search

Beltone Electronics Corporation President Lawrence M. Posen today announced that the search has begun for the 1983 winner of the Beltone Distinguished Teaching Award in Audiology.

This award is given annually by Beltone to an outstanding audiology instructor in the United States or Canada, nominated by an audiology student or graduate. The intent of the award, according to Posen, is to honor the teaching profession for the vital role it plays in shaping the future of the field of audiology. The top three instructors will each receive a cash prize, their universities will be given grants and the students nominating them will be awarded a cash prize from Beltone.

Judging in the competition will be based on the recommendation of the student making the nomination, the instructor's department chairman or dean's recommendation, the candidate's essay on "The Future of the Profession of Audiology," curriculum vitae and the overall impression of the judges.

Judges for the competition will be: Robert Goldstein, Ph.D., University of Wisconsin; Mary Kawell, student representative, University of Illinois; David Lilly, Ph.D., University of Michigan; David Lipscomb, Ph.D., University of Tennessee; Judith Rassi, M.A., Northwestern University; Ross Roeser, Ph.D., University of Texas, Callier; Zahrl Schoeny, University of Virginia (1982 winner); Arnold Small, Ph.D., University of Iowa; Laszlo Stein, Ph.D., Michael Reese Medical Center; Bruce Weber, Ph.D., Duke University Medical Center; and Don Worthington, Ph.D., Boystown Institute for Communication Disorders.

The winner of the 1983 award will be announced at the convention of the American Speech-Language-Hearing Association (ASHA) in Cincinnati later this year.

Naunton Provides Recommendations To Anderson on Committee

At the 1982 Executive Committee meeting President Ralph Naunton was made chairman of a committee on committees. His task was to recommend standing committees and chairmen to President Anderson. Dr. Naunton, immediate past president of AAS, recently provided his recommendations to President Anderson. In his recommendations Dr. Naunton suggested the formation of seven standing committees of the Society. The various committees that were suggested will be published in the Summer/Fall issue of Corti's Organ. Any member wishing to make recommendations regarding the formation of committees, or wishing to serve on a committee, should contact President Anderson at his new address: 11003 West 27th Avenue, Lakewood, Co. 80215.



**May is Better
Hearing and Speech
Month**

Annual Meeting Announced Keith Calls For Papers

The 10th Annual Meeting of the American Auditory Society will be held in Cincinnati, Ohio on November 17, 1983. In recognition of our progress in developing intra-professional relationships, in conducting an informative annual meeting, and in the development of a quality professional journal, the theme of the meeting will be "A Decade of Progress."

The Program Committee is presently soliciting papers of scientific and clinical interest to be considered for presentation at the meeting. Interested persons are invited to submit five copies of a 300-word abstract with a brief summary by June 1, 1983 to the following address:

Robert W. Keith, Ph.D.
Department of Otolaryngology
Mail Location #528
University of Cincinnati Medical Center
Cincinnati, Ohio 45267

The Committee will send acceptance notices on August 15, 1983.

J.D. Harris to Address 1983 AAS Convention



It has been announced that Dr. J.D. Harris will be this year's Keynote Speaker at the 1983 AAS convention in Cincinnati. (Further information will appear in the pre-convention issue of Corti's Organ.).

History of The AAO-HNS, Inc.

The Western Ophthalmological, Otolological, Laryngological and Rhinological Association was founded in 1896 in Kansas City, Missouri. This first meeting of about 50 eye, ear, nose and throat specialists eventually blossomed into the American Academy of Ophthalmology and Otolaryngology. The purpose of the organization was to encourage the study and practice of medicine and surgery in their relation to the eye, ear, nose, and throat.

As medical and surgical techniques advanced, this one specialty divided into two distinct entities: ophthalmology and otolaryngology. Separate certifying boards were established. In 1916 the American Board of Ophthalmology and in 1924 the American Board of Otolaryngology were created. The AAO continued to serve both specialties until 1979, when the Academy divided into two separate associations. The ophthalmology headquarters moved to San Francisco while the otolaryngology headquarters remained in Rochester, Minnesota.

On January 1, 1982 a unification occurred with the merger of the American Academy of Otolaryngology-Head and Neck Surgery and the American Council of Otolaryngology-Head and Neck Surgery. The Council had been created in 1968 to serve the specialty's governmental and socioeconomic needs. The new entity assumed the former's name and is now headquartered in Washington, D.C. It was felt that joining the two organizations would strengthen and enhance the effectiveness of each. The new organization assumed the responsibilities of both the predecessor associations.

The function of the American Academy of Otolaryngology-Head and Neck Surgery today is to serve as the governmental and socioeconomic support base for all otolaryngologists, advance the science and art of medicine related to otolaryngology and provide educational services for the specialty.

The Board of Directors determines policy for the Academy. The President is the chief executive officer and sees that all orders and resolutions of the Board of Directors are carried out. His term of office is one calendar year. Other officers of the Academy include the President-Elect, Vice-President, and Secretary-Treasurer. The Executive Vice-President is an otolaryngologist hired by the Board to serve as chief administrator of the Academy. He hires and supervises the staff to carry out the administrative work of the corporation.

Special services include a job information exchange, residency training and fellowship vacancy lists, a comprehensive calendar of courses, meetings and workshops in the U.S. and abroad, and up to date mailing lists of the specialty.

The Academy has a legislative alert system which provides volunteers and representatives of all otolaryngology societies with key information about proposed legislation and regulations affecting the specialty. In this way otolaryngologists can quickly respond as a unified group to both federal and state proposals.

Amplifon Names Keidel As CRS Award Winner

The Amplifon Board of Directors met on February 10th in order to vote for the winner of the 1982 Amplifon Research and Studies Center International Prize and to scrutinize the votes which had arrived from the other voting societies.

The winner, resulting from the poll, is Prof. W.D. Keidel, from the Institute of Physiology and Biocybernetics, University of Erlangen — Nurnberg, Germany.

The Prize awarding ceremony will be held on April 27th, 1983 and its final program will be sent to you as soon as ready. Further details will appear in the next issue of Corti's Organ.

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Lorne Greene Leads Better Hearing and Speech Campaign

The 1983 Better Hearing and Speech campaign will be launched April 29 in Washington, D.C. Actor Lorne Greene will release a special message from President Reagan, introduce poster child Brooke Broberg, and begin a series of national media appearances.

Mr. Greene is well-known for his leading roles in the TV series Bonanza, Battlestar Galactica and Code Red. In 1982, he filmed a public service announcement for the Academy and the Better Hearing Institute. Mr. Greene explained how he overcame his own hearing loss with hearing aids and encouraged others with hearing problems to get help medically, surgically, with hearing aids or through rehabilitation.

This year's poster child, four-year-old Brooke Broberg of Shawnee, Kansas, was selected from more than 200 nationwide nominees. She receives speech and language therapy at the Communicative Disorders Department of the Research Medical Center in Kansas City, MO. Her articulation disorder is characterized by omissions, substitutions, and distortions of many sounds.

"Sharing Life Through Hearing & Speech" is the theme of this year's campaign. The slogan will be used in the Better Hearing & Speech poster, TV and magazine public service announcements and other publicity.

The Better Hearing & Speech public information campaign

is jointly sponsored by a consortium of the major non-profit organizations concerned with communicative disorders.



***CALL FOR PAPERS** for the Annual Meeting of the Society for Ear, Nose and Throat Advances in children (SENTAC), December 4-6, 1983, in San Diego, California. Send two copies of abstracts (maximum 200 words) for 15-minute papers by June 1 to:

Steven D. Handler, M.D.
Department of Otolaryngology
and Human Communication
Children's Hospital of Philadelphia
34th and Civic Center Boulevard
Philadelphia, PA 19104

***The 11th Annual meeting of SENTAC** (Society for Ear, Nose and Throat Advances in Children) will be held December 4-6, 1983 in San Diego, California. For information and registration materials contact:

Allan Seid, M.D.
Hillcrest North Medical Center
550 Washington Street, Suite 621
San Diego, CA 92103

Attention:

Please send ALL changes of address for AAS publications (Ear and Hearing and Corti's Organ) to:

American Auditory Society
1966 Inwood Road
Dallas, TX 75235

1983 Audiology Teleconference Series

"Components of an Industrial Hearing Conservation Program"

Speaker: Alan Feldman, Ph.D.

Date: April 19, 1983

Time: 12:00 P.M. Eastern Time

"Evaluation of Central Auditory Disorders"

Speaker: James Jerger, Ph.D.

Date: August 16, 1983

Time: 12:00 P.M. Eastern Time

"New Advances in Hearing Air Modifications/Fittings"

Speaker: Wayne Staab, Ph.D.

Date: November 15, 1983

Time: 12:00 P.M. Eastern Time

For more information:
Robert Pratt, Research Medical Center
2316 East Meyer Boulevard
Kansas City, MO 64132—(816) 276-4023

Captioned Television, U.S.A.

In March 1980, the U.S. National Captioning Institute (NCI) was created to assist the television networks in making their programming accessible to the estimated 16 million Americans with significant hearing loss. Three of the four major networks (ABC, NBC and PBS) began cooperating in the captioning selected programs now totalling near 40 shows a week.

The system used is closed captioning which means text can only be seen with the use of a special decoder around \$290. Approximately 50,000 sets of the special equipment have been purchased.

Details are available from NCI, Suite 1500, 5203 I Pike, Falls Church, Virginia 22041, USA.

What is the Institute of Noise Control Engineering of the U.S.A.

The Institute of Noise Control Engineering of the United States of America (INCE/USA) is a nonprofit professional organization that was founded in 1971.

The purpose of INCE/USA is to assist in the development and application of noise control technology. The objectives of the Institute include developing professional qualifications for noise control engineers, establishing an effective and continuing mechanism for exchanging information on the technology of noise control engineering, and stimulating development of engineering education in noise control.

The notation "Member INCE" after an individual's name may be used to designate that an individual is a member of the Institute and has met specific professional qualifications in terms of both experience and an examination in noise control engineering. Individuals interested in noise control may also join the Institute as Affiliates or Associates. Organizations contribute to the activities of the Institute through a Liaison Program.

The Institute is governed by a Board of Directors elected by the members. The officers are appointed by the Board and the principal officer is the President of the Institute. All officers serve without financial compensation; there is a no paid staff.

The Institute participates in coordinated efforts with international and national societies and organizations. It is a member organization of the multimember International Association of Noise Control Engineering, INCE/USA supports worldwide efforts for the control of noise. In the USA, the Institute works closely with other professional societies, organizations and agencies toward the same goal.

The Institute organizes national and international conferences on noise control engineering. The INTER-NOISE and NOISE-CON international conferences and the NOISE-CON national conferences held in the USA are organized by INCE/USA. Three-day training seminars are usual in conjunction with these conferences.

The Institute publishes proceedings of the noise control conferences held in the USA (INTER-NOISE and NOISE-CON) as well as the refereed technical journal "Noise Control Engineering" and the bimonthly "NOISE/NEWS" newsletters.

The Institute welcomes your comments or inquiries. For further information. You are invited to write to: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Poughkeepsie, NY 12603.

Meet The Candidates for the AAS Executive Committee Election

In July of this year an election will be held to replace seven members of the Executive Committee of the American Auditory Society. In this issue of *Corti's Organ* we have asked each candidate nominated for the office to provide the Membership of the Society with some basic bibliographic information, and to provide their thoughts regarding the future direction of the Society (A membership ballot will be mailed to you soon.)



Franklin Owen Black, M.D., F.A.C.S. Chief, Neuro-Otology Neurological Sciences Center, Senior Scientist, Neurological Sciences Institute, Good Samaritan Hospital and Medical Center, 1015 NW 22nd Avenue, Portland, OR 97210, 503-229-8159. B.A., Chemistry, Southeast Missouri State, Cape Girardeau, Missouri, M.D., University of Missouri, Columbia, Missouri, 1963.

The membership of the American Auditory Society comprises the largest cross-section of professionals in the United States who perform research, and provide service and health-care delivery to the hearing - and communicative-impaired. The Society provides a formal and informal forum for communication between professionals from very different backgrounds and perspectives. The organization of the American Auditory Society, later to become the American Auditory Society, was indeed a fortunate event because the recently increased interest of the public has facilitated efforts of the research community and the research funding organizations to respond to the rapidly increasing numbers of people of all ages with hearing and communicative disorders. Considering the considerable depth upon which it can now draw from the broadly based membership, and through consistent and energetic leadership in research and in health care delivery to patients with Communicative Disorders, the Society should continue to play a major role in charting a course which will most wisely apply the limited resources available to the cascading problems which will face both patients and professionals as the population increases and becomes older.



Deborah Hayes, Ph.D., B.S., and M.A., Northwestern University Evanston, Illinois 1971, 1973, Ph.D. Baylor College of Medicine Houston, Texas 1979, Assistant Professor, Baylor College of Medicine Houston, Texas Supervisor, Audiology Service The Methodist Hospital Houston, Texas, Department of Otolaryngology Baylor College of Medicine 1200 Moursund Avenue Houston, Texas 77030.

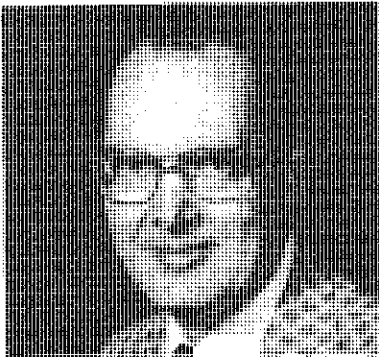
As the sole National society devoted exclusively to hearing, the American Auditory Society permits an unique forum for interaction among professionals with diverse backgrounds and expertise. In this time of increasing professional insularity, the Society can provide important bridges of communication among those various disciplines which have a common interest in hearing. The future strength and growth of the Society will depend, to a great degree, on its ability to encourage and promote open dialogue among its members on issues of professional controversy. The American Auditory Society can provide mechanisms not only for dissemination of scientific information, but also for discussion of basic issues impacting on our daily professional activities.



Terry Griffing, BS Univ. of Oklahoma 1956, MS Gallaudet 1959, President of Omni Hearing Systems, 2339 Inwood Rd. Dallas, Texas 75235.

First, let me say the Society by its structure, professional discipline, publications and programs offers so much. It continues to amaze me why there is not a "ground swell" of new members. The Society Beyond a doubt is the viable professional organization in the field.

Provided I was elected, and with committee approval, I would like to devote some of my energies toward an aggressive membership recruitment program. It is my belief professional growth in all our endeavors can be accelerated backed by a larger and more involved membership.



Fred M. Hughes M.S., A.B., Fresno State University, 1952. M.S., University of So. Calif., 1962. Private practice in hearing instrument dispensing, Portland, OR. 4511 S.E. Hawthorne Blvd., Ste. 215 Portland, OR 97215 (503) 238-0121.

Insofar as the rehabilitation of hearing is concerned, knowledge in related areas of science, engineering, acoustics, medicine is growing rapidly, so much so that not all of it finds immediate application. As a consequence, we still make use of systems that are probably no longer defensible. The measurement of the function of hearing leading to hearing aid selection is probably the best (and most unfortunate) example.

One of the functions of the Society should be to capitalize on the vast resources of knowledge and skills inherent in its membership to bring about an improvement in the systems presently used to alleviate hearing handicaps among those that, ineffect, constitute our "raison d'être."

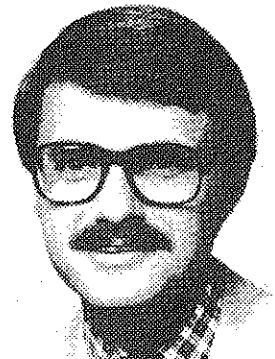
Fred M. Hughes, M.S.



Robert M. Johnson, Ph.D., 1961 B.S. North Dakota State University, Fargo, North Dakota. 1963 M.A. Northwestern University, Evanston, Illinois. 1968 Ph.D. Northwestern University, Evanston, Illinois. Audiologist — Professor in Dept. of Otolaryngology, Oregon Health Sciences University. Kresge Hearing Research Laboratory 3515 S.W. Veterans Hospital Rd. Portland, Oregon 97201.

During the 1963 convention of the American Speech and Hearing Assn. in Chicago, I had the opportunity to spend an evening with several prominent audiologists of that time. The primary topic of conversation concerned the apparent need

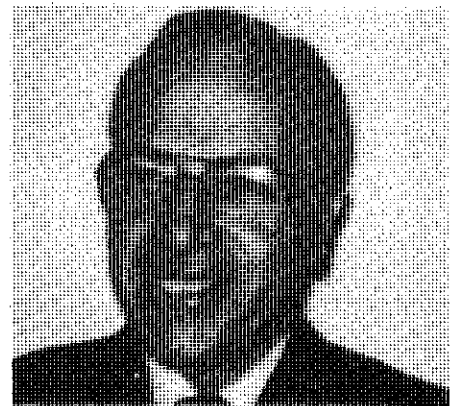
for a professional organization devoted entirely to the ear and hearing. This organization would include members from these disciplines: Otolaryngology, Audiology, and the Hearing Aid Industry. Those ideas shortly became reality with the founding of the American Auditory Society. The need for this multi-disciplinary organization became even more important during the Hearings conducted by the Food and Drug Administration and the Federal Trade Commission. The natural tendency for each discipline to protect their "Territory" resulted in considerable conflict between members of the three groups. The opportunity for members of the three disciplines to convene and discuss common problems has significantly improved the relationships for the individual members of this organization. It also provides an important vehicle for disseminating current information regarding hearing health care to its membership.



G. Richard Holt, M.D., B.S. Zoology 1966, University of Missouri, Columbia, Missouri M.D. with clinical honors 1970, University of Missouri Medical School. Stright Surgery Internship, University of Missouri Medical Center, July, 1970-June, 1971. Resident, General surgery, University of Missouri Medical Center, July 1971-June, 1972. Resident, Otolaryngology, University of Missouri Medical Center, July, 1972-June, 1973. Chief Resident, University of Missouri Medical Center, July, 1974-June, 1975. Staff Otolaryngologist. Dwight D. Eisenhower Army Medical Center Fort Gordon, Georgia, May, 1977-July, 1978. Counselor U.S. Army Physician's Assistant Program, August, 1976-July 1978.

Philosophy on the American Auditory Society

As the acquisition of knowledge in the communicative sciences increases at a very rapid rate, the possibility exists that the dissemination of this information will be incomplete, with scattered voids in the hearing disciplines. We must be vigilant to the isolation of the basic and clinical sciences so that all attempts to integrate scientific information are made. The American Auditory Society is in a very unique position to encourage, nourish and maintain the interdisciplinary approach to the utilization of new knowledge in the communicative sciences. The cooperative spirit should be fostered by the Society and the interdigitation of information between audiologists, otologists, speech specialists, and physiological investigators reaffirmed. Our own program in San Antonio serves as an example to me of the leading role the Society can continue to take in encouraging the free interchange of ideas and technology, the complementary utilization of education and training, and the camaraderie of professionals working toward the same goal - to improve the diagnosis and care of the communicative disorders.



E. Robert Libby, O.D., Graduate Pennsylvania State College of Optometry 1948 with degree of Doctor of Optometry. President Associated Hearing Instruments, Upper Darby, Pa. Associated Professor, Department of Speech and

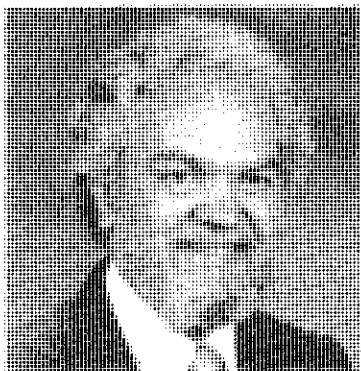
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Hearing, Hahnemann Medical Center, Phila., Pa. 6796 Market St., Upper Darby, Pa. 19082.

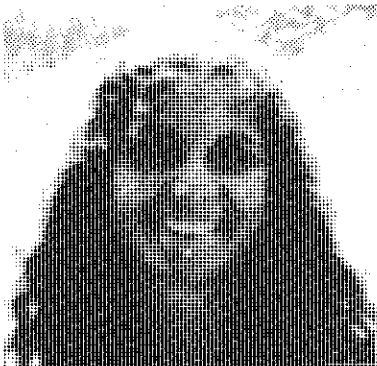
The American Auditory Society is a vital organization where workers in different disciplines of the hearing sciences have the opportunity to meet and work together toward common goals. It has been my belief that progress in the rehabilitation of person with hearing impairments can best be served by closer communication between researchers, clinicians, manufacturers, etc. in the hearing specialties. The stimulating interaction that can be achieved can promote endeavors of high technical quality.

Today, hearing aid technology has produced such developments as directional microphones, compression amplification and highly selective frequency modification. We have scarcely touched signal processing and the computer revolution. Practically any technological design is now possible. The important question is, "How do we assess psycho-acoustically the various hearing aid characteristics interacting with parameters of loudness, frequency selectivity and frequency discrimination for hearing impaired subjects?" It is hoped that the disciplinary cross pollination of the American Auditory Society and "Ear and Hearing" will bring us closer to that goal.



David M. Lipscomb, Ph.D., B.A. U. Redlands 1957 Speech Pathology. M.A. U. Redlands 1959 Speech Pathology. Ph.D. U. Washington 1966 Audiology. Professor of Audiology & Speech Pathology University of Tennessee also Director Departmental Noise Research Laboratory. Director, Rehabilitation Engineering Center for the Hearing Impaired. Department of Audiology & Speech Pathology University of Tennessee Knoxville, TN 37996.

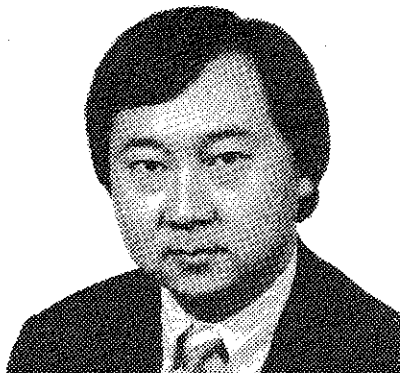
My interest in AAS stems from the fact that it is the only organization to which I belong that offers full membership to representatives of all segments of the "hearing health community". Other groups do have associate membership categories, but I feel it is important to be on "par" with those in the medical profession, hearing aid distributors, manufacturers and representatives of manufacturers. This is not to alter the status of any one group, but to foster the appreciation by each sub-group of the value of each other sub-group, the real world situation in which we all operate contains myriad divisive elements that tend to place one professional segment in opposition to some of the others. This is true with regard to economical considerations, theoretical principles, academic factors, and even goes as far as social status. Therefore, to fulfil its purpose, AAS can do much to provide a vehicle for unification of goals of its diverse membership, thereby defeating some of these divisive elements.



Dianne J. Mecklenburg B.A. Speech Pathology Calif. State College, LA (CSCLA) 1970. M.A. - Dual: Audiology & Speech Pathology Calif. State University, LA (CSULA) 1972. Ph.D. - Audiology Bowling Green State University, Ohio (BGSU) 1978. CCC-A, 1974, CCC-Sp, 1975 Present - Private Clinical Practice and Consultant to Nucleus of Australia and Western Audiology Ltd. 295 Bellevue Drive, Boulder, Co. 80302.

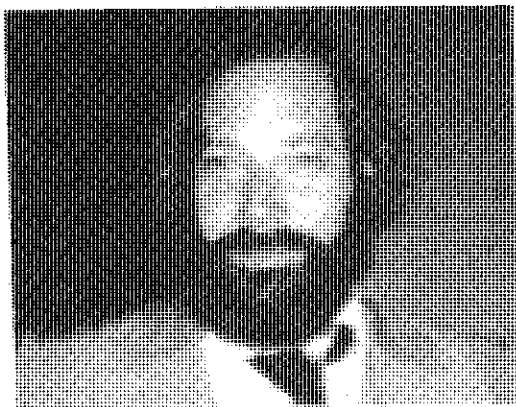
The very structure of this voting system exemplifies the desire of the AAS to maintain its multidisciplinary origins. It is the only organization in the United States that promotes non-political interaction of professionals who are dedicated to all aspects of audition and provides an open forum for the dissemination of academic and non-academic information. The membership is growing; the journal is expanding to

include more basic science papers, and; the attendance at the annual meeting is increasing. In all areas the AAS is becoming more visible to the professionals. To preserve this trend it is important for the AAS to maintain flexibility in its organizational structure and thus allow for the changing needs of a Society whose management and administration hope to remain accessible to its membership.



Richard T. Myamoto, M.D., Wheaton College, Wheaton, IL. B.S. 1966. University of Michigan, Ann Arbor, MI. M.D. 1970. University of Southern California, Los Angeles, CA. M.S. (Otolaryngology) 1978. Indiana University School of Medicine Indianapolis, IN Resident in Otolaryngology 1975. Otolaryngologic Medical Group, Inc. & St. Vincent Hospital Los Angeles, CA Fellowship in Otolaryngology & Neurotology 1978. Associate Professor, Otolaryngology-Head & Neck Surgery Indiana University School of Medicine Indianapolis, IN. Chief of Otolaryngology, Dept. of Otolaryngology-Head & Neck Surgery Indiana University School of Medicine. Chief of Otolaryngology-Head and Neck Surgery Wishard Memorial Hospital, Indianapolis, IN. Board of Governors, American Academy of Otolaryngology-Head & Neck Surgery. Secretary-Treasurer, Indiana Academy of Otolaryngology-Head & Neck Surgery. Vice-President, Alumni Fellowship Group of the House Ear Institute, Los Angeles, CA.

As a practicing otologist I recognize the acute need for a multiple disciplinary approach to problems of hearing, hearing preservation, and the rehabilitation and habilitation of hearing impaired individuals. It is extremely gratifying to observe the tremendous refinement in diagnostic techniques and the advances in the medical and surgical treatment of hearing loss. However, there remains a large population who cannot be helped by means currently available in the otologist's armamentarium. On going research in closing this gap but more than ever before, if further progress is to be made, a free interchange of ideas between the various disciplines represented in the membership of the American Auditory Society must occur. I perceive the American Auditory Society as a key organization in insuring that this progress will continue.



Michael F. Seidemann, Ph.D., 1968 - Bachelor of Science - Old Dominion University Major: Psychology. 1969 - Master of Science - Old Dominion University Major: Psychology. 1973 - Doctor of Philosophy - Florida State University Major: Audiology. Professor of Audiology and Otorhinolaryngology. Department of Audiology and Speech Pathology LSU Medical Center 100 S. Derbigny Street New Orleans, LA 70112.

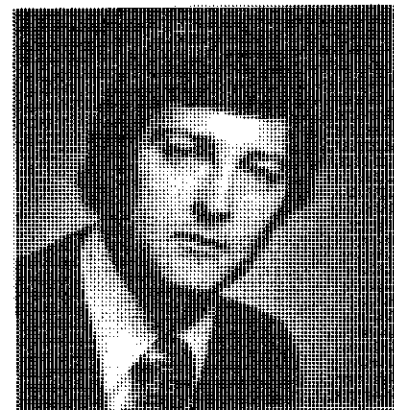
In a very brief period of time the American Auditory Society has achieved a leadership position as an interdisciplinary specialty organization. Such achievement can be directly attributed to quality leadership and publications. I feel that such successful direction should be maintained in the future, and not altered. Audiologists, otologists, hearing aid specialists, and other allied professionals have needed a forum such as the American Auditory Society provides for many years. At the annual meetings, as well as in the Auditory Society's journals we have been able to set aside professional differences and exchange information and ideas for the benefit of the hearing impaired.

I feel that the American Auditory Society in the future should continue along its present course, remain apolitical, and strive to encourage advances in the medical, prosthetic and educational prevention and treatment of hearing loss.



Richard J. Salvi, Ph.D., Associate Professor, University of Texas at Dallas Callier Center for Communication Disorders, 1966 Inwood Road Dallas, Texas 75235. B.S. North Texas State University Psychology 1969. Ph.D. Syracuse University 1975 Psychology. NIH post-doctoral fellowship University of Medical Center, State University of New York 1976. State University of New York regarding the American Auditory Society.

Clinical and basic research in hearing and speech has changed enormously in both quantity and scope during the past decade. Each passing year sees the introduction of a new journal or society created to bypass the publication bottleneck and provide a forum for a new or specific line of research. The proper information at the right time has never been greater. The American Auditory Society grew out of a need. The Society's growth over the past three years attests to its success at providing relevant information to a number of clinicians, physicians and educators interested in the assessment, diagnosis and treatment of hearing disorders and in understanding the process of hearing. During the decade, the Society and its journal, Ear and Hearing, have challenged to keep pace with the communication information revolution. We are already witnessing significant change. Manuscripts and documents are typed on computers and information is transmitted on floppy discs or over telephone lines; type setting is done in front of a terminal; computers and information is transmitted on a terminal; computers help us search for relevant journal articles. We are likely to see more dramatic changes. Journals may be displayed on video terminals and we may attend Scientific Meetings with the aid of closed circuit television. The Society must keep abreast of the technology in order to grow and meet the future needs of its members.

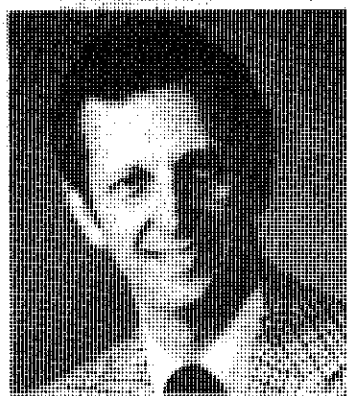


Wayne J. Staab, Ph.D., A.B. Degree, Fort Hays State University, 1963. M.S. Degree, University of Wisconsin-Madison, 1965. Ph.D. Degree, Michigan State University, 1971. Vice President, Marketing, Audiotone, 2422 West Holly, Phoenix, Arizona 85009.

The American Auditory Society should continue the role expressed in Article 2 of the AAS Statutes. It should provide a nonpolitical independent medium for interaction of multidisciplinary membership and continue to pursue a variety of membership consistent with the goals of the AAS...persons with different credentials, roles and expertise. It is this diversification that sets AAS apart from any other organization in dealing with the human hearing process and its rehabilitation.

The future of AAS lies in the assumption that no single educational background will govern the group's interests. The organization should continue to provide a non-political forum where the various specialty backgrounds can exchange viewpoints, and concerns of mutual interest. With this in mind, I believe that some effort should be made to involve those AAS members more fully who do not comprise the largest membership segments — audiologists and otolaryngologists.

(Cont.)



James J. Pappas, M.D., B.S. degree in 1954 from the University of Arkansas, followed by an M.D. degree from the same in 1956. My otolaryngology residency training was taken at Baylor University College of Medicine from 1960 to 1963.

I am a strong supporter of the stated aims of the American Auditory Society and look to Society meetings, publications and other forms of communication as an outstanding opportunity for all professionals involved in the study of hearing and the rehabilitation of hearing disorders to improve their knowledge of related disciplines and have an open exchange of ideas and experiences. As an otologist, I understand the importance of communicating with professionals in such fields as audiology, psychoacoustics, engineering and deaf education because of the increasing complexity of knowledge in each of these areas.

I see the American Auditory Society in the future as a forum of ideas from many disciplines, each serving to stimulate research and to improve provision of care to patients through all disciplines involved.

Jerome Goldstein, M.D. to join Academy Staff as EVP Designate

Dec. 27, 1982: The American Academy of Otolaryngology – Head and Neck Surgery, Inc. has announced that Jerome C. Goldstein, M.D. will join its staff Jan. 1, 1983 as Executive Vice President Designate. The current Executive Vice President, Harry W. McCurdy, M.D., plans to retire December 31, 1983.

Dr. Goldstein comes to the Academy with a broad background in otolaryngology. At Albany Medical College, his current position is Professor and Head, Division of Otolaryngology. Previous to that he was in private practice. He is also a Director of the American Board of Otolaryngology and a member of its Examination Committee.

Dr. Goldstein has served on the Academy's Committees on Drugs, Surgery of the Head and Neck, and Pathology as well as on the Continuing Education Course faculty. He served on the American Council of Otolaryngology's Board of Directors and was Chairman of its Professional Relations and Public Education Committee.

Dr. Goldstein is currently President of the American Society for Head and Neck Surgery. He is also a member of numerous national societies including the American College of Surgeons, the American Academy of Facial Plastic and Reconstructive Surgery, and the Triological Society.

Dr. Goldstein has been very active in county and state medical societies. He is the immediate past president of the Eastern New York Ophthalmology and Otolaryngology Society and served from 1975-81 as Secretary of the New York State Society of Otolaryngology – Head and Neck Surgery. Dr. Goldstein is currently on the Board of Northeastern New York Blue Shield. He is a member of the Executive Committee and New York State Chairman of the Centurions of the Deafness Research Foundation. He also serves on the editorial boards of three national medical publications: Annals of Otorhinolaryngology, Archives of Otolaryngology, and Comprehensive Therapy.

The American Academy of Otolaryngology – Head and Neck Surgery, Inc. was established in Jan. 1982 as a result of the merger of the American Council of Otolaryngology – Head and Neck Surgery and the predecessor Academy. Unified, the new Academy comprises the largest scientific/educational society of otolaryngologists in the U.S. Located in Washington, D.C., it also represents otolaryngology – head and neck surgeons (formerly known as ear, nose and throat doctors) in governmental affairs.

"Information, Awareness and Understanding for Integration" Chosen as Theme for 1984 World Congress of Rehabilitation International

One of Europe's most beautiful and hospitable cities, Lisbon Portugal, will be the gathering point for thousands of disability specialists, June 4-8, 1984. The historic port will be the site for the Fifteenth World Congress of Rehabilitation International.

The theme of the Congress is "Information, Awareness and Understanding for Integration of Disabled Persons and Society." The attached Congress Symbol represents the four points of the theme.

Col. Joao Villalobos Vieira, Director of the host organization, the Portuguese National Secretariat for Rehabilitation, was confided as Congress President by the 1982 meeting of the Rehabilitation International Assembly. He is also the founder of Portugal's meeting national association of people with physical disabilities.

A preliminary Congress program, developed by the Rehabilitation International Secretariat, develops the theme through examination of ways that information activities, the mass media and innovative service programs can advance the integration of people with disabilities and their societies. The program includes plenary addresses, workshops organized by the seven standing commissions of Rehabilitation

International; sectoral meetings organized with the cooperation of organizations representing people with disabilities; and poster sessions on various topics.

A Congress folder has just been published and is available from:

Secretariado Nacional
de Reabilitacao
Av. Conde Valbom, 63-5
1000 Lisbon, Portugal

(Rehabilitation International is a federation of 135 member organizations providing services to people with disabilities in 77 countries. It has official relations with the U.N. Economic and Social Council, UNESCO, the International Labor Organization, the World Health Organization, UNICEF and regional bodies including the Council of Europe, the Commission of European Communities and the Organization of American States. Its seven standing commissions work on specialized aspects: medical; vocational; education; social; technical aids, buildings and transportation; organization and administration; and leisure, recreation and sports. Founded in 1922, R.I. has held 14 quadrennial world congresses, 10 regional conferences and many specialized international meetings.)

Just Like Home



A home-like setting facilitates on-the-spot evaluation of many aids selected by clients of the hearing clinic.

Sheila Gottlieb, graduate student in audiology, works with a client in the new home-environment room.

A gray-haired man and a young woman sit chatting and sipping coffee at the dining table. Ignoring the sound of the dishwasher and the laughter – and arguments – of children at play, the two remain intent on their conversation. It's a scene typical of many a family home, but this setting is actually part of the hearing clinic in Purdue's Department of Audiology and Speech Sciences.

"The idea is to recreate a home environment," Dr. Carl Binnie, professor of audiology and speech sciences, explained. "The kitchen, living room and dining room form different settings for one-on-one, small-group or large-group communication. In this new room we can evaluate an individual's ability to communicate in a true-to-life situation."

The special room looks like a compact efficiency apartment with kitchen, dining and living areas. The difference is that the noises of the dishwasher, television, garbage disposal and other appliances are pre-recorded and can be turned on or off at will. Even the sounds of children playing or of a large group talking are recorded and come from strategically placed speakers in the corners of the room. The flexibility of the setting permits audiologists to simulate situations that might produce special problems, and then to discuss solutions to those problems, before they pose actual social difficulties for the hearing-impaired.

The clinic does comprehensive hearing testing and is equipped to dispense, adjust, check and repair hearing aids as well as to make ear molds. In fact, the clinic has a full range of hearing aid models for clients to examine and try, but clinic services go far beyond this basic diagnostic step.

"It's important that the person with a communication problem be able to interact in their own life situation," Binnie commented, "not just under ideal conditions." Some clients

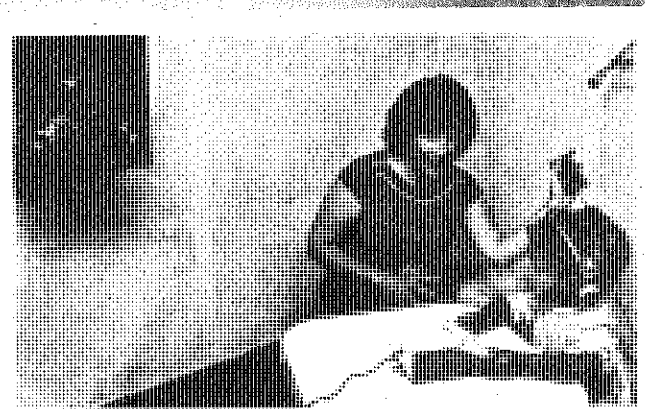
may need a visual alert to replace the ring of the doorbell, phone or alarm clock. Others may need one of several types of adapters in order to be able to hear television sounds clearly. Those with serious problems may need closed circuit captioning units for their television sets or TDD systems to permit them to send and receive typed messages through the phone system. These devices, too, are available for inspection and trial use at the center.

Technology can solve only part of the problem for the hearing-impaired, and the total rehabilitation program stressed the importance of the human factor in improving communication ability. Whether the client is a baby or an octogenarian, the clinic has a program tailored to the person's needs. A parent-infant program teaches parents how to aid the language development of their hearing-impaired child. A preschool program for children three to five years of age offers two options. One service emphasizes auditory training and speech development; the other teaches the child to utilize all modes of communication including sign language. Parents of children in both programs are involved in a parallel counseling program. A schoolage program provides consultation and support services for children and their teachers in regular and special education classes, and an adult communication skills program offers a group program on hearing aid use and communication strategies, as well as individual auditory training and family counseling services.

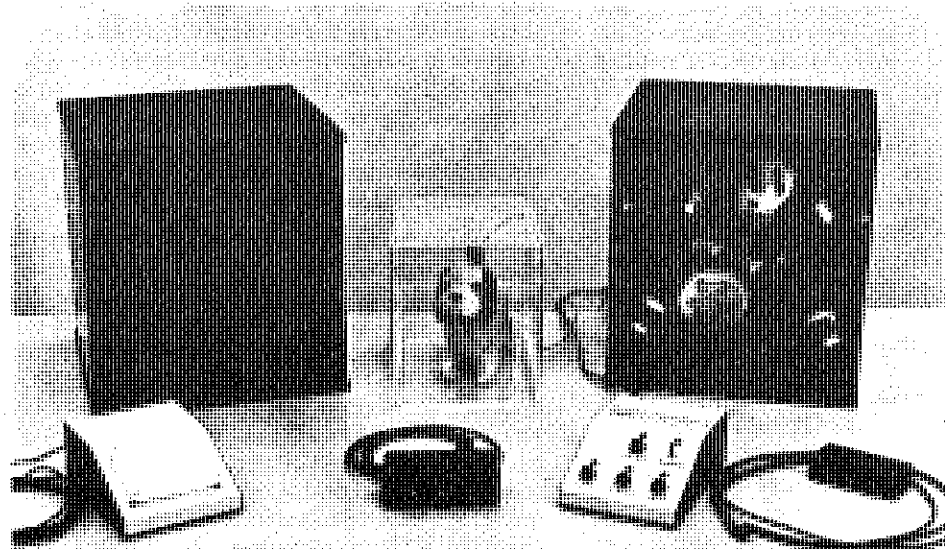
Hearing aids are the first, not the final step in rehabilitation. The new home environment facility in AUS takes the rehabilitation effort into an important area, a place just like home.

(Ed. note: This article previously appeared in a recent Purdue University Newsletter.)

DON'T KID AROUND WITH PEDIATRIC TESTING



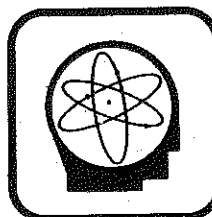
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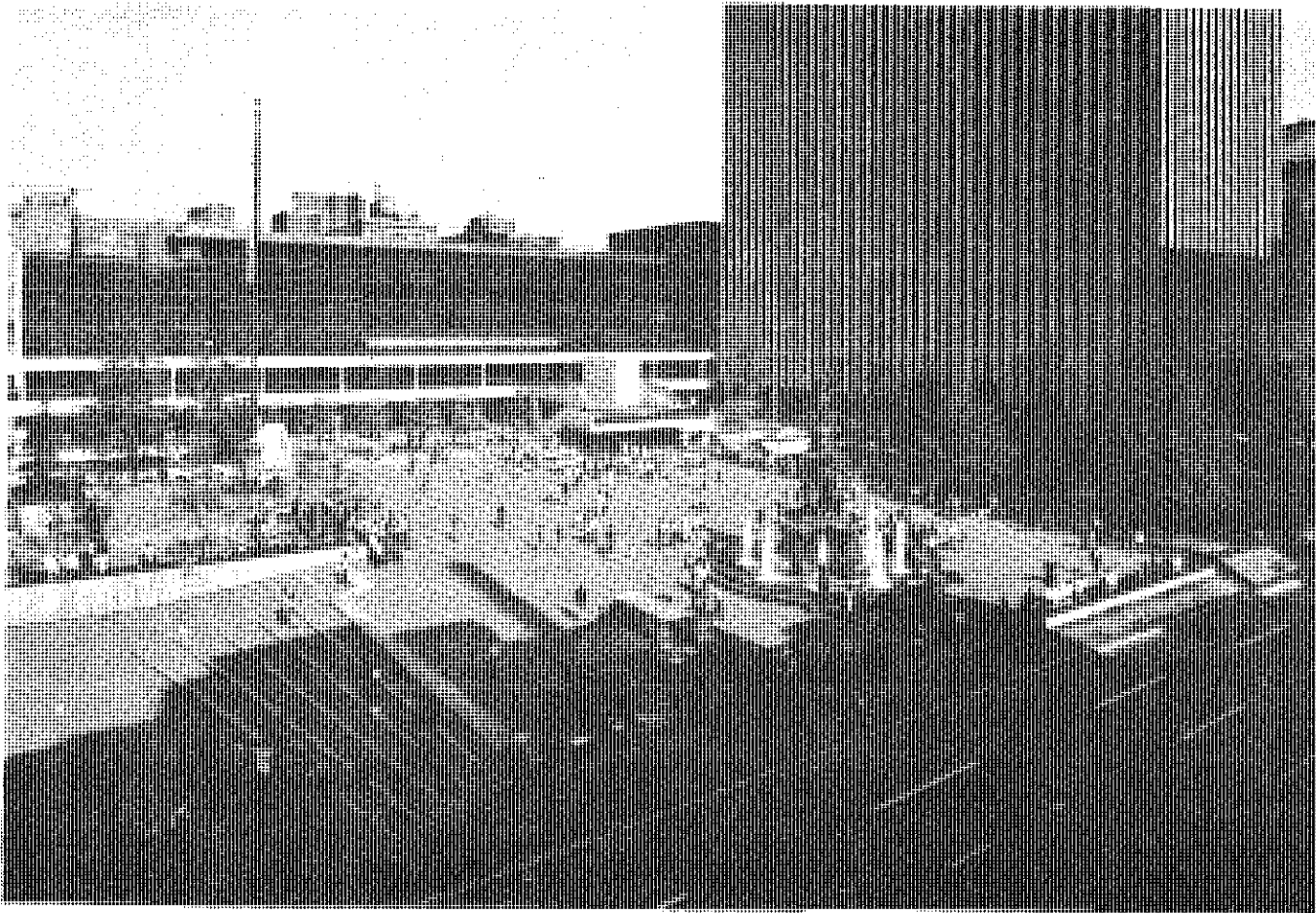
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Leigh Mills
Ronald J. Scheurer
William



Convention Reminder

The 10th Annual Meeting of the American Auditory Society will be held in Cincinnati, Ohio on November 17, 1983, in the Convention Center, downtown Cincinnati. A block of rooms has been reserved in the nearby Netherland Plaza Hotel. A hotel reservation form is below. Please note that this year's meeting will be held the day before the Annual Convention of the American Speech-Language-Hearing Association. You are encouraged to make your hotel reservation early, and to note on the reservation form your final departure date.

This year's annual banquet will be held at Forest View Gardens, an authentic "gastehaus" in the tradition of Cincinnati's German heritage. With music provided by the singing waiters and waitresses from the University of Cincinnati college Conservatory of Music, this promises to be a very cordial evening.

RESERVATION REQUEST FORM FOR AMERICAN AUDITORY SOCIETY AT NETHERLAND PLAZA HOTEL

ARRIVAL DATE: _____ TIME: _____ *DEPARTURE DATE: _____

TYPE OF ROOM:
Single at \$58 per night
Double (2 persons, one bed) at \$70 per night
Twin (2 persons, 2 beds) at \$70 per night

Mail to:
NETHERLAND PLAZA
Reservation Department
35 West Fifth
Cincinnati, OH 45202

LAST NAME: _____ FIRST NAME: _____

COMPANY NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP CODE: _____

Rooms are held until 6:00 p.m. unless later time of arrival indicated. Your reservation can be guaranteed by a major credit card and your authorization to bill you for the first night if you should not arrive. Cancellations are accepted until 6:00 p.m. on the day of your arrival.

CREDIT CARD COMPANY: _____ NUMBER: _____

SIGNATURE: _____ EXPIRATION DATE: _____

NOTE: Regular check-in time is 3:00 P.M.

*If you plan to stay through ASHA, please indicate your final departure date. Reservations to the AAS meeting are required to be made before November 1, 1983.

Convention Schedule In This Issue (Page 3)

Registration Form & Room Reservation Request on pg. 8

The Vote Is In! AAS Executive Committee Announced (see page 3)

CORTI'S ORGAN

The Official House Organ of the American Auditory Society

Vol 8, No. 3

Summer/Fall 1983

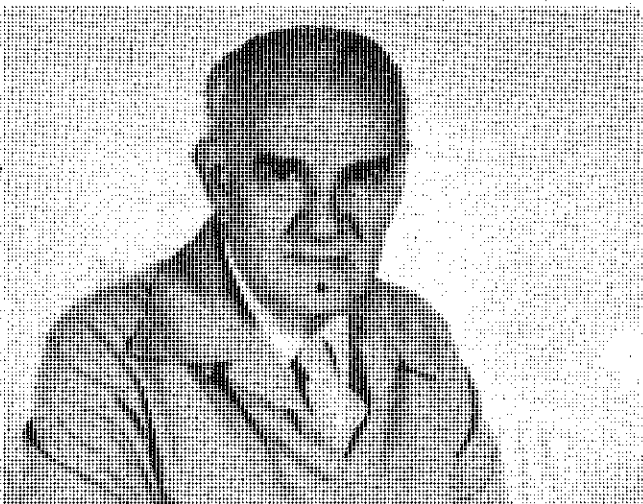
Program Committee Outlines Outstanding Program - Harris Titles Talk

DALLAS, TX AUGUST 23, 1983. The 1983 program committee, chaired by Dr. Robert W. Keith, met in Cincinnati on August 5th and reviewed the many submitted papers to finalize this year's program. Over 35 papers were received, making it one of the most successful call for papers in the 10 years that AAS has been in existence. The final program is published in this issue of Corti's Organ on page 3, and abstracts of the papers begin on page 4. Keith and the other members of the program committee that were able to attend the meeting, Drs Robert Glaser and Kenneth Donnelly, all agreed that this year's selection of papers was very high in quality and making the final selection was no easy task.

A special event during the meeting will be the presentation of the Belton Distinguished Teaching Award (see details this page). Also, after the meeting those interested can join in on the festivities at the Forest View Garden where there will be an evening of sumptuous dining and lively entertainment. Tracoustics, Inc. has agreed to provide transportation of AAS members and others attending the meeting from the convention center to this landmark restaurant in the old historic part of Cincinnati.

Dr. J. Donald Harris is this year's Carhart Memorial Speaker and will address the society on the topic "The World of Hypoacusis." In traditional style Dr. Harris, when writing to give the title of his talk stated, "Many writers and editors use 'hypacusis' but it lately seems to me to be an ambiguous elision also for 'hyperacusis'. Also, I don't hesitate to turn an adjective into a noun. A more conventional reading might be 'The World of Hypoacuisa', but I prefer the more personal tone as in the title I chose." Those of us who know Dr. Harris are anxiously awaiting his stimulating discussion on this topic.

This year will be the best meeting yet, and it is hoped that each and every one of the AAS members will be able to join the group for the excellent papers, renewal of old acquaintances, and evening festivities.



J. Donald Harris

And The Winner Is ...

Beltone Electronics Corporation will name the winner of the second annual Beltone Distinguished Teaching Award in Audiology at the AAS Convention in Cincinnati, November 17.

Mr. Charlie Anderson, president of AAS, extended the invitation to Beltone President Lawrence M. Posen in recognition of the AAS goal of bringing together all facets of the hearing health care team, including audiologists, physicians, dispensers, educators, students and manufacturers. The AAS Convention will be held at the downtown Cincinnati Convention Center, in conjunction with the annual Convention of the American Speech-Language-Hearing Association.

Posen accepted the invitation on behalf of Beltone and commended the American Auditory Society for their goal of increasing the knowledge of human hearing, promoting conservation of hearing, and fostering habilitation and rehabilitation of the hearing impaired.

The Belton Distinguished Teaching Award in Audiology is given annually by Beltone to an outstanding audiology instructor in the United States or Canada. Candidates are nominated by an audiology student or graduate. The intent of the award is to honor the teaching profession for the vital role it plays in shaping the future of the field of hearing technology for the hearing impaired.

Twenty-eight instructors are competing for this year's award. A monetary gift and a grant for the winner's school goes with it, as well as the opportunity for the winner to present his or her audiological research papers before a variety of professional forums. Judges in the competition are prominent educators and other professionals from the field of audiology.

Reger To Be Honored By Symposium

A symposium to honor the memory of Scott N. Reger will be held at the University of Iowa from April 12-14 1984. The symposium will focus on "Sensorineural Hearing Loss: Mechanisms, Diagnosis and Treatment," and will be sponsored jointly by the Department of Otolaryngology-Head and Neck Surgery and the Department of Speech Pathology and Audiology. The program will be directed by Arnold M. Small, Jr., Ph.D., M. Jane Collins, Ph.D., and Lee Harker, M.D., and will include approximately 20 guest speakers. Issues to be addressed include those in both the basic sciences and clinical management. Further information may be obtained by contacting M. Jane Collins, Ph.D., Wendell Johnson Speech and Hearing Center, University of Iowa, Iowa City, Iowa 52242.

Dr. Reger was a past member of AAS and a Carhart Memorial Award Winner.

1983 Convention

Registration Form pg. 8

HIA Special Report

WASHINGTON, D.C., May 2, 1983 - The Hearing Industries Association (HIA) today announced the Association's Standing Committees for the current year.

HIA President James C. Keyes, Audiotone, announced the formation of an HIA Membership Committee, charged with expanding the Association's membership among hearing aid manufacturers, distributors, component manufacturers, earmold laboratories and suppliers. Jerry G. Johnson, Oticon Corporation, was named by Keyes to chair the Membership Committee. Members of the committee are: Glenn L. Kennedy, Hearing Services, Inc.; Reginald Garratt, Knowles Electronics, Inc.; and William D. Hooper, Unitron Industries, Inc.

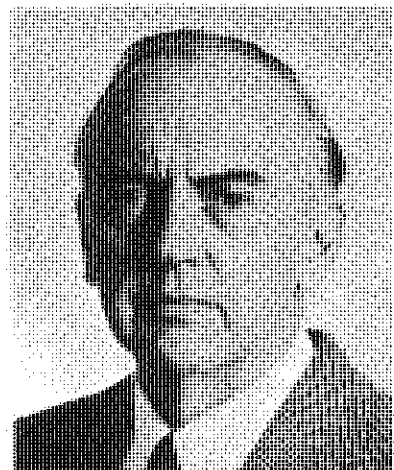
Additionally, President Keyes named the 1983 Market Development Committee, which will elect its own chairman at its first meeting, to be held in early summer. Members appointed to serve on the Market Development Committee are: Wayne J. Stabb, Audiotone; John J. Zei, Beltone Electronics Corporation; Marjorie D. Skafte, Hearing Instruments; Reginald Garratt, Knowles Electronics, Inc.; and Jerry G. Johnson, Oticon Corporation. Carole M. Rogin continues as HIA's Director of Market Development.

The HIA Standards and Technical Committee continues under the chairmanship of Harry Teder, Telex Communications, Inc. Additional committee members include: James Nunley, Audiotone; Richard Brander, Beltone Electronics Corporation; Ole Arndt, Bosch Hearing Instruments; Elmer Carlston, Industrial Research Products; Praben Brunved, Oticon Corporation; Mark Gorder, Resistance Technology; David Preves, Starkey Laboratories, Inc.; and Horst Arndt, Unitron Industries, Inc.

Swedish Audiologist Joins The University of Minnesota

Gunnar Liden, professor of audiology and otolaryngology at the University of Goteborg in Goteborg, Sweden, and head of the audiology clinic at Sahlgrenska Hospital, also in Goteborg, will be joining the faculty of the University of Minnesota's department of otolaryngology as a visiting professor beginning September 1, 1983, staying for a minimum of two years. He will be teaching and collaborating on research projects with Michael Paparella, M.D., professor and chairman of the department of otolaryngology and Earl Harford, Ph.D., director of audiology in the department.

Liden's main research efforts while at the University will be in the area of amplification for the hearing impaired. Liden, 65, is one of the pioneers of impedance audiometry and published the first article on tympanometry to appear in an American journal. The author of nearly 300 works in professional and scientific publications, Liden also developed Swedish speech audiometry and did early work on a pediatric test battery, including visual reinforcement audiometry. Married and the father of one daughter, Liden will retire from the University of Goteborg as the head of the world's largest audiology center on July 1, 1983.



Gunnar Liden

CORTI'S ORGAN is a quarterly publication of the American Auditory Society, processed in Dallas, Texas.

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CORTI'S CALENDAR

September 24, 1983

Vestibular Disorders: New Approaches to Diagnosis and Treatment
Good Samaritan Hospital & Medical Center
Portland, Oregon
Contact: (Ms.) Bobby Heagerty.
(503) 229-7348

January 6-8, 1984

The Triological Society, Western Section
Santa Barbara Biltmore, Santa Barbara, CA
Contact/call: Joseph R. DiBartolomeo,
M.D. Secretary, Western Section.
2420 Castillo Street Santa Barbara, CA 93105
(805) 682-3711

March 4-10, 1984

The 18th Colorado Otology-Audiology Workshop will be held March 4-10, 1984 at the Continental Inn and Aspen Conference Center in Aspen, Colorado. For further information contact: Jerry Northern, Ph.D., Colorado Hearing Foundation, Box B210, 4200 E. 9th Avenue, Denver, Colorado 80262.

June 6-9, 1984

Academy of Rehabilitative Audiology Summer Institute: Computers in Aural Rehabilitation.
Watts Bar Dam, Tennessee.
Contact: Lloyd Graunke, Ph.D., 1008 Grace Drive, Johnson City, TN 37501.

August 26-30, 1984

International Congress of Audiology and American Auditory Society joint meetings, Santa Barbara CA. Contact: Sanford E. Gerber, Ph.D., Chairman, Dept. of Speech, University of California, Santa Barbara, CA 93106.

October 21-22, 1984

Audiological Resource Association Fall Meeting Topic: "Aural Rehabilitation"
Roan Mountain, Tennessee
Contact: Faye Churchill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama, 35209.

Letter From England

Dear Editor,

The recent splendid issue of Corti's Organ has reminded us of the pleasures of attending a scientific meeting in the USA. It has provided some striking evidence of the progress of audiological research to which you and your colleagues have made many valuable contributions.

I have noted with particular interest the abstracts of papers with a strong pathological bias. With reference to Dr. Abramson's valuable studies on cholesteatoma two papers from London on this important topic might be of interest to your readers. Drs. Wells and Michaels from my old department described the histopathological features of retraction pockets and Dr. Brookes from Dr. Morrison's department at the London Hospital three cases of Post-traumatic cholesteatoma. These papers published in Clinical Otolaryngology lend further support, if such is needed, to the immigration or implantation theory this writer has considered the commonest mechanism in the pathogenesis of epidermoid cholesteatoma.

The other abstract that has attracted my attention was Dr. Peck's report on hearing problems of children with mucopolysaccharidosis II (Hunter's syndrome). This problem and, in particular, the related Hurler's syndrome has been intensively studied by a team of the Metabolic Disorders Division (Director, Dr. Watts) at our Northwick Park Hospital and Clinical Research Centre.

Such children suffer from conductive deafness and sensorineural deafness. Another example of the greater awareness, also in Europe, of the importance of otological and audiological research is the organization and coordination of temporal bone studies by a Subcommittee of the European Community - incidentally inspired by your friend Dr. Ole Bentzen from Denmark. A detailed book of instructions on 'Functional Histopathology of the Human Audiovestibular organ' has been compiled by several well-known authors in this field and edited by Professor Salvatore Iurato (Italy); Dr. Goran Bredberg (Sweden) and Dr. G. Bock (England). This will be available to pathologists and ENT-Surgeons and should contribute, as in the USA, to our knowledge of the pathology of the ear.

In my last letter I have noted that the Journal of Laryngology will be appearing in an attractive new format. This has been well received, moreover the Journal is going to be expanded by about 20 pages an issue. This should allow us to reduce the ever lengthening waiting period inspite of the monthly publication of our Journal. I congratulate you that you too are planning a more frequent publication of Corti's Organ.

I have had the privilege of being an enthusiastic witness of the transformation of otorhinolaryngology in the last thirty years. Who would have expected in 1953 that a Conference on Otitis Media would attract 170 or more papers in 1983! I did and I might do a little reminiscing next time I write to you.

I. Friedmann

Seventh Shambaugh/Shea International Workshop On Otology

MARCH 1-4, 1984

SPONSORED BY THE NATIONAL HEARING ASSOCIATION

(Oak Brook, IL) An outstanding faculty of 50 world renowned experts in Ear Surgery and Neurotology will lead this workshop series. Emphasis will be placed on new and current medical techniques in the field of hearing. Optional evening programs have been arranged for review and medical/surgical controversies. The Workshop will be held at the Chicago Marriott Hotel. CME accreditation will be extended to those in attendance at the Workshop.

To apply contact:

National Hearing Association
1010 Jorie Blvd., Suite #308
Oak Brook, IL 60521

AAS ANNUAL**MEETING**

NOV 17th, Cincinnati

Berger Prescription**Method Materials**

Several new materials are now available to assist clinics in using the Berger Hearing Aid Prescription Method.

AUDIO CASSETTES. The method is described on three minute audio cassettes. The procedures are presented detail on the cassettes, and the materials are designed individual study or class use. The cassettes are available loan for one week for a small rental fee. To schedule write: Kenneth W. Berger, Speech & Hearing Clinic, Kent State University, Kent, Ohio 44242. Or call, (216) 672-2111.

PERSONAL COMPUTER PROGRAM AND CASSETTE TAPE. Two programs for personal computers with prescription are available, both on cassette tape along with written instructions and program listing. The "PC" (Personal Computer) program may be used with either the Radio Shack TRS 80 PC-1 or Sharp PC-1211. The "Z-16" program is used with either the Sinclair ZX 81 or Timex-Sinclair TS 1000 v external 16K (RAM) pack. For further details write: D. Services, 213 34th Street, West Des Moines, Iowa 50265.

WRITTEN COMPUTER PROGRAM. The prescription program is also available in an extended written-only version in BASIC and in FORTRAN. For further information write: Kenneth W. Berger, Speech & Hearing Clinic, Kent State University, Kent, Ohio 44242.

HEARING AID SELECTION GUIDE. This slide chart permits rapid and accurate determination of predicted air thresholds, and the maximum gain required to approximate those thresholds. For further information write: Association of Hearing Instruments, 6796 Market Street, Upper Merion, Pennsylvania 19082.

Screening Information Available

Impedance screening, a new concept in hearing screening that many schools and preschool programs are now implementing, has great promise for preventing learning problems. The H.E.A.R. Program in Newton, Massachusetts has been working for five years to perfect and test a training/diagnostic management system to facilitate the use of a combination of pure tone and impedance screening. They have available a packet of information about impedance screening, the effects of hearing loss, and impedance programs in schools. To receive this folder of information, write to John Roberts, Coordinator, H.E.A.R. Program, Metropolitan Centers, 181 Wells Avenue, Suite 204, Newton, MA 02159. In addition, you may ask to receive their quarterly newsletter "Speaking of Hearing," at no cost. If you have questions regarding impedance screening, call the H.E.A.R. Program on their toll-free lines (1-800-225-4270 or 1/800/225-4271).

<p>Departments of Otolaryngology and Pediatrics University of Pittsburgh School of Medicine announces</p>		
<p>EAR, NOSE, AND THROAT DISEASES IN CHILDREN A 1983 Update</p>		
<p>December 10-14, 1983 The Breakers Palm Beach, Florida</p>		
<p>Course Co-Directors: Charles D. Bluestone, M.D. Jack L. Paradise, M.D. Sylvan E. Stool, M.D.</p>		
<p>Rooms at the hotel are limited; early hotel registration is advised. COURSE REGISTRATION IS UNLIMITED Simultaneous Spanish Translation Available</p>		
<p>Accreditation 17 hours of AMA Credit in Category 1 granted. Program is acceptable for 17 prescribed hours by the Pennsylvania Academy of Ophthalmology and Otolaryngology.</p>	<p>Tuition \$250 Practicing Physicians \$185 Residents Tuition includes: All course-related material, coffee breaks, and reception.</p>	<p>For Further Information please contact: Department of Otolaryngology Children's Hospital of Pittsburgh 125 DeSoto Street Pittsburgh, PA 15213 (412) 647-5465</p>

1983 AAS PROGRAM SCHEDULE
CINCINNATI CONVENTION CENTER THURSDAY, NOVEMBER 17

8:30-8:40 Introductory Remarks

10:50-11:00 Discussion

3:06-3:18 A Clinically Manufactured Stepped-Diameter Earmold for Superior Aided Listening. (Valente)

Topic: Auditory Brainstem Response

8:40-8:52 Auditory Brainstem Response Stimulus-Related Variations as a Prediction Method of High Frequency Hearing Loss. (Balzer)

8:52-9:04 Reliability of Auditory 40-Hz Event Related Potential Measures. (Lesner, Lynn and Poelking)

9:04-9:16 Clinical Use of Electrocochleography. (Lewis and Whitaker)

9:16-9:23 Discussion

9:28-9:40 The Relationship Between Acoustic Neuroma Size, Auditory Brainstem Response, Acoustic Reflex Findings and Hearing Loss. (Rudin and Coleman)

9:40-9:52 The Differential Effect of Barbituates on Auditory Brainstem vs. Middle Latency Evoked Responses: A Clinical Study. (Hall, Allen and Hargadine)

9:52-10:02 Discussion

Topic: Differential Audiology

10:02-10:14 The Results of Three Dichotic Speech Tests on Subjects with Brainstem and Hemispheric Lesions. (Musiek and Rackliffe)

10:14-10:26 Interpreting Central Auditory-Language Processing Test Results In Children. (Lucker)

10:26-10:38 Neurophysiological Correlates of Specific Learning Disabilities. (Staller)

10:38-10:50 Use of NU-6 Word Lists in Rollover Measurement. (Meyer and Mishler)

11:00-11:45 Carhart Memorial Lecture

"The World of the Hypoacusic." J.D. Harris

11:45-12:00 Presentation of the Beltone Distinguished Teaching Award

12:00-1:10 Lunch Break

1:10-1:30 Business Meeting

Topic: Pediatric Audiology

1:30-1:42 The Natural History of Supra-High Frequency Hearing in Children 8-18 Years of Age. (Downs, Fletcher, Lampe Doster and Simonton)

1:42-1:54 Retrospective Study of the Etiology of Hearing Loss in Children. (Shimizu and Erskine)

1:54-2:06 Responses of Newborns to High Pass Filtered Noises. (Gerber and Dobkin)

2:06-2:18 Discussion

2:18-2:30 Crib-O-Gram and Auditory Brainstem Response: Direct Comparison of Two Infant Hearing Screening Methods. (Kuklinski and Hosford-Dunn)

2:30-2:42 A Description of the Results of the Past Five Years of a High Risk Hearing Screening Program. (Moneka and Gollegly)

2:42-2:54 Discussion

Topic: Hearing Aids

2:54-3:06 Performance Characteristics of Hearing Aid Compatible and Incompatible Telephone Receivers. (Gladstone and Kahl)

3:18-3:30 Discussion

Topic: Tinnitus

3:30-3:42 Auditory Electrical Stimulation: Effects on Tinnitus. (Edgerton, McElveen and Brimacombe)

3:42-3:54 Tinnitus Evaluation and Treatment. (Johnson, Vernon, Meikle and Brummett)

3:54-4:06 Pilot Study on the Effects of a Group Intervention on Normal-Hearing Subjects Suffering from Handicapping Tinnitus. (Normandin, Roberge and Bergeron)

4:06-4:16 Discussion

Topic: Rehabilitation

4:16-4:28 Options for the Profoundly Deaf: An Outgrowth of the Cochlear Implant Project. (Pope, Miyamoto, Shallop, Kienle, McKonkey and Young)

4:28-4:40 Test/Re-Test Reliability of the Hearing Handicap Inventory for the Elderly. (Weinstein, Ventry and Spitzer)

4:40-4:52 An Articulation Index Study of Phonemic Regression in the Elderly. (Parlovich and McCroskey)

4:52-5:02 Discussion

5:02-5:15 Closing Remarks

6:30-6:45 Load Busses to Forest View Gardens (Transportation provided by Tracoustics, Inc.)

7:00-? Dinner at Forest View Gardens

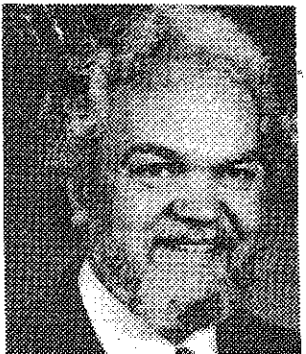
TENNIS OR JOGGING ANYONE?

If you have a hearty disposition and want to join a group of enthusiastic AAS members in a little jog (about 2 miles) or Tennis match the morning of Nov. 17th at 6:00 a.m. (can you believe it), Contact Robert Glasier (111 W. First St., Suite 412, Dayton, Ohio 45402) for tennis or Ross Roeser (1966 Inwood Road, Dallas, Tx 75235) for the jog if you are interested.



On April 27th, at the Milan Press Club, Prof. W.D. Keidel of Erlangen University was awarded the Amplifon Research and Study Center International prize for 1982 in recognition of his scientific achievements in the fight against deafness.

**Meet The New
Executive
Committee
Members**



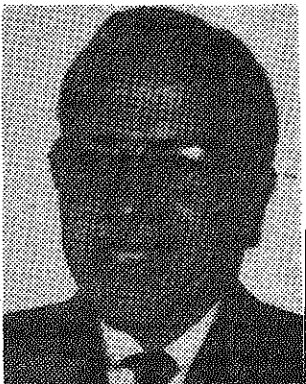
David M.
Lipscomp



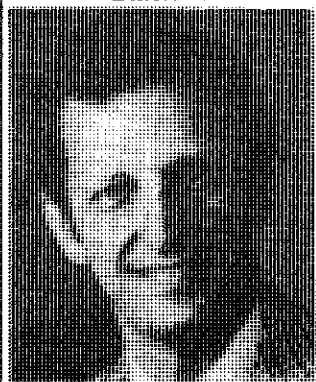
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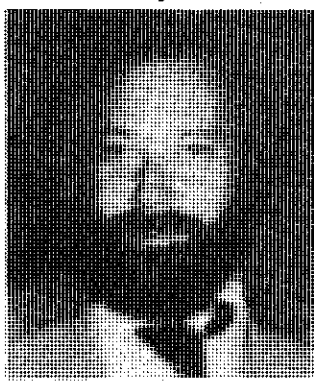
Deborah
Hayes



E. Robert
Libby



James
Pappas



Michael F.
Seidemann



Wayne J.
Staab

1983 PROGRAM ABSTRACTS

(FOLLOWS CONVENTION SCHEDULE ON PAGE 3)

AUDITORY BRAINSTEM RESPONSE (ABR) STIMULUS-RELATED VARIATIONS AS A PREDICTION METHOD OF HIGH FREQUENCY HEARING LOSS

Gene K. Balzer Department of Neuro-Diagnostics
Bismark Hospital Bismark, ND

This study investigated the characteristic variations of morphology, amplitude and latency of high frequency hearing loss subjects as compared to age and sex matched normal hearing subjects for the Auditory Brainstem Response (ABR). Single sine wave acoustic transients with center frequencies below the cutoff frequency of the high frequency hearing loss (1,000 Hz) and within the frequency range of the high frequency hearing loss (8,000 Hz) were presented at 40 dB nHL and 70 dB nHL to yield ABR results which were described with regard to morphology, amplitude, latency and stimulus phase latency differences. Statistically significant variations in a) morphology (absences of P1 and P3 component waveforms), b) amplitude (increased P5:P1 relative amplitude ratio), and c) absolute latency (accelerated P5 latency/intensity functions) were demonstrated in the high frequency hearing loss subject as compared to the normal hearing subjects. No statistically significant interpeak latency variations were noted. Additionally, no statistically significant absolute latency differences in component waveforms were observed for condensation as opposed to rarefaction initial stimulus phase signals. Examination of ABR results suggested that by utilizing the previously mentioned morphology and latency variations as identification criteria, 90 percent of the high frequency hearing loss subjects in this sample would be identified as such and none of the normal hearing subjects would have been incorrectly identified as at risk for high frequency hearing loss (false positive). These two variations of a) absence of P1 and P3 component waveforms in the 8,000 Hz, 40 dB nHL condition and b) P5 latency intensity function of greater than .06 msec/dB in the 8,000 Hz 40 dB and 70 dB nHL, are suggested as an ABR protocol for screening for high frequency hearing loss in patients difficult to behaviorally test.

RELIABILITY OF AUDITORY 40-HZ EVENT RELATED POTENTIAL MEASURES

Sharon A. Lesner, James M. Lynn and Sharon S. Poelking
University of Akron
Akron, Ohio

Galambos, Makeig, and Talmachoff (1981) described a procedure, the 40Hz event-related potential (40-Hz ERP), for recording the auditory middle-latency response potentials. This procedure was demonstrated by Lynn, Lesner, Poelking, and Daddario (1982) to be a reasonable accurate and effective way to predict behavioral thresholds for 500 and 1000 Hz in a population of hearing-impaired adults. The present study examined the reliability of the 40 Hz ERP procedure in estimating hearing sensitivity. Thresholds for the 40-Hz ERP were obtained from 40 ears with cochlear hearing loss for 500 and 1000 Hz signals on two separate occasions. Stimuli consisted of tone pulses with rise/fall times of 5 msec, delivered at a rate of 39.1 per second and referenced, in level, to 0 dB nHL. Potentials were amplified by 104 and 600 responses were averaged with a Nicolet CA-1000 averager triggered externally with a Nicolet 502 pulse generator. A minimum of two replications was obtained for each signal condition.

The 40-Hz ERP thresholds were established by an investigator who was unfamiliar with any of the hearing-impaired subjects. Each subject's behavioral thresholds for pure tones were then determined by an investigator other than the one who obtained the 40-Hz ERP thresholds. After a period of approximately four months, subjects were retested following the same procedures.

The test-retest reliability coefficient for 500 Hz was 0.87 (p.0005) and for 1000 Hz it was 0.51 (p.05). Ramifications concerning the feasibility of using 40-Hz ERP as a frequency specific predictor of hearing sensitivity will be presented.

CLINICAL USE OF ELECTROCOCHLEOGRAPHY

Anne E. Lewis and Samuel R. Whitaker
Los Angeles Ear Medical Group, Inc.
Los Angeles, California

In our private otologic clinic, we are using electrocochleography as part of a diagnostic evaluation of patients with Meniere's disease or endolymphatic hydrops. In the past, clinical electrocochleography (ECoG) was limited primarily by difficult recording techniques, i.e., transtympanic recordings which requires an otologist present to insert the electrode. When Coats introduced the "plastic leaf" extratympanic

ic electrode, a non-invasive procedure, ECoG became a more clinically feasible test. Disadvantages of the plastic leaf electrode, however, include high electrode impedance, some skill required for proper insertion and occasional patient discomfort. Our clinic has designed an extratympanic electrode which overcomes the problem of high electrode impedance, is simple to insert and causes little, if any, patient discomfort. Primarily we are recording the summing potential (SP) and the whole nerve action potential (AP) and measuring the amplitude ratio between the two potentials. It has been shown that responses recorded from a patient with Meniere's disease often exhibits an enhanced SP and the results from our clinic support this finding. We have observed the enhancement of the SP to vary with patient symptomatology and we have monitored and found the enhancement of the SP to improve during glycerol dehydration, which supports the hypothesis that changes in intralabyrinthine pressure and volume will produce variations in the enhancement of the SP. In conclusion, by using a noninvasive recording technique, electrocochleography is a relatively simple procedure to administer and provides valuable information in the diagnosis and monitoring of Meniere's patients.

THE RELATIONSHIP BETWEEN ACOUSTIC NEUROMA SIZE, AUDITORY BRAINSTEM RESPONSE, ACOUSTIC REFLEX FINDINGS AND HEARING LOSS

Stephanie Rudin and John Coleman
Otologic Medical Group, Inc.
Los Angeles, California

The purpose of this study is to evaluate in greater detail the diagnostic correlation between auditory brainstem response, acoustic reflex findings, hearing loss, and acoustic neuroma size. Specifically, our diagnostic interest is to identify these lesions as early as possible. With the detection of smaller neuromas comes the reduced risk of damage to the Facial Nerve during surgery and makes available the possibility of preserving hearing in the affected ear using the middle fossa approach. A greater number of small tumors are identified presently, due to the advent of the CAT scan. One of our goals is to establish more sensitive criteria for detecting smaller tumors in an effort to maximize our effectiveness and efficiency at the clinical level.

Currently used assessment criteria such as asymmetrical hearing loss, reduced discrimination or abnormal acoustic reflex findings at 500 or 1000 Hz are not adequately sensitive clinical measures for identifying smaller lesions. We have found that these manifestations are much less prevalent in smaller tumors. It appears that larger acoustic neuromas exhibit a wide range of hearing loss. Patients with smaller lesions typically have audiograms showing thresholds within normal limits or mild losses.

Criteria currently used in acoustic reflex testing enables the detection of larger tumors, while having a high false-negative rate for smaller lesions. Coleman & House (ASHA 1982) revised these criteria to include abnormalities observed at 2000 and 4000 Hz. A relationship appeared to exist between tumor size and the frequency at which acoustic reflex abnormality occurred.

Auditory brainstem response results have shown P5 values to be either delayed or absent in the presence of Eighth Nerve lesions. Sellers & Brackmann (1979) found a trend toward larger acoustic neuromas having greater difference between affected and unaffected ear for P5 (IT5). However, a correlation was not examined.

In this study, thirty patients with surgically confirmed acoustic neuromas were evaluated by comparing tumor size, ABR results, acoustic reflex findings and hearing loss. Size of tumor was obtained from the operative report based on visual observation by the surgeon.

Our preliminary findings indicate there is a poor correlation between tumor size and magnitude of pure tone hearing loss, except that smaller tumors tend to produce minimal hearing loss and larger tumors can present a range of normal to severe hearing loss. The relationship between abnormal acoustic reflex findings at 500 & 1000 Hz and the larger tumors is apparent. The more recent data by Coleman & House has shown that smaller acoustic neuromas tend to manifest abnormalities at 2000 or 4000 Hz using revised and more sensitive test criteria. ABR results also indicate a progression of abnormal effects on interaural IT5 differences as the lesion expands in size.

Our initial conclusions demonstrate that there is the potential for continuous reduction in hearing threshold, typically from the higher frequencies toward the lower frequencies, but a poor overall correlation between hearing loss and acoustic neuroma size. Good correlations exist between lesion size and ABR and acoustic reflex data. It is also apparent that the physiological factors that occur with tumor expansion create responses that appear similar in their degradation of hearing, ABR, and acoustic reflex measure. Our data further indicates that these tests evaluate functions which operate independent of each other.

THE DIFFERENTIAL EFFECT OF BARBITURATES ON AUDITORY BRAINSTEM VS. MIDDLE-LATENCY EVOKED RESPONSES: A CLINICAL STUDY

James W. Hall III, Steven J. Allen and Judy Hargadine
University of Texas Medical School
Houston, TX

High-dose barbiturates, including induced coma, are employed therapeutically in the management of increased intracranial pressure and to reduce the deleterious effects of cerebral ischemia secondary to vascular occlusion (eg., Brannarelli and Langfitt, 1978; Lawner and Simeone, 1978; Marshall and Shapiro, 1977). In deep barbiturate coma, however, clinical neurologic signs of CNS status (brainstem reflexes and motor responses) are no longer present and electroencephalogram (EEG) is isoelectric. The physician then, has virtually no means of assessing neurologic integrity in these acute brain-damaged patients.

In a recent experimental study, Sutton, et al (1982) found that high-dose barbiturates, adequate to induce coma, produced pronounced changes in the visual and long-latency somatosensory evoked responses, but had little effect on brainstem somatosensory and auditory evoked responses. There are, to date, no published clinical studies of the ABR in barbiturate coma. Nor has the influence of barbiturates on auditory brainstem vs. middle-latency response (AMR) been compared.

Serial measurements of the ABR and AMR were made for patients with acute, severe head-injury (a total of over 50 sessions) using commercially-available instrumentation. Most evaluations were done at bedside in an intensive care unit. Barbiturate blood levels and pertinent physiologic parameters (eg., body temperature, intracranial pressure, PaCO₂) were documented for each patient. Whenever possible, prebarbiturate baseline evoked response recordings were obtained, and then serial measurements were carried out regularly until the patient was completely withdrawn from barbiturates, as indicated by blood level Barbiturates did not differentially influence the ABR vs. AMR. Consistent with previous experimental results (eg., Bobbin, May, Lemoine, 1979; Sutton, et al, 1982), we found the ABR extremely resistant to therapeutic doses of barbiturates, although at very high blood levels (in excess of 40 ug/ml) latency changes of later wave components were sometimes observed. The ABR was reliably recorded in patients demonstrating no neurologic signs of CNS function. The AMR (Wave Pa) in contrast, was quite sensitive to barbiturate influence, and remained grossly depressed in amplitude even at blood levels of less than 10 ug/ml (toxic level). The Na component of the AMR appeared to be less influenced by barbiturates, but not as resistant as the ABR.

In addition to providing clinical confirmation of previous experimental studies of evoked responses in barbiturate coma, these data suggest a basic distinction in the neuro-anatomical and neuro-physiologic substrate of the auditory evoked responses. This final point is discussed in detail.

THE RESULTS OF THREE DICHOTIC SPEECH TESTS ON SUBJECTS WITH BRAINSTEM AND HEMISPHERIC LESIONS

Frank E. Musiek and Lisa M. Rackliffe
Dartmouth Medical School
Hanover, New Hampshire

The purpose of this study was to analyze the results of three audiological tests of dichotic listening which, to the author's knowledge, had not previously been compared. The Competing Sentences (Willeford, 1977), Staggered Spondaic Words (Katz, 1962) and a modified Dichotic Digits Test were used to test thirty subjects possessing a variety of surgically and/or neurologically diagnosed intracranial lesions (11 brainstem and 18 hemispheric). This group of subjects exhibited mean pure tone thresholds and speech discrimination scores which were essentially normal bilaterally. Normal performance on these dichotic tests was pre-determined to be approximately 90% or better for each ear on each test, a level 2 standard deviations below the mean for normal. The results of the tests were then analyzed according to the number of individual subjects who yielded abnormal results in at least one ear. In addition, analysis of laterality effects among the three tests were carried out.

The results of the individual subjects exhibiting abnormal scores revealed that the Dichotic Digit Test was most sensitive, followed closely by the SSW and then Competing Sentences in detecting both hemispheric and brainstem lesions. Further, all three tests appeared more sensitive to hemispheric lesions than brainstem disorders.

The mean laterality effects for those subjects with hemispheric lesions limited to one side indicated that significantly greater deficits were found for the ear contralateral to the side of the hemispheric lesion. This trend was similar for all three dichotic tests. In addition, brainstem lesions limited to one side demonstrated greater ipsilateral than contralateral deficits.

In conclusion, these dichotic listening tests all exhibited

greater sensitivity to hemispheric than brainstem lesions, with the Dichotic Digit Test being the most sensitive, and the Competing Sentence Test being least sensitive to both types of lesions. Further, subjects with brainstem lesions exhibited greater ipsilateral deficits on all three tests, while those with hemispheric lesions showed greater contralateral deficits. These analyses as well as others are further discussed in this study.

INTERPRETING CENTRAL AUDITORY-LANGUAGE PROCESSING TEST RESULTS IN CHILDREN

Jay R. Lucker

Private Practice in Audiology & Rehabilitation
Scarsdale & Ossining, N.Y.

The ability to evaluate central auditory-language processing skills in children has been established. Audiologists are taught administration and scoring for various central auditory tests, however, interpreting test results and providing useful information for remediation is often lacking. It is felt that the problem lies in the application of an inappropriate model of central auditory-language processing in children. The purpose of this paper is to discuss various models of central auditory functioning applied with children, and develop an understanding of a more appropriate model.

The first model considered is called the PASS/FAIL model. According to this model, children are administered central auditory tests, and if they fail, they are diagnosed as having a central auditory impairment requiring remediation on those listening skills they failed on the tests or a general program of improving listening is developed which is unrelated to specific needs. This model is felt to be inappropriate for evaluating and remediating central auditory-language processing in children.

The second model is founded upon research with adults and lesion studies. This model presumes a "site-of-lesion" or region of dysfunctioning causing the breakdown in central auditory functioning. According to this model, children's poor performance on central auditory tests are described in terms of specific focus of central auditory nervous system dysfunctioning and remediation becomes unrelated to the diagnosed problem. Again, remediation may be to improve the skills the child performed poorly on during the testing or to generally improve listening abilities. This model is felt to be inappropriate and may even be invalid until a specific relationship is proven between central auditory-language processing and "site-of-dysfunctioning" in children.

The last model discussed is one developed by the author. It integrates knowledge from neurophysiology and neuropsychology with knowledge from cognitive psychology and language. This model will be discussed in depth. It views specific process (such as: focusing, filtering, selective focusing, integrating, feedback, feedforward, decision making, etc.) and relates these cognitive/linguistic processes to success or failure to perform on specific central auditory-language processing tasks. This model also views central auditory evaluation as a method for determining why children are having difficulties learning and not as a method for identifying central with processing problems. It will further be demonstrated how application of this model to central auditory evaluation yields appropriate remediation programming to develop strategies to overcome general processing deficits.

NEUROPHYSIOLOGICAL CORRELATES OF SPECIFIC LEARNING DISABILITIES

Steven Staller

Denver Ear Institute
Denver, Colorado

Identification of physiological correlates of specific perceptual, processing and cognitive deficits would greatly strengthen the ability to isolate homogenous subgroups of children with learning disabilities. Theoretically, the differentiation of children with learned behavioral deficits, may allow more effective design and implementation of remediation protocols in this population.

To date, studies of physiological measures in this population have been equivocal due to: 1) The lack of adequate multi-dimensional selection criteria for the target population. 2) The use of physiological measures which have not been sensitive to subtle deficits associated with the learning disabled population. and 3) The use of very small experimental samples.

In an attempt to address these concerns, an experimental group of 30 learning disabled children were evaluated with a comprehensive battery of physiological measures, central auditory processing tests and speech discrimination in noise. These children were drawn from a pool of 100 potential candidates who were failing in the regular classroom but had a performance of verbal IQ (WISC-R) within the normal range. The experimental group was selected based selected tests of perceptual function, speech & language reception and expression as well as auditory and visual processing.

The physiological battery included: 1) The Binaural Inter-

action of the ABR. 2) The P300 Cortical Evoked Potential to auditory tonal stimuli and pattern visual stimuli. 3) Sinusoidal Harmonic Acceleration Vestibular evaluation. 4) The Middle Latency AER (MLR). and 5) Smooth Pursuit Oculomotor Tracking.

Data obtained from this group was compared with an age and S.E.S. matched control group from the same school district. Significant differences were noted between the two groups and will be discussed. The most consistently abnormal finding noted in the experimental group was vestibular dysfunction. Correlations between behavioral and physiological measures which theoretically involve the same system, task or modality will also be briefly discussed.

USE OF NU-6 WORD LISTS IN ROLLOVER MEASUREMENT

Dianne H. Meyer and E. Tracy Mishler

University of Ill. Eye and Ear Infirmary
Chicago, Illinois

Measurement of PI-PB function is a special auditory test used in the differentiation of cochlear from retrocochlear hearing loss. Jerger and Jerger (1971) and Dirks et al. (1977) tested subjects with 1/2 lists (25 words) of the PAL-50 word lists and found that a "rollover" index of .45 identified retrocochlear pathology. In contrast, Bess et al. (1979) used 1/2 lists of the NU-6 word lists and found that a rollover index of .25 was associated with retrocochlear disorders. The discrepancy found among these studies in the critical rollover index may be due to differences in PB materials, to differences among the populations studied, or to the variability inherent in using 1/2-lists for speech discrimination testing. The purpose of this study was to account for discrimination score variability in determining a critical rollover index that is appropriate for use with NU-6 word lists.

PI-PB functions were obtained on normal, cochlea-impaired, and radiographically or surgically confirmed retrocochlear subjects. Tape recorded NU-6 lists (Auditec of St. Louis) were delivered at three to five suprathreshold levels, depending upon the severity of the loss. Full 50-word lists were used because of the reduced reliability and greater score variability found when only 1/2-lists are used (Jirsa et al., 1975; Thornton and Raffin, 1978). A rollover index was computed for each subject, according to the formula recommended by Jerger and Jerger (1971).

The results of this study will be discussed relevant to (a) the relationship between degree of loss and PB max; (b) the effect of discrimination score variability in determining the rollover index; and (c) the rollover index for NU-6 lists that best distinguishes between cochlear and retrocochlear subjects.

THE NATURAL HISTORY OF SUPRA-HIGH FREQUENCY HEARING IN CHILDREN 8-18 YEARS OF AGE

Marion P. Downs, John Fletcher, John Lampe,
Mildred Doster, Jane Simontron

Five hundred third-grade school children from representative socio-economic groups were selected for a 10-year study of the Natural History of High Frequency Hearing, 4000-18,000 Hz. Using a Rudmose Manual Audiometer these children were given threshold tests each year for ten years. At the end of the study those remaining were queried as to their noise exposure, disease history (including otitis media) and other factors that might effect high frequency hearing.

The results of this study demonstrate age-related normative data for the supra-high frequencies of children 8-18 years old. In addition the effect of noise exposure and disease on the children's hearing of those frequencies are shown. The study supplements the 1972 report (Northern et al.) of adult age-related norms of supra high frequency hearing.

RETROSPECTIVE STUDY OF THE ETIOLOGY OF HEARING LOSS IN CHILDREN

Hiroshi Shimizu and M. Cara Erskine

Johns Hopkins School of Medicine
Baltimore, Maryland

Knowing the cause of hearing impairment is essential for both its prevention and early detection. Establishment of an effective high risk registry for hearing impairment solely depends on extensive epidemiologic studies of the etiology. The eradication of hearing impairments cannot be achieved without identification of the causes. Otolaryngologists and pediatricians as well as clinical audiologists must be fully informed as to the etiology of hearing impairment as they are most likely to be the first professionals to encounter patients with a possible hearing impairment.

It is probable that medical advancement will continuously alter the statistics of the etiological pattern. Wide spread vaccination, improved prenatal, natal and neonatal care, prompt administration of Rh globulin, development of antibiotics, preventive abortion and decreased birth rate seem to have reduced certain types of hearing impairment and

changed etiologic patterns.

The etiology of hearing impairment has been discussed by many investigators elsewhere, but percent distribution of reported causes presents wide diversity between various reports. For example, the incidence of genetic hearing impairment ranges from 7.6% to 51.5%. The disagreement perhaps stems from the difference in the size and nature of the study population and methodology. There have been few studies on a large population.

In order to investigate the incidence of various causative factors of hearing impairment in a large general pediatric population and changes in the etiologic pattern over a period of 16 years, we have reviewed the records of patients younger than 18 years of age who were referred to the Hearing and Speech Clinic of The Johns Hopkins Hospital from 1965 through 1980. The patients of the Clinic are not restricted to any particular population. They were all referred for an initial audiologic evaluation.

The total number of records was 6,577. A hearing loss was ruled out in 1,808 patients. In 182 patients, no confirmed information was available about the presence or absence of hearing impairment or the nature of the hearing loss due to lack of the follow-up evaluation. Consequently, these 182 cases were excluded from the study. The remaining 4,633 cases were carefully reviewed to identify the proximate cause of hearing impairment. In some instances the patient had a history of two or more possible etiologies. If the available information gave no clue whatsoever as to which one of these causative factors was the most probably etiology, the case was unidentified, undetermined, and no information. Nearly one-third of the causes (30.1%) belonged to this group.

The total etiologic factors were divided into genetic, and non-genetic prenatal, perinatal and postnatal causes. Thirty-five causative factors were identified and their percent distribution will be reported.

The rate of the genetic cases was 7.4% of the total population, which agreed with the report by the national census of the deaf population of 1971. The low ratio of the genetic cases is obviously ascribed to the fact that the data includes not only prelinguistic hearing impairment but also a large number of otitis media, all other conceivable causes of late on-set. Interestingly, however, the data shows a relative increase in the incidence or identification of genetic cases in the later years. The genetic cases were the highest in frequency among the prelinguistic hearing loss.

Incidence figures of the prenatal, perinatal and postnatal etiologic factors were etiologic factors were 8.7%, 6.1% and 47.5% respectively. The data showed an unusually high incidence of prenatal rubella for the well known reason that the United States experienced the worst rubella epidemic from 1963 to 1965. Among the perinatal causative factors, premature birth showed the largest incidence. It is significant to note that 47.5% of the cases of premature birth with confirmed hearing impairment weighed more than 1,500 grams.

One-third of the total population (36.5%) had a hearing loss secondary to middle ear problems. The ratio between suppurative otitis media and serous otitis media was approximately one to two. The incidence of otitis media was followed by postnatal viral or bacterial infection, in which meningitis had the highest incidence, and in decreasing frequency by temporal bone fractures, trauma to the middle ear, pseudohypacusis, acoustic trauma, ototoxic drugs, unexplained high febrile illness, neoplasms and hypoxia.

The incidence of causative factors by the year of the birth clearly showed a gradual decrease in hearing impairment due to maternal rubella, reflecting the advancement of its prevention. It was reduced to zero percent in children who were born after 1973. Contrary to what has been expected, no dramatic change in the number of hearing impairment due to hyperbilirubinemia was observed throughout the years included in this investigation.

Statistical data on the nature and degree of hearing loss secondary to selected etiologic factors will be presented. We intend to include the data obtained from the patients seen in 1981 and 1982.

RESPONSES OF NEWBORNS TO HIGH PASS FILTERED NOISES

Sanford E. Gerber and Mark S. Dobkin

Speech and Hearing Center
University of California
Santa Barbara, CA

Over quite a number of years clinicians and researchers alike have employed a vast array of acoustic events supposing that these phenomena would elicit motor responses of neonates if they were loud enough. As a result, we have employed noise making toys, frequently modulated tones, narrow band noises, wide band noises, white noise, sine waves, coin clicks, watch ticks, speech, whispered speech, and anything else which might have been handy. Many of these investigations have failed to ask which signals are, in

fact, stimuli. In other words, what serves as an auditory stimulus for an infant?

Following the advice of the Nova Scotia Conference on Early Identification of Hearing Loss to use high pass filtered noise, this study centered on the cut-off frequency. While the Nova Scotia conference (Mencher, 1976) recommended a noise which is filtered below 750 Hz, and this signal has been shown to be more effective than a narrow band noise (Gerber and Mencher, 1979), until now no one has investigated the effect of the cut-off frequency. This question is important for two reasons: we still need to find an optimum signal for screening of infants, and we need to determine the properties of stimulus complexity as a function of frequency spectra. Hence, we employed three different cut-off frequencies of high pass filtered noise - 500, 1000, and 2000 Hz - and presented them in random sequence to a number of full-term, well newborns. Following the procedures we have used repeatedly (e.g., Gerber and Mencher, 1979; Gerber, 1983) each infant was presented with eight repetitions of each signal. Given that there were three spectra in this study, there were 24 signal presentations. Furthermore, the 24 events were recorded in random sequence and the levels adjusted so that all were at 90 dBA.

Eighteen infants participated in this study. The results indicated that signal complexity as represented by bandwidth constitutes the best stimulus. That is, the wider the band, the more often the infant will respond. Of course, this finding is confounded by the fact that the wider the band, the more low frequency content there is. In other words, while infants seem to be more responsive to wider bands, they are also more responsive to lower frequencies. Consequently, it may indeed be the case that the "Nova Scotia spectrum" is the most clinically useful because of its inclusion of low, but not too low, frequencies.

CRIB-O-GRAM AND AUDITORY BRAINSTEM RESPONSE: DIRECT COMPARISON OF TWO INFANT HEARING SCREENING METHODS

Anne L. Kuklinski, and Holly Hosford-Dunn
Stanford Audiology Clinic, Division of Otolaryngology
Stanford University Medical Center
Stanford, CA

Crib-O-Gram (COG) and Auditory Brainstem Response (ABR) data were collected in a local Neonatal Intensive Care Unit (NICU) and scored without knowledge of follow-up. Of 747 infants tested by COG, 162 (21.7%) failed (scalar score - 50.5), in fairly good agreement with the 17-19% rates Marcellino (1982) reported for two groups in NICU. COG failures and every fifth pass were screened by ABR, with ABR passes defined as wave V presence/replication at 30 dB nHL in either ear.

Data on 69 infants have been scored (Table 1). Numerous subjects were discarded because of ABR technical problems/incomplete testing. Additional data remains to be judged. Forty six infants failed COG. Assuming the average failure rate of 21.7%, this subgroup was drawn from an estimated sample population of 219. Using the 11.7% incidence of hearing loss reported in COG failures (Marcellino, 1979), we predict 5.38 babies to have significant hearing loss.

ABR failed 36, yielding an estimated failure rate of 16.4%, in agreement with Galambos et al's (1982) rate of 15.84%. Using the 13% incidence of significant hearing loss he reported at follow-up of ABR screening failures, we predict serious impairment in 3.94 subjects.

Chi square testing showed no significant interaction in the screening distributions. These data contrast with Marcellino's finding of no COG-Pass/ABR-Fail occurrences. Since ours and other reports show high false positive rates for both methods, it seems inappropriate to establish false positive and negative rates by comparing one method against the "standard" of the other. The two methods test different components of auditory performance: ABR measures cochlear sensitivity, COG measures behavioral responses to suprathreshold stimuli. A baby could fail COG yet pass ABR if he were: 1) out of crib or poorly placed on sensor; 2) in deep sleep; 3) suffering cortical damage. A COG-Pass and ABR-Fail could result due to: 1) poor reliability due to equipment or infant noise; 2) poor tester technique; 3) transient hearing loss resulting from a real or artificial conductive component.

Analysis of audiometric follow-up data and enlarging sample group will allow comparisons of sensitivity and specificity of both methods. Results of such comparisons will be discussed in the presentation.

A DESCRIPTION OF THE RESULTS OF THE PAST FIVE YEARS OF A HIGH RISK HEARING SCREENING PROGRAM

Wynette J. Moneka and Karen M. Gollegly
Northwestern University Medical School
Chicago, Illinois

The use of a high risk register for targeting those infants at risk for hearing loss is a well-accepted procedure since the Supplementary Statement of the Joint Committee (1974). However, the lack of further guidelines from this group be-

tween 1974 and the Position Statement (1982), left the audiologic and pediatric/medical community without periodic updating. During the longitudinal Crib-O-Gram project, Simmons (1979, 1980), compiled detailed information on the realities composing high-risk status for hearing loss in contemporary neonatology. However, those programs not in the field trials for the Crib-O-Gram study, were left to decide whether to test high risk infants or not and if so, how to test. In 1976, the Nova Scotia Conference, though not an "official" body, did resolve that the use of behavioral screening programs was acceptable, thus clearing the way for programs to test infants in addition to identifying them as at risk for hearing loss.

Following the Nova Scotia Conference, Prentice Women's Hospital and Maternity Center and Northwestern University, Medical Center Hearing Services, established a program for the systematic identification, screening and follow-up of high risk infants. A chart of the organization of the program, Figure 1, shows the initial screening step plus two routine follow-up visits for the most at-risk infants who are slated for periodic re-evaluation by the entire team of professionals. Thus far, 1061 babies have been tested between January, 1977, and December, 1982. While the initial test failure rates were higher, the overall failure rate is only 8% (Figure 2), a reasonable number which also compares quite well with other methods. It is extremely important to note that the rate of identification of hearing impairment from the nursery phase of our program is 1:55. This figure is quite close to the lower level of the stated 2-5% incidence figures provided by the 1982 Position Statement. If only the later years of the program are considered, identification rates are at least 2%, Figure 2.

This presentation would detail the program we have established, and the findings thus far. As noted above, we feel that a carefully applied behavioral program can prove successful. The risk factors present in the identified cases of hearing loss will be classified as we have some concerns about the items slated in the Position Statement. A category that we have established called Priority Risk, will be discussed as it has helped us in conceptualizing a special category of cases for more aggressive followup. Examples of such cases are shown in Figure 3. At the present time, we are in the process of acquiring normative data on a portable auditory brainstem response unit (ABR/BSER) which the University received. While we have had a stationary test unit to use for suspected cases of hearing loss, our plans to incorporate this unit into the present program will also be shared.

PERFORMANCE CHARACTERISTICS OF HEARING AID COMPATIBLE AND INCOMPATIBLE TELEPHONE RECEIVERS

Vic S. Gladstone and Eileen Kahl
Baltimore, MD

Hearing aid-telephone incompatibility has been a concern since the mid 1960's when AT&T and its affiliates began installing incompatible receivers in its telephone sets (Gladstone, 1975). Since that time, efforts by consumer groups have succeeded in reversing AT&T's intent to have all coin-operated phones contain incompatible receivers. By 1980, over 95% of coin-operated telephones were hearing aid compatible (OUT, Archives, 1980).

A persistent concern has been the resistance/reluctance of AT & T, its affiliates, and the many non-Bell telephone companies to provide hearing aid compatible receivers in all telephones such as business, private-system, and designer-type models. An alternative to complete change-over offered by AT & T has been an adapter which converts acoustic energy to electromagnetic energy thus enabling use of a hearing aid with telephone pick up coil. Objections raised to the adapter have included cost, size, conspicuousness, and, perhaps most important, poor acoustic quality (OUT, Archives, 1980). This study was conducted to examine the performance characteristics of a hearing aid compatible receiver (WE-U1) and an incompatible receiver (WE-TRIMLINE) requiring an adapter (WE-100A).

Three experiments were undertaken to evaluate the psychoacoustic, electroacoustic, and electromagnetically for both receivers; (1) individually, and (2) coupled to each of three hearing aids. Each hearing aid was evaluated according to ANSI S3.22-1976 Specifications of Hearing Aid Characteristics and found to meet such specifications.

The hearing aid volume control was set to the reference test gain position which represents the "in-use" position. The hearing aid output was fed to the measuring amplifier section of a Bruel and Kjaer (B&K) Type 2010 Heterodyne Analyzer, the output of which was coupled to a B&K 2307 Laboratory Graphic Level Recorder (GLR). The GLR controlled the frequency sweep of the Beat Frequency Oscillator (BFO) section of the 2010 Heterodyne Analyzer. The BFO served as the input signal source to the telephone receivers.

The input signal was a pure tone adjusted to 250 millivolts (mV) at 1000 Hz as monitored at the receiver terminals by a Tektronix 7313 dual trace storage oscilloscope. Electromagnetic coupling was effected by comparing the hearing aid output displayed on one channel of the oscilloscope to the input

signal to the telephone receiver displayed on the second channel of the oscilloscope. The hearing aid was oriented relative to the receiver to achieve a maximum signal display while preserving wave form quality. In the case of the WE-TRIMLINE receiver the electromagnetic coupling was accomplished via the WE-100A adapter. The input signal was then swept over the frequency range from 100 Hz to 7000 Hz with the frequency response automatically recorded by the GLR. Total Harmonic distortion was measured at 1000 Hz at the same 250 mV at 1000 Hz input signal via the B&K Heterodyne Slave Filter 2020. Signal-to-noise ratio at 1000 Hz was measured by obtaining a reading from the 2010 measuring amplifier with a 250 mV at 1000 Hz signal into the receiver and then obtaining another reading with the input signal removed.

Results from experiments 1 and 2 reveal that the performance characteristics were superior for the hearing aid compatible WE-U1 receiver than for the WE-TRIMLINE (an incompatible receiver, when required). Psychoacoustic measures were obtained by evaluating the speech discrimination ability of normal listeners to material recorded via the electroacoustically and electromagnetically coupled hearing aids and both telephone receivers. Results and implications for clinical management of hearing aid wearers, future research, and telephone-hearing aid compatibility will be discussed.

A CLINICALLY MANUFACTURED STEPPED-DIAMETER EARMOLD FOR SUPERIOR AIDED LISTENING

Michael Valente
Omaha, Nebraska

Killion (1981) introduced a series of damped stepped diameter earmold configurations for improved speech intelligibility when utilized with hearing aids having wideband receivers. Several studies (Rezen, 1980; Mueller, Schwartz, and Sung, 1981; Sung and Sung, 1982) have reported superior performance with the stepped diameter earmold configuration when compared to a traditional earmold configuration (i.e., #13 tubing from the tip of the earhook to the tip of the earmold without the use of damping). Recently, many of the Killion earmold designs have become commercially available (i.e., 6R10, 6R12 and 8CR). However, their costs are relatively expensive (\$11.50 to \$25.00 per earmold) and additional cost is incurred by requiring the patient to return for the hearing aid evaluation. A method has been established to prepare a damped stepped diameter earmold (8CR) cost of which is rather inexpensive (less than \$2.00) and which may be prepared without the need for a second visit. This paper will describe the design of the earmold as well as its psychophysical performance in comparison to a traditional custom earmold.

Twenty-two veterans (it is anticipated that the number of subjects will be approximately forty by the time of our convention) have been included in this study. All subjects had sensorineural hearing loss which varied in magnitude and configuration. For each subject, two earmolds were prepared. The first earmold was custom made occluding the traditional earmold ordered from an earmold laboratory. This earmold consisted of #13 tubing extended to the tip of the earhook. When coupled to the hearing aid, this earmold design did not incorporate the use of damping. The second earmold was the experimental earmold which closely adhered to the dimensions specified by Killion for his 8CR design. The earmold consisted of three sections of tubing. The first section (most medial) consisted of fourteen millimeters of #7 tubing (I.D. equals 4.0 millimeters). The second section consisted of twenty-two millimeters of #9 tubing (I.D. equals 3.0 millimeters) where the first three millimeters were bonded to the #7 tubing. The last section consisted of #13 tubing (I.D. equals 1.93 millimeters) in which the first three millimeters were bonded into the #9 tubing. The length of this last section varied depending upon the individual's ear configuration. In this experimental earmold a 1500 ohm fused mesh damper was placed at the tip of the earhook. This earmold was coupled to the subjects ear canal utilizing a pre-drilled soft ear insert which varied in diameter (sizes 2 - 6) depending upon the diameter of the subject's ear canal.

Each of the two earmolds were evaluated psychophysically in determining unaided and aided (functional gain) spondee words as well as warble tones (5%) between 250-6000 Hz. Also evaluated were word discrimination scores (recorded versions of CID W-22) in quiet and noise (multi-talker background at a +6 S/N ratio). All procedures were evaluated under conditions of near-ear listening.

Results revealed:

1. Functional gain was significantly better with the stepped diameter earmold at 2000-6000 Hz.
2. There were no significant differences between the two earmold designs in functional gain for spondee words or warble tones at 250-1000 Hz.
3. Word discrimination scores were significantly better in quiet and noise for the 8CR design.
4. Considerable variability was revealed for both earmold designs.

TEST-RE-TEST RELIABILITY OF THE HEARING HANDICAP INVENTORY FOR THE ELDERLY

Barbara E. Weinstein, Ira M. Ventry, Jaclyn B. Spitzer

The Hearing Handicap Inventory for the Elderly (HHIE) is a new self-assessment technique designed to quantify the emotional and social effects of hearing impairment in the non-institutionalized elderly. The HHIE is comprised of 25 items and is divided into two subscales: a 13 item emotional subscale which explores emotional consequences of hearing impairment and a 12 item social/situational subscale which explores both social and situational effects. The internal consistency of the total scale and its two subscales is quite high (.88 to .95), as is its split-half reliability (.94).

In view of the high internal consistency of the HHIE, it is gaining widespread appeal for its clinical utility with the elderly. For example, the scale has been used in large-scale hearing screening programs, to pinpoint social/situational problems associated with hearing impairment and to serve as the basis for counseling the elderly. However, its application as a measure of change in self-perceived hearing handicap (as such change may be derived from audiologic intervention) has been limited. The latter application has not been advocated due to the absence of test-re-test reliability data.

The purpose of the current paper is to present test-re-test reliability data on the total HHIE scales and on its subscales. In addition, test-re-test reliability as a function of degree of hearing impairment will also be discussed. Finally, the reliability of a paper-pencil vs. face-to-face administration of the HHIE will also be discussed. The clinical application of these findings (eg. methodological issues) will be addressed.

The test-re-test reliability of the (HHIE) was assessed on a sample of 40 non-institutionalized individuals over the age of 65 with sensorineural hearing loss. The test-re-test reliability of the HHIE using a face-to-face administration method was .96, while test-re-test reliability of paper-pencil administration was .84. Test-re-test reliability of the subscales is currently under analysis, as is reliability as a function of hearing level category.

AN ARTICULATION INDEX STUDY OF PHONEMIC REGRESSION IN THE ELDERLY

Chaslav V. Pavlovich and Robert McCroskey

Department of Communicative Disorders

University of Mississippi and Wichita State University

The concept of Phonemic Regression (disproportionately poorer understanding of speech than would be expected on the basis of a listener's threshold of auditory sensitivity) has been widely accepted for older individuals, in spite of the fact that the phenomenon has received only limited research attention, and the fact that the effects of Phonemic Regression are not as documented or as understood as its associated deficit in hearing sensitivity.

The contribution of this investigation lies in the application of an Articulation Index procedure to the accounting for the reduction in speech intelligibility due to the loss in threshold sensitivity alone. There appeared to be a need to assess and compare the severity of Phonemic Regression for low frequencies, where threshold sensitivity is relatively good, with the severity of Phonemic Regression in the higher frequencies where threshold sensitivity loss is usually greater. Further, there was an attempt to relate the temporal resolving power of the aging auditory system to performance in the lower and in the higher frequency ranges.

The purpose was to explore, by means of an Articulation Index (AI) procedure, whether the Phonemic Regression phenomenon is: 1) present in old age; 2) whether it is frequency specific; and 3) whether it is accompanied by a deterioration in the temporal processing abilities of this older population. There were 28 subjects equally divided according to age. The mean age of the younger group was 18 years and the mean age of the older group was 67 years. The subjects from the older age groups had a mild to moderate hearing loss for higher frequencies (above 1400Hz) and normal hearing (better than 15dB HL) for lower frequencies (below 1400Hz). The subjects from the younger age group had normal hearing. Each subject's speech discrimination ability was tested using high passed (1400Hz cutoff frequency) and low passed (1400Hz cutoff frequency) filtered PB words (PAL PB-50 material). Their temporal processing abilities were measured at 500Hz and 4000Hz in terms of the ability of the auditory system to detect silent intervals between tone clicks.

The main research tool of the study was the AI theory which can predict, from the proportion of the speech spectrum that is audible within the residual hearing area, the speech discrimination of listeners — provided no suprathreshold deficits of the auditory system are present. However, since the presence or absence of such deficits was the object of this investigation, a variable termed "regression proficiency factor" was introduced in the AI formulas to represent such phenomena (phonemic regression). The mean values of this variable in the low frequencies (below 1400Hz) and in the high frequencies

(Cont. on pg. 8)

Also, implications of these results will be discussed in terms of the durability of the experimental earmold as well as illustrating those patients for which this earmold may not be appropriate. Finally, a section will be included concerning the usefulness of the stepped diameter earmold with hearing aids not possessing wideband receivers.

AUDITORY ELECTRICAL STIMULATION: EFFECTS OF TINNITUS

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and Judith A. Brimacombe
House Ear Institute
Los Angeles, California

At least 80% of the patients seen for otologic problems manifest some degree of tinnitus. Unfortunately, the physiologic mechanisms underlying tinnitus are not known. Many diverse treatment methods have been reported to be successful for some tinnitus patients; no procedure is successful in all cases. The severe to profoundly hearing-impaired patient frequently fails to respond to conventional treatment forms such as hearing aids, biofeedback, tinnitus maskers, or drugs; electrical stimulation, however, has been reported to be successful in many of these cases.

An analysis of the effectiveness of the House cochlear implant (CI) for tinnitus suppression revealed that significant tinnitus reduction has occurred in 50% of the patients (Total N = 68), no change occurred for 45%, and 5% reported an increase in tinnitus. The CI data suggest that patients who are implanted primarily to restore hearing, may reflect a slightly higher degree of successful tinnitus suppression than patients who receive the CI specifically for tinnitus relief. The number of patients in this latter category, however, is extremely small and therefore requires additional investigation before any conclusive statements can be made.

Further investigation into the effects of electrical stimulation on tinnitus is currently being done in a series of acute electrical stimulation experiments. Patients include those with debilitating tinnitus who have not responded to conventional therapies and patients with severe tinnitus that are undergoing stapedectomy surgery. Stimulation is done at the round window using sinusoids, monophasic and biphasic pulses, and direct currents. Preliminary findings indicate that these patients' responses to electrical stimuli are variable. No single factor or group of factors has been predictive of the degree of tinnitus suppression during electrical stimulation. Often, electrical stimulation has not suppressed tinnitus in patients for whom suppression was expected. Further investigation is necessary to determine the viability of electrical stimulation for severe tinnitus sufferers.

TINNITUS EVALUATION AND TREATMENT

Robert Johnson, Jack Vernon
Mary Meikle, and Robert Brummett
Department of Otolaryngology
Kresge Hearing Research Laboratory
Portland, Oregon

During the past decade, considerable interest has been generated in the area of tinnitus both in the United States and in selected foreign countries. This interest has resulted in various improvements of both evaluation and treatment procedures.

To date, approximately 2500 tinnitus patients have been seen at the Kresge Hearing Research Laboratory in Portland, Oregon and a series of experiments have addressed the problems associated with this symptom. Investigations have dealt with methods for both evaluating and treating tinnitus patients and this information has been entered into a large data registry. This information has accumulated from patients seen at the Tinnitus Clinic during the past seven years and in the Department of Nephrology and Rheumatology for three years. Treatment procedures have included medical treatment, tinnitus masking and drug therapy.

Quantitative data include information regarding audiological assessments, tinnitus evaluations and related medical problems associated with this symptom. These data will be reported and discussed and findings of specific projects will be highlighted. Current problems involved in evaluating and treating tinnitus patients will be reported as will future directions for research in the next decade.

SUMMARY

Information from approximately 2500 tinnitus patients accumulated at the Kresge Hearing Research Laboratory in Portland, Oregon which has been analyzed and entered into a large data registry will be reported and discussed. Various research projects completed during the past three years involving both the evaluation and treatment of tinnitus will be highlighted.

PILOT STUDY ON THE EFFECTS OF A GROUP INTERVENTION ON NORMAL-HEARING SUBJECTS SUFFERING FROM HANDICAPPING TINNITUS

Normandin, N.; Roberge, C.; Bergeron, L.

A pilot study was undertaken to measure the effects of group intervention on ten normal-hearing subjects of 30 to 50 years

old suffering from handicapping tinnitus since at least one year and having no hope for treatment in a near future.

A palliative approach was developed to reduce handicap which was operationally defined as an increase in tolerance of tinnitus and maintenance or reintegration in familial, social and professional life.

Based on review of literature, clinical experience and formulation of needs and expectations from the individuals themselves (at a preliminary meeting), the group intervention provided two types of services. First, general information was transmitted concerning the auditory system, the etiology and treatment of tinnitus, and the psychophysiological effects of stress on the individual; second, basic practicum on general relaxation was done and regular practice at home was encouraged.

Measurements of before - after of knowledge, attitudes and behaviors was performed by means of specifically developed questionnaires on handicap, case history, degree of stress and anxiety, and adjustment to changes of life. Preliminary results are presented in terms of percentages of responses after intervention.

Findings suggest that explanation of the problems to the individuals, paired with group gathering, identification of life stressful events, and basic training on general relaxation provided better tolerance to tinnitus problem, reduced feeling of helplessness and encouraged behavior of self-control. It was also obvious that the subjects who had consulted regular clinics did not have any knowledge about the diverse aspects related to their problem.

Results are discussed in terms of clinical application and further researches. Group intervention can become a very important adjunct to traditional individual case-by-case intervention in cases seeking palliatives to non-treatment tinnitus.

OPTIONS FOR THE PROFOUNDLY DEAF: AN OUTGROWTH OF THE COCHLEAR IMPLANT PROJECT

Molly L. Pope, Richard T. Myamoto, Jon K. Shallop,
Marjorie L. Kienle, Amy J. McConkey, Barbara Young

In 1979 a cochlear implant team was established at the Indiana University Medical Center. Since then, more than 150 patients have been evaluated as potential candidates for a cochlear implant. To date, 22 patients have received a House-Urbain single channel device.

Candidates for the cochlear implant receive an extensive evaluation and are selected for the implant procedure on the basis of medical, audiological and psychological criteria. The medical evaluation includes history and physical examination, electronystagmography and radiographic studies. Audiological testing is used to select subjects who are profoundly deaf. In addition, performance with a hearing aid is evaluated using speech and environmental sound discrimination tasks. Speechreading and voice production assessments are obtained. Prospective implant candidates are psychologically assessed through interviews, tests and questionnaires designed to measure cognitive, neuropsychological and personality functions.

Following this extensive work-up, the cochlear implant team makes recommendations regarding which device and rehabilitation strategy is most appropriate for the patient. Candidates who are not appropriate for the cochlear implant are then counseled regarding the alternatives available to them.

The purpose of this report is to review the status of those patients who consulted our team, but for whom an implant was not recommended. Some of our most gratifying results were seen in this heterogeneous group of patients. Many of these patients have been helped by alternate rehabilitation strategies. Depending on the level of residual auditory function, in many cases, traditional amplification fittings or amplification with minimal cue training has proven to be most appropriate. Vibro-tactile training has been utilized effectively in a few selected patients. This paper will discuss our rationale for recommending a particular device or rehabilitation program, based upon data obtained in the evaluation and upon our clinical experience with a large number of hearing impaired patients. Specific case information will also be presented.

The purpose of this report is to review the status of prospective cochlear implant patients, who consulted our implant team at Indiana University Medical School. The focus of the paper will be on those patients for whom an implant was not recommended. Some of our most gratifying results were seen in this heterogeneous group of hearing impaired patients. Many of these patients have been helped by alternative devices and rehabilitative strategies.

We will discuss the rationale for recommending a particular device and/or rehabilitative program in various clinical situations and give specific case examples.

Abstracts (cont. from pg. 7)

cies (above 1400Hz) were determined for the older age group using the observed filtered speech discrimination scores and threshold sensitivity values off all 28 subjects. These mean values were subsequently analyzed to determine whether or not they were different from unity, since unity represents the value of the regression proficiency factor if there is no phonemic regression.

The analysis of the results led to the following conclusions:

1) Phonemic regression phenomenon is present in the population represented by the group of older individuals who participated in this study.

2) The observed phonemic regression is frequency specific. It is not present in the low frequencies where the subjects had normal hearing but it is present in the high frequencies where they had mild to moderate hearing losses. A consequence of this is that the application of the AI theory in its present form to the prediction of speech discrimination by the hearing impaired is not possible, at least for the population represented by elderly individuals tested in this study. A revision of the procedure to account for suprathreshold distortion of speech is necessary.

3) The association between phonemic regression and the distortion in the temporal processing abilities was not evident.

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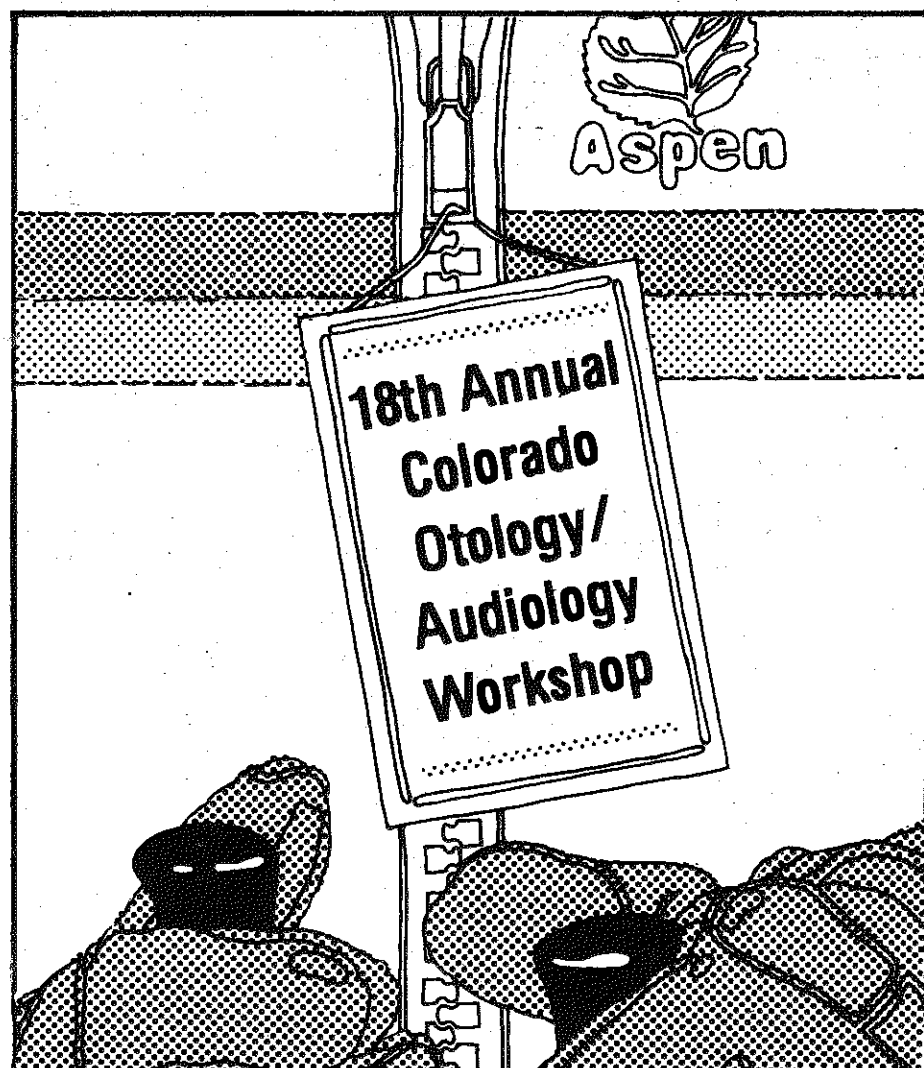
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Vol. 9, No. 1

Winter, 1984

Cordless Telephones Can Cause Permanent Hearing Loss

Several cases of documented permanent sensorineural hearing loss resulting from cordless telephones have recently come to the attention of the AAO-HNS.

According to the Federal Communications Commission (FCC), the agency which certifies this equipment, there may be three to five million cordless telephones in the U.S. The product came on the market two years ago, and now there are 30 to 40 basic models with 150 to 200 variations. Sales are expected to continue to rise rapidly (i.e. \$1 billion in sales is projected for the next two years).

Complaints filed with the federal government by Academy members and affected users have prompted an investigation through the Consumer Product Safety Commission, an independent federal regulatory agency.

The noise-induced hearing loss results from improper use of the equipment. The public is accustomed to the conventional "wired" telephone which automatically stops ringing when answered. Cordless telephones have a "flip switch" which is normally in a "standby" position and has to be moved manually to a "talk" position. If the user forgets to flip the switch, the ringing continues directly into his ear because (in all except one model) the audio signal device for incoming calls and the intercom or page is located in the ear piece.

The CPSC has logged numerous complaints of painful ringing and tinnitus. In some cases there was no apparent related hearing loss. Other cases indicated hearing loss of 20 to 25%.

There have also been reports of violent headache and disorientation. Painful sounds, including a pistol-like "crack" or loud pop, have also been reported. This may be some type of radio interference. These types of noises did not occur when the CPSC conducted laboratory tests on five models. Its tests found the sound level in a range of 123 to 135 dB.

The CPSC staff met with cordless telephone manufacturers. Warning literature and stickers have been discussed, and some companies have started using them. The CPSC staff has proposed a "consumer alert" which, if approved by its commissioners, would be issued jointly with the product manufacturers. CPSC may also work with the manufacturers to develop voluntary standards to modify the equipment. If a "substantial" hazard is established, CPSC has the authority to recall cordless telephones. At the point, the FCC could take the equipment off the market by revoking the certification to sell it.

Readers are urged to help investigate the extent of the hazard cordless telephones pose on hearing. Write to Dr. Jerome C. Goldstein, Academy Deputy Executive Vice President at the Academy office. You are requested to supply as many details as possible, including the brand and model of the equipment, and the patient's name if he or she would be willing to discuss the case with the CPSC. The collected case reports will be presented to the CPSC with appropriate recommendations. The Academy has also notified the FDA's Bureau of Medical Devices of the emerging medical hazard related to cordless telephones.

The Executive Committee of the American Auditory Society has announced the availability of Life Membership in our organization.

Eligibility requirements include membership status for ten consecutive years and an age of seventy years or more (we won't tell!)

For further information contact: Ross Roeser, Ph.D., Secretary/Treasurer AAS, 1966 Inwood Rd., Dallas, TX 75235.

Diller To Lead 1984 Campaign For Better Hearing and Speech

Popular comedienne Phyllis Diller, who overcame a hearing problem herself, will lead the Council for Better Hearing and Speech Month's 1984 public information campaign on behalf of 22 million Americans with communicative disorders. She was elected national chairman of the May campaign by a consortium of 27 nonprofit hearing and speech organizations cooperating in the Council program.

Miss Diller will act as chief media spokesman for the Council's message of hope and help for those suffering from hearing and speech problems. She personally experienced a sudden hearing loss which was corrected by medical therapy, and has since committed herself to helping others with similar problems.

Miss Diller will launch the Council campaign during early May kickoff ceremonies in Washington, D.C., where she will release a special message from President Reagan, introducing the 1984 poster child, and step up a series of national media appearances.

Killion Launches Etymotic Research, Inc.

Mead Killion, Ph.D., has announced the formation of Etymotic Research, Inc., a new company to do Research and Product Development in the hearing instruments field. "We have been extremely fortunate," says Killion, "that Knowles Electronics has granted us the development rights to three important new products on which I worked. We hope to bring out the first one early in 1984."

Killion has spent 21 years in the hearing aid industry. He helped develop the first subminiature ceramic microphone, the subminiature electret microphone, and subminiature directional microphones. He is probably best known for developing earmold coupling systems to improve both the useful bandwidth and the sound quality of hearing aids. He has been granted eight U.S. patents, either as sole inventor or with co-inventors, and has two more pending.

Killion is an Adjunct Professor of Audiology at Northwestern University. He has written and lectured extensively on hearing aids and earmolds, with papers published in the field of electroacoustics, psycho- and physiological acoustics, and audiology.

The corporate name ETYBOTIC is pronounced et-im-OH-tik. It is a newly coined "ancient Greek" word, which here means "true to the ear." The corporate name reflects Killion's commitment to unflawed sound reproduction for the normal or impaired ear.

The Board of Directors of Etymotic Research includes Charles I. Berlin, Ph.D., Jack Clemis, MD, Barbara Kruger, Ph.D., E. Robert Libby, Edgar Villchur, and Laura Wilber, Ph.D.

Inter Noise 84

The Institute of Noise Control Engineering (INCE-USA) has issued the Announcement and Call for Papers for INTER-NOISE 84. INTER-NOISE 84, the 1984 International Conference on Noise Control Engineering, will be the thirteenth in a series of International Conferences on Noise Control Engineering which began in 1972 in Washington, DC. INTER-NOISE 84 will be held at the Hotel Ilikai in Honolulu, Hawaii on December 03-05, 1984. Deadline for receipt of abstracts is March 15, 1984.

Copies of the Announcement and Call for Papers are available from the INTER-NOISE 84 Conference Secretariat, P. O. Box 3469, Arlington Branch, Poughkeepsie, NY 12603, USA.

ARA Holds Fall Meeting

The fall meeting of the Audiological Resource Association was held in Roan Mountain, Tennessee, on October 22 and 23. Derek Sanders, Ph.D. presented a stimulating program on aural rehabilitation with a focus on the provisions of services in a private practice setting. Dr. Sanders stressed that the audiological work-up is only the first step in determining rehabilitation needs. He encouraged the clinician to take into account the total communication needs of each individual as well as the motivating factors in seeking amplification. The emotional effects a hearing loss has on a client and the changes in the client's self-concept that occur with amplification must be considered as well.

The meeting was well attended and all were very grateful for the financial support provided by Siemens Hearing Instruments.

The meeting site was a rustic mountain setting. Fall colors were near their peak and many attendees took advantage of the hiking trails in the park. The setting and atmosphere was so attractive that Roan Mountain was unanimously chosen for the Fall 1984 meeting.

ADA Adopts Position Statement

(ED NOTE: On November 18, 1983 The Academy of Dispensing Audiologists Adopted the following Position).

The purpose of this position paper is to create a specific definition of the professional responsibilities and capabilities of a practicing Audiologist. It also presents ADA positions on related professional issues.

I. Hearing Loss & Audiologists

A. Hearing loss warrants concern both as a symptom of bodily dysfunction and as a potential communicative disability. The best interests of the public are served by recognizing that any person with a hearing loss that is determined not to be medically or surgically remediable should be under the management of an Audiologist.

B. An Audiologist may practice in a variety of professional settings. The Academy of Dispensing Audiologists recognizes the independence of Audiology as a profession whether practiced as a private enterprise or in association with hospitals, universities, or other related professionals.

C. The Audiologist is the best qualified professional practitioner to assume the responsibility for the non-medical habilitation/rehabilitation of the hearing-impaired person, including, but not limited to counseling of the hearing-impaired and their families, aural habilitation/rehabilitation, and the evaluation, selection and fitting of appropriate amplification and tinnitus masking instrumentation.

D. Of those professionals who generally provide services to the hearing-impaired, only the Audiologist is trained and experienced in planning and implementing a complete program of aural habilitation/rehabilitation. Therefore, the Audiologist should be the professional practitioner who carries out or supervises such a program.

E. A hearing aid is only one part of an overall program of aural habilitation/rehabilitation.

II. Auditory Tests

A. Although the information obtained through audiometric tests is frequently utilized by physicians to reach a medical diagnosis, such tests are not in and of themselves medical tests. As procedures for the evaluation of the auditory sensory modality, tests of auditory function can provide rehabilitation-specific as well as medically specific information.

B. Audiometric test batteries provide differentially diagnostic information that is vitally important in determining etiology and site-of-lesion of hearing loss.

C. The Audiologist is best qualified by training and experience to determine which acoustic and non-acoustic tests of the auditory sensory modality are appropriate in individual cases, to administer or supervise the administration of such procedures, and to provide such information to the patient's physician to assist in the medical remediation and/or treatment of the patient.

**IMPORTANT ISSUES
RESOLVED AT AAS
EXECUTIVE COMMITTEE
MEETING. (See Page 4)**

CORTI'S ORGAN is a publication of the American Auditory Society, processed in Dallas, Texas.

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CORTI'S CALENDAR

February 6-8, 1984

Primary Children's Medical Center will sponsor a conference at Snowbird, Utah, on advances in pediatric sensory evoked potentials as they apply to neonates and young children. Guest faculty include Kurt Hecox, M.D., Ph.D., Kenneth Nudleman, M.D., and Samuel Sokol, Ph.D.

For further information, please contact Michael J. Cevette, Primary Children's Medical Center, Speech/Language/Hearing Center, 363 12th Avenue, Salt Lake City, Utah 84103, (801)521-1680.

March 4-10, 1984

The 18th Colorado Otolaryngology-Audiology Workshop will be held March 4-10, 1984 at the Continental Inn and Aspen Conference Center in Aspen, Colorado.

For further information contact: Jerry Northern, Ph.D., Colorado Hearing Foundation, Box B210, 4200 E. 9th Avenue, Denver Colorado 80262.

June 6-9, 1984

Academy of Rehabilitative Audiology Summer Institute: Computers in Aural Rehabilitation. Watts Bar Dam, Tennessee.

Contact: Lloyd Graunke, Ph.D., 1008 Grace Drive, Johnson City, TN 37501.

June 24-28, 1984

The International Federation of the Hard of Hearing (IFHOH) arranges in cooperation with Hørselramjandets Riksförbund, Sweden "The 2nd International Congress of the Hard of Hearing" at Folkets Hus in Stockholm, Sweden.

More information of the Congress will be given by the Congress Secretariat, 2nd International Congress of the Hard of Hearing, c/o RESO Congress Service, S-105 24 Stockholm, Sweden. Telephone: +46-8-14 49 10.

August 26-30, 1984

International Congress of Audiology and American Auditory Society joint meetings, Santa Barbara CA.

Contact: Sanford E. Gerber, Ph.D., Chairman, Dept. of Speech, University of California, Santa Barbara, CA 93106.

October 21-22, 1984

Audiological Resource Association Fall Meeting Topic: "Aural Rehabilitation" Roan Mountain, Tennessee

Contact: Faye Churchill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama, 35209.

Letter From England

January 1st, 1984. I wish you and your readers, wherever they might be, a happy and prosperous New Year.

We hope you have been able to enjoy the festivities in your snowed-in 'igloo'. We have been worried about your weather.

But I am sure you have been well prepared for the weather as people in colder unfriendly climes. Why should we not be prepared against other threatening dangers? Would a shovel do where not even snowploughs can get through...?

In contrast we have been enjoying a comparatively mild December and the New Year has begun, at least climatically speaking, in a pleasant way also. Let us hope that it is a good omen in spite of the sinister reputation of the number '1984'. Our Prime Minister believes that Orwell's grim forecasts in his book '1984' were wrong.

The health services will have to brace themselves to considerable economies. What is even more alarming is the fact that more of the newly qualified doctors have been finding it difficult or impossible to get jobs. There are many old hospitals in London facing closure; some have perhaps reached the end of their usefulness. But it is a disturbing thought that one or two hospitals that have been looking so well after the victims of the recent bomb-outrage at 'Harrods' — known to visitors from the USA — may have to be abolished. In my opinion there could never be too many doctors and hospitals anywhere. Efficiency could, of course, be improved and wastage should be eliminated as also unnecessary treatment curtailed, but progress must not be retarded.

That good and indeed excellent work can be carried out under difficult conditions has been demonstrated once again, on a hospital-ship providing medical care near the Falklands in the Atlantic; over 700 wounded were treated on her and only 3 of them died. One of our naval colleagues served on the ship, a converted cruise liner. I was interested to note that the cockpit bar had to be converted into the path, lab.

A new audiological unit has been opened in my old hospital, the Royal National Throat Nose and Ear hospital in London and Professor Ron Hinchcliffe has been occupying there an up-to-date modern department of audiological medicine. The building houses the hearing-aid centre also. I am happy to have witnessed the great renaissance of otolaryngology in the last 35 years.

Countless publications have appeared and many excellent new journals have been founded. Nevertheless, the older established journals retain their leading position. This has been recognized in the person of the popular Editor of the Journal of Laryngology and Otolaryngology (England) Mr. John Chalmers Ballantyne by his appointment at CBE: Commander of the British Empire; one of the highest honours awarded by the Queen in this year's Honour's list. I am sure all John's friends and admirers all over the world will be delighted in his award so well merited.

Your readers might be interested that with John Ballantyne we have edited an 'Ultrastructural Atlas of the Inner Ear', with the active cooperation of many experts in this field including David Lim, Bob Kimura, Hanna Sobkowicz, I. Hunter Duvar, from the USA and Canada. The Atlas will be published by Butterworths in the near future.

Last year I have paid another visit to the House Ear Institute which has been refurbished and reorganized to house a paediatric unit for cochlear implantations under Bill House who has succeeded Howard as President of the Institute. Another example of relentless progress that has characterized the House Institute; also the ENT-department at the UCLA under Paul Ward and Vincente Honrubia.

I hope we shall both be able to continue observing the passing parade of our chosen specialties in PEACE.

Imre Friedmann

Inter-Noise Proceedings Available

The first of the well-known series of INTER-NOISE Conferences on noise control engineering was held in Washington, DC in December, 1972. Since the first meeting, eleven annual INTER-NOISE Conferences have been held in seven different countries, and world-wide interest in noise control technology has grown rapidly. The Proceedings of the INTER-NOISE series have been an important source of information on noise control technology for many years.

All of the Proceedings of past conferences are still available, and a reduced price is now available for a limited time for nearly all volumes. The list prices of these volumes have been reduced by 25%-35% until June 30, 1984. This is the last time that a complete set of INTER-NOISE Proceedings will be available.

A flyer which describes the volumes in the series and contains ordering information may be obtained from the Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, NY 12603, U.S.A.

**Computer Applications
Topic Of ARA Meeting**

The winter meeting of the Audiological Resource Association will focus on the use of computers in the audiology practice. Topics to be covered will include an introduction to computer terminology and concepts, hardware, configurations, a review of software, computer supplemented BSE testing, computerized hearing aid selection, adapting software to the audiologists need, business applications, and computerized industrial services. Bruce Weber, Ph.D., Duke University will also provide an update on Brain Stem Evoked Potential Testing.

The meeting was planned in recognition of the growing value of the computer to business applications as well as other aspects of an audiology practice. The group hopes to demonstrate the broad application of today's computers and dispel, to some extent, the common fear that complex training is required before one can work with a computer. The "USE FRIENDLY" design of current equipment allows one to quickly adapt a computer to suit the individual need of each practice. The participants will have an opportunity for "hands-on" experience to demonstrate this flexibility. Attendees are expected to raise their level of computer literacy — a definite requirement for survival in the 80's.

The meeting will take place in Gatlinburg, Tennessee, the traditional site for the group's February meeting. Gatlinburg is a beautiful resort town nestled in the Smokey Mountains. The abundance of quaint stores, craft centers and outdoor activities makes this a great site for a "working vacation".

Registration will be open to all interested individuals. However, register early as enrollment is limited to 100. Further information may be obtained from the ARA Secretary, Mary Faye Churchill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama 35209.

**G.A. Levow, Inc. To
Sponsor Downs Seminar**

G.A. Levow, Inc. is pleased to sponsor a seminar entitled "Otitis Media and Its Effect on Learning". The seminar scheduled for April 7, 1984 at the Aspen Hotel and Manor in Parsippany, NJ will be conducted by Marian P. Downs, M.A., D.H.S., Professor Emeritus of Otolaryngology-Audiology at the University of Colorado.

In addition to Mrs. Downs, Dr. Francis T. Deane, MD will speak on the medical aspects of otitis media. Three teachers from the Kinnelon, NJ Public Schools will discuss teacher observations of otitis media and its effect in the classroom and several parents will be on hand to provide observations from the parents' point of view.

For additional information or to obtain a registration form contact: Ron Gardrel, G.A. Levow, Inc., 44-48 Mechanic Street, Newton, MA 02164. 1-800-225-4270.

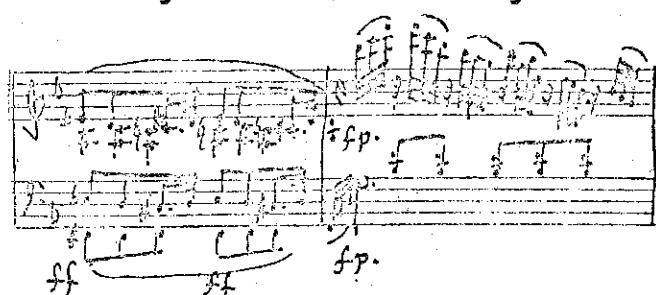
ABR Symposium Announced

A unique symposium will be held this Spring in Washington, D.C. Entitled "Clinical Problems and Issues in Auditory Brainstem Response Audiometry", this meeting will have invited guest speakers and no scientific papers. Its purpose will be to bring together 50-100 experienced users of ABR audiometry to permit the sharing of successes, failures, problems and questions.

The organizers of the meeting, Roger Ruth of the University of Virginia Medical Center and Bruce Weber of Duke University Medical Center, believe that often the most valuable portion of a workshop or scientific meeting is the informal interchange that occurs outside the structured meetings. Unfortunately, this exchange of information is usually very brief and haphazard. In an attempt to provide an alternative to conventional meetings, last spring Drs. Ruth and Weber organized an inexpensive two and a half day symposium aimed at the informal sharing of clinical information about ABR Audiometry. The meeting, on an invitation basis, attracted 100 clinicians from around the country. The symposium consisted of panel discussions. Because the size of the group was limited it permitted considerable interaction among the participants. The meeting was considered to be such a success that it will be held again this spring with an open invitation extended to any professional who is actively involved in clinical ABR audiometry. It will be held on May 25-27 in Washington D.C. For more information contact: Dr. Roger Ruth, Dept. of Otolaryngology, Box 430 University of Virginia Medical Center, Charlottesville, VA 22908.

"Beethoven's Deafness"

By E. Robert Libby



In each of the arts, there are a few figures who loom imposingly over all the others. Beethoven's name is the one which automatically springs to most people's minds if asked to name a musical composer.

Neither the practice of medicine nor for that matter, the practice of hearing aid fitting would be perceptibly affected by the knowledge or ignorance of Beethoven's deafness. Nevertheless very few illnesses have aroused such speculation and interest as his hearing loss. His grave was opened twice in an attempt to solve the riddle of his deafness.

Beethoven was born in Bonn, Germany, in 1770. He showed early musical genius. At age eight he gave his first concert. At 12 he was already publishing promising compositions.

Beethoven, who previously enjoyed exceptional hearing, began to experience deafness for high tones when he was 27 years of age. He complained of ear infections. In 1801, when he was 31 years old he stated in a letter to a friend: "Know that my noblest faculty, my hearing, has greatly deteriorated. When you were still with me I felt the symptoms but kept silent. Now it is continually getting worse. My affliction causes me the least trouble in playing and composing, the most in association with others."

Another letter also written in 1801: "My hearing has grown steadily worse for three years, my ears whistle and buzz continuously day and night. In any other profession, this might be more tolerable, but in mine such a condition is truly frightful...to give you some idea of my extraordinary deafness I must tell you that in the theatre I am obliged to lean close up against the orchestra in order to understand the actors, and when a little way off, I hear more of the high notes of instruments or singers."

If I am a little farther away, I do not hear at all. Frequently I can hear the tones of low conversation but not the sounds of the words and soon as anyone shouts it is intolerable."

Stevens and Heinenway describe Beethoven's symptoms: The left ear was the first to become involved, but soon became a bilateral high frequency hearing loss, associated with severe tinnitus. His discrimination appears to have been poor. Recruitment is suggested by his intolerance to loud sounds. He never had vertigo or purulent otitis.

Hearing Devices

It is of interest that Beethoven used various devices to aid his hearing. Despite his poor discrimination he made extensive use of ear trumpets. He has trumpets designed which were held in place by a special headband. The Beethoven Museum in Bonn has on display a number of ear trumpets which the composer is known to have used.

Gelleneau describes a wooden "drumstick," reputedly used by Beethoven, one end of which was held between the teeth and allowed hearing by bone conduction and suggests a conductive component to his hearing loss. It may be noted that sound conducted via the teeth may be a more efficient bone conduction route than that via the mastoid, or the skull, particularly for low frequency sounds.

Beethoven's deafness progressed until it became profound. Despite its severity, he continued to use his wooden drumstick and ear trumpets until his death, suggesting that his deafness never became total. One wonders how present day electronic amplifiers would have affected Beethoven's genius and changed the course of musical history?

The only efficient means by which Beethoven could communicate in his later years was by writing; for this purpose he used conversation books in which he left an invaluable record of his life. Of the 400 known conversation books, only 136 remain. His friend Shindler unfortunately destroyed most of them for possible political reasons.

It should be noted that his speech did not deteriorate and remained intact until the end.

Medical History

The cause of Beethoven's deafness still remains a mystery. Many theories have been advanced but none have been proven conclusively. Of the possible diagnoses, including syphilis, ty-

phoid fever and vascular insufficiency, only cochlear otosclerosis as a single otological disease can explain all the clinical symptoms and pathological findings. Larkin also favors the diagnosis of otosclerosis. In an entirely different view, Maiken views Beethoven's deafness in the context of Paget's disease of bone. The unusual physical characteristics — large asymmetrical head, large Olympian forehead, overhanging browns, thick fingers — all suggested Paget's disease.

Miller states we should consider trauma as a possible cause. The young Ludwig was forced by his greedy, drink-crazed father to practice hour after hour. At times the elder Beethoven would drag the young Ludwig out of bed and make him play until dawn. Blows on the head followed the slightest mistake caused by lack of sleep, cold or fatigue. Some of the complex mechanisms of auditory perception could be damaged by repeated blows at the temporal region close to the petrous position. Such cases are by no means rare.

The older view accepts that Beethoven's deafness was caused by syphilis. The view we suspect was responsible for much of the fascination evoked by the composer's hearing loss. The stigma of venereal disease adds of touch of tragedy.

In 1863 and again in 1888 the grave was opened and the skull was examined. Unfortunately Beethoven's temporal bones were missing.

The Psychology of Beethoven's Deafness

Anyone who has closely observed an adult soon after he has lost his hearing has noted that he becomes discouraged and struggles with feeling of depression. He may become suspicious of friends and family. He not only loses his communication ability, but suffers from a basic and severe psychological impairment. There is an undefined feeling of loss coupled with a vague sadness and insecurity. Beethoven had all these classic symptoms. The realization that he was threatened with deafness threw Beethoven into a depression which nearly drove him to suicide. His "Heiligenstadt Will," written for his brother in 1802, is an impressive and moving document of inner self conquest and rededication to music.

Deafness, of course, severely increased the suspicion and pride already natural to him. It finally all but severed his relations with the outside world. He was exposed to crass misunderstanding as he became increasingly engrossed in the inner world of his musical imagination. Social intercourse became increasingly difficult with friends and even more with constantly changing servants.

Goethe remarks about Beethoven's character: "One must forgive him and pity him for his loss of hearing, which is perhaps less harmful to him from a musical than from a social viewpoint. Never have I met such a concentrated, forceful and fervent artist. I can well understand that he has a strange relationship with the world." In his last years Beethoven was darkly moody and eccentric, and spend many long years in brooding solitude.

Relationship of Beethoven's Deafness and His Music

Allowing for the idle quality of curiosity, we must look beyond for a deeper cause of lasting interest in Beethoven's deafness. This clue may be found in the harsh irony of fate which deprived a musical genius of his sense of hearing. When the poet Milton became blind his daughter wrote and read for him. No one, however, could help Beethoven. Yet he still created immortal music.

Beethoven's symptoms first appeared in 1797. The first symphony was published in 1800. No hint of tragedy appears in it. Even as his hearing deteriorated and hope for improvement declined, he was busy preparing the ground work for his future creations. The sketches of the first three movements of the Fifth Symphony were begun around 1800. The Prometheus theme with which Beethoven concluded the Eroica was completed during this period.

The summer of 1802 was a critical one for Beethoven. There is little doubt that Beethoven was close to despair at this time over the calamity that had overtaken him. Despite his despair he was sustained by his art. Actually the affliction in no way interfered with his creative ability. It tended to isolate him from society and it increased his feelings of loneliness. It may explain in part why his longing reached out to nature and the universe more than to his fellow man for inspiration. The history of Beethoven's later years is almost entirely that of music. By 1810 when his deafness had isolated him, he had completed the Emperor Concerto and was engaged in the Seventh Symphony performed in Vienna in 1813.

By the time Beethoven composed what many consider his masterpiece, the Ninth Symphony, his deafness was a way of life. He nonetheless conducted the first performance of this work hearing neither music from the performance nor accolades from the audience.

Conclusion

Beethoven led an intense, sometimes anguished and agonizing, sometimes joyful, but always exciting and controversial life. All this is reflected in his music. He is buried in a quiet circle in Vienna's Central Cemetery, the final resting place for all of Vienna's famous composers and musicians. As would be expected, his monument dominates all others.

Perhaps his struggle against forbidding odds, more than the cause of his deafness, deserves deeper wonder and further exploration.

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E. Robert (Cy) Libby, is president of Associated Hearing Instruments, Upper Darby, PA.

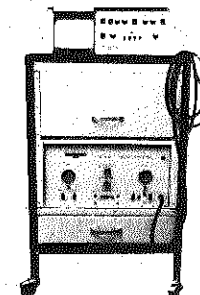
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Minutes Of The American Auditory Society Executive Committee Meeting

DATE: November 16, 1983

PLACE: Netherlands Plaza Hotel, Cincinnati, Ohio

TIME: 1:30 P.M.

MEMBERS PRESENT: Charlie D. Anderson, Lavonne Bergstrom, Earl Harford, Ed Johnson, Susanne Kos, Ralph F. Naunton, Ross J. Roeser, Hiroshi Shimizu, Don Worthington.

MEMBERS ABSENT: Bruce Graham, Malcolm Grahm, William Meyerhoff, James A. Nunley, W. Dixon Ward, Marion Downs.

GUESTS: Irvin Gerling, David Lipscomb, Deborah Hayes, Bruce Weber, Michael Seidemann, Robert Keith, Cy Libby, Phillip Bellefleur, Eugene Sheeley, Suzanne Brown.

1. President Anderson opened the meeting at 1:38 p.m.
2. The first order of business was to welcome the new Executive Committee members, several of whom were present at the meeting. The new members are:

- A. F. Owen Black
- B. Deborah Hayes
- C. E. Robert (Cy) Libby
- D. David Lipscomb
- E. James Pappas
- F. Michael Seidemann
- G. Wayne Staab

3. The minutes from the 1982 meeting of the Executive Committee were approved.

4. The treasurer's report from January-October, 1983 was discussed and approved with one change.

5. A report on the membership was given. The total number of members as of October 30, 1983 was 1319. Of these, 1173 (88%) are audiologists, 127 (10%) are otolaryngologists, and the remaining (2%) are in other categories. The promotional netted 264 members for 1983 and 1984, 212 were audiologists and 52 were otolaryngologists.

6. The 1984 meeting site was identified last year to be Santa Barbara. AAS will meet with the International Audiology Society. A committee was formed consisting of Lavonne Bergstrom, Cy Libby, Hiroshi Shimizu, and Don Worthington to identify the Carhart Memorial Award recipient for the 1984 individuals were identified and the Executive Committee voted on these two individuals. The recipient was contacted and agreed to present the Carhart Memorial Lecture in Santa Barbara. He is Gunnar Liden.

7. A discussion was held regarding the 1985 and 1986 meeting sites. It was decided that the 1985 meeting would be held in Atlanta with the American Academy of Otolaryngology/Head & Neck Surgery. David Lipscomb was identified as the Chairman for the Scientific sessions. Tad Zelski was identified as the Local Arrangements Chairman.

The 1986 meeting will be held in Detroit with ASHA.

8. Ross J. Roeser was appointed as Secretary/Treasurer for 1985.

9. Susanne Kos was appointed as Assistant Secretary for 1985.

10. A report on **Ear and Hearing** was given by Ross Roeser.

A. A statistical summary of the manuscripts received during the period 1980 through 1983 was reviewed. Overall 290 manuscripts were received during this period. During 1982 there were more manuscripts received than any other year, and there continues to be a healthy flow of manuscripts.

B. Appreciation was expressed to the Section Editors and Editorial Consultants. A listing of the Editorial Consultants appears in the November/December issue of the journal and Executive Committee members were encouraged to contact these people and express their appreciation for their work on **Ear and Hearing**.

C. Ken Startt, representative from the Williams and Wilkins Co., gave a financial review of the journal from the publisher's perspective. All indications are that the journal is on a sound financial basis and this implies that there will be no increase in the subscription rate for members in 1984 or 1985. Thus, there will be no increase in dues for this period.

D. A controversial manuscript was submitted to the journal in 1982. The issue was discussed with the Executive committee, which resulted in approval of the manuscript for publication.

E. The Executive Committee approved a transfer of \$1000.00 from the AAS account to the **Ear and Hearing** account.

F. The Editorial board will remain the same for 1984. For 1985 Ross Roeser indicated that he would relinquish the post of Editor-In-Chief and recommended that the Executive Committee accept Robert W. Keith's offer to serve in this position. After discussion a motion was made to accept Robert Keith as the Editor-In-Chief for a five year period. This motion passed.

G. At the meeting of the Editorial Board the presentation of Editorial Awards were discussed and several members indicated that they felt that **Ear and Hearing** should discontinue granting Editorial Awards for outstanding papers. Several opinions were given both for and against the granting of Editorial Awards. After this discussion it was moved that **Ear and Hearing** discontinue giving awards for outstanding papers that are published in **Ear and Hearing**. This motion passed.

11. Marion Downs had contacted President Anderson prior to the meeting and indicated that she wished to discontinue her post as the Editor of **Corti's Organ**. Suzanne Brown, Associate Editor for **Corti's Organ**, was present and indicated she would accept the post if the Executive committee would approve her. Following discussion she was appointed the Editor of **Corti's Organ**. She indicated that her plans were to keep the publication in its present form, but did want to make several changes including changing the Regional Editors, publication of more information on national events, and trying to bolster advertising in the newsletter to offset costs.

12. It was brought to the attention of the Executive Committee that since AAS had been in existence for 10 years it now was possible for members of the Society who had attained the age of 70 years and had held membership for 10 consecutive years to become Life Members of the Society. In order to do so the candidate must contact the Secretary/Treasurer and request Life Membership. An announcement will be placed in **Corti's Organ** to inform members of this.

13. Several Chairmen gave committee reports.

A. **Committee on Committees** — Ralph Naunton reviewed the activities of the Committee on Committees since the 1982 Executive Committee Meeting. He indicated that his committee had identified several standing committees of the Society including a Committee on Standards, Membership and Credentials Committee, Public Relations Committee, Long Range Planning Committee, Program Committee, and Annual Meetings Committee. The recommendation of these committees was submitted to President Anderson.

President Anderson indicated that he and Ross Roeser met in June to discuss these possible committees and felt that three Committees should begin their activities immediately. These committees were the Membership Promotions Committee, Standards Committee, and Credentials Committee. Chairmen of these three were identified and accepted the posts.

B. **Membership/Promotion Committee** — Don Worthington was appointed the Chairman of the Membership/Promotions Committee. He indicated that his committee would like to develop a display for the Society and have it placed at national meetings to attract new members. He had contacted representatives from ASHA, AAO, and the National Hearing Aid Society to estimate costs and found it would cost between \$130.00-\$560.00 to obtain a booth at these meetings. After discussion it was decided that AAS would construct an exhibit to display at meetings. The first meeting targeted was the International Audiology Society in Santa Barbara in 1984. It was also decided that in 1984 the Society would send out a promotional similar to past years to the professionals in the education of the deaf. The budget set for promotional activities for 1984 was \$3,600.00.

C. The **Standards Committee** will be chaired by W. Dixon Ward. He was not present for the meeting, but through correspondence indicated that he would accept the Chairmanship. Whether AAS should have a Standards Committee, and the exact function of the committee was discussed, and after discussion it was agreed that this was a major change in the direction of the Society and should be approached cautiously. One proposal has been made to write a standard on impedance screening and it was decided that AAS would pursue this particular endeavor. It was also suggested that the Committee explore avenues for AAS to be included on various writing groups.

D. The **Credentials Committee** will be chaired by Susan Kos. She indicated that she and one other member have viewed all applicants since the 1982 Executive Committee Meeting. She has categorized the members into those with sponsors' signatures, those without sponsors' signatures who belong to ASHA or AAO, and those without sponsors' signatures who do not belong to ASHA or AAO. In total there were 275 new members approved for 1983, and this list will be published in **Corti's Organ**.

After reviewing the activities of the three committees it was decided that a Long Range Planning Committee was needed and President Anderson appointed Ralph Naunton as the Chairman of the committee.

14. The possibility of purchasing video equipment to tape the annual meeting was discussed. It was pointed out that having video equipment would allow the Society to tape meetings, including the Carhart Memorial Lecture, for distribution to the members who could not attend and for historical reasons. After discussion it was felt that this should be taken up for the 1984 meeting in Santa Barbara to determine its merit prior to equipment purchase. Earl Harford volunteered to coordinate this project.

15. The Society received a letter requesting its participation in Better Hearing and Speech Month. It was unanimously agreed that this is a highly worthwhile endeavor, but due to the costs involved more thought was needed on becoming a sponsoring organization for this activity. The Society has sponsored any other organization to date.

16. A representative from the CRS Amplifon Award contacted the Society just prior to the meeting and asked for support of a candidate. This year's prize will be awarded to a clinician/researcher in the area of the vestibular system. Awards Committee has already identified a possible candidate and requested that the Society concur with the selection. It was pointed out that this is a worthwhile activity but due to the short notice given to the Society, the Society would not suggest additional names. It was also stated that AAS should ask the CRS Amplifon Committee to contact the Society earlier so that serious thought can be given to a candidate.

17. Recognition was given to the Beltone Distinguished Teaching Award activities that were to be held at this year's annual meeting. Although some possible conflicts were pointed out, it was felt that this is a worthwhile activity and should be supported by AAS.

18. President Anderson recognized the departing Executive Committee Members. These included Malcolm Grahm, Bruce Graham, Ed Johnson, Ralph Naunton, and Hiroshi Shimizu. He expressed his deep appreciation for their work and efforts that have been put forth for the Society.

19. There being no other immediate business the Executive Committee adjourned at 5:37 p.m.

AMERICAN AUDITORY SOCIETY Statement of Income and Disbursement for 1983 10/31/83

Revenues

1. Prepaid Membership dues (587 total)	\$20,545.00
2. Membership dues for 1983	23,331.00
3. Interest on checking and savings accounts	1,349.00
4. Convention income	4,724.00
5. Selling Mailing list	80.00
*posted through 9/15/83 only	
TOTAL	\$50,029.00

Expenses

1. Expensible supplies	\$1,288.00
2. Office equipment	384.00
3. Postage for office	1,035.00
4. Postage for Corti's Organ	460.00
5. Printing and duplicating	277.00
6. Telephone	447.00
7. Travel-office	254.00
8. Corti's Organ costs	2,359.00
9. Bookkeeping and audit	135.00
10. Contract services-office	949.00
11. Contract services-Corti's	512.00
12. Convention expense-1982	460.00
13. Convention expense-1983	2,277.00
14. Supplies and equipment-Corti's	157.00
15. Secretary/Treasurer allowance	1,800.00
16. Ear and Hearing Costs	30,829.00
17. UTD Indirect Costs	65.00
18. Foreign check charge	7.00
19. Promotional for 1983	3,283.00
20. Credentials Committee	168.00
TOTAL EXPENSES	\$47,146.00

NET INCOME **\$2,883.00**

Assets	
Checking	\$11,396.00
Savings	\$24,494.00
	\$35,890.00

Minutes of the Ear And Hearing Editorial Board Meeting

DATE: November 16, 1983

PLACE: Cincinnati, OH

MEMBERS IN ATTENDANCE: Phillip A. Bellefleur, Irvin J. Gerling, Deborah Hayes, Robert W. Keith, Ross J. Roeser, Eugene Sheeley, Hiroshi Shimizu, and Bruce A. Weber.

MEMBERS ABSENT: William Meyerhoff

OTHERS IN ATTENDANCE: Charlie D. Anderson, President of AAS, Ralph Naunton, Executive Committee.

1. The meeting began at 10:40 A.M.

2. The meeting began by reviewing statistical summaries showing manuscripts submitted for the period January, 1980 to September, 1983. The first summary showed the cumulative number of manuscripts received during this period. The date indicated that there had been 290 manuscripts submitted to **Ear and Hearing** during this period. The second analysis showed the cumulative manuscripts received by month. It was clear that in 1982 more manuscripts were submitted than other years. However, there continues to be a healthy flow of submitted manuscripts, with 70-80 expected manuscripts to be submitted in 1983.

The next two statistical summaries reviewed the status of the 1983 manuscripts. The primary information from these summaries was that the regular section received the most number of submitted manuscripts, the electrophysiologic and speech sections received the greatest number of manuscripts of the sections, and the otology and hearing education sections have yet to receive any submitted manuscript for 1983.

3. Ken Startt, Vice President for Periodical at the Williams and Wilkins Co., and the publishers representative for **Ear and Hearing**, gave a financial report. Circulation has increased significantly in the past year, making the financial outlook for the journal excellent. Based on projections, it was indicated that there will be no increase in publication costs for 1984 or 1985.

4. Plans for 1984 and 1985 were reviewed. It was stated that for 1984 the Editorial Board would remain the same. Ross Roeser indicated that he planned to vacate the post of Editor-in-Chief after Volume V (1984) had been completed and recommended that Bob Keith be appointed to this post. It was indicated that this was an Executive Committee decision and would be discussed later in the day during the Executive Committee meeting.

5. A discussion was held on the editorial Awards for Outstanding Papers. There was concern raised regarding the awards in general and several members of the Editorial Board indicated that they would prefer not giving awards. After discussion, this issue was put to vote and there were four in favor and four against giving awards. It was decided that the issue would be discussed at the Executive Committee meeting later in the afternoon, as it was an Executive Committee decision to give the awards.

6. A list of the Editorial consultants for the 1983 journal was provided to each member to review. One change was made. It was stated that the Editorial Board should express their appreciation to their Editorial Consultants for the work they have done with the journal.

7. Each Section Editor gave a report on the section which he/she edited. The only major concern raised was that two sections, the Audiology in Hearing Education and New Developments in Otology sections, were not receiving any submitted manuscripts. Based on this, it was decided to recommend to the Executive Committee that next year the deaf educators be targeted to receive promotional material on the Society. Bill Meyerhoff had written a letter to the members of the Society of Academic Otolaryngologists in September, but it is too early to determine the effects of this action.

8. A controversial manuscript was submitted to the journal in 1982. The manuscript involved a comparison of manufacturers' products and found that one product was not rated as high as it was advertised. After discussion, the Editorial Board unanimously approved the publication of this manuscript.

There being no other business the meeting was adjourned at 12:10 p.m.

New members accepted to AAS

Carol L. Andersen
Peter N. Arkis
Robin E. Auerbach
Jewell M. Baggett
Barbara Barsook-Schwartz
Lillian E. Beasley
Brenda Bloom
Margaret Bonner
Patrick E. Brookhouser
Earl J. Brown
Peggy Buckwalter
Seth Budney
Frank M. Butts
Rebecca R. Camden
Christopher T. Campos
Arlene E. Carney
Keith Chiveralls
Gerald Church
Christina C. Clarke
Jeffery A. Cokely
Catheryn L. Comstock
Sara E. Conlon
Sr. Marie E. Copeland
Teresa Crumpton
Patricia Cubells-Finnerty
David G. Cyr
Larry G. DeBernardo
Marilyn E. Demorest
Judi Denenberg
Mark S. Dobkin
William D. Domico
Kenneth Donnelly
Sue Ann Erdman
Salli Elena Eve
Alexis O. Fernandez
Lawrence L. Feth
Pat Foreman
George J. Frye
Sandra Abbott Gabbard
Robert Gene Garcia
Karen Rynish Glay
Michael P. Gorga
Mary Ann Gossman
James W. Hall, III
Patricia T. Hansen
David J. Harbrecht
Mary Margaret Hathoot
Debra Lynn Hildebrand
Michael L. Hill
Claude B. Hoffmeyer, Jr.
Rhonda Gayle Hooks
Linda Jacobs-Condit
Karen A. Jakubczak
Thomas S. Joseph
Susan Liff Kennedy
Ronald Allen Kirschner
Dawn Burton Koch
Alice Kreisle
Barbara L. Kurman
Paul R. Lambert
Lori L. Larson
Joan Leavitt
William E. Lentz
Harry Levitt
Dixie Frasier Lilley
Penny Lucier
Paul Madsen
Ann Maisch
Marsha McClean
William H. McFarland
Laura E. McNutt
Dianne H. Meyer
Joshua Millar
Jane L. Moore
Susan H. Morgan
Steven W. Morris
Catherine A.W. Mrema
Anne Mulvena
Benjamin T. Newman
Per Nilsson
Michael B. Nolph
Gwendolyn M. O'Grady
Walter C. Otto
Janice E. Painter
George W. Pay
Tonda S. Pierce
Mark P. Porter
Lloyd L. Price
Christiane Provencal
Joseph K. Quartuccio
Sharon Beall Rapp
Diane Rines
Franklin M. Rizer
Jeffrey B. Rubinstein
Marian N. Sarosi
James T. Schilling
H. Christopher Schweitzer
Michael Setzen
Christine Sikorski
Shlomo Silman
Joseph D. Sparks
Howard K. Tamashiro
Diane C. Tiernan
Carole W. Tomassetti
Donna Sue Trapp
Peter J. Troesch
Christopher W. Turner
Kathleen J. Valenta
Joan F. Verhoef
Thomas F. Viner
Michael C. Vivion
John W. Wagener
Roger J. Walters
Kevin C. Webb
Donald S. Willett
Joseph E. Wolfer
Scott Wood
Stanley Zerlin
Bruce A. Allen
George W. Allen
Sylvia Allen
Marty Ann Apa
Senekerim Armagan
Paul M. Baccaro
Judith G. Ballow
Jane A. Baran
Craig T. Barth
Anne Basile
Michele Bassett
Robert P. Bavosi
Wallace P. Berkowitz
Daniel P. Bode
Thomas W. Boyle
Douglas G. Brown
Steve L. Brown
David J. Cieliczka
George H. Conner
Richard W. Danielson
Mary Danko-Burch
Jeffrey W. Davies
Nancy Dickey
June DiMateo
Martha E. Drummond
Robert J. Dunlop
J. Craig Edgerton
Capt. John H. Elmore
Sorrel E. Fagel
Sidonie Lankford Faire
Julie R. G. Feldman
Peter Feudo, Jr.
Pamela J. Fiebig
Sidney H. Fieman
Marianne Fisher
Gordon L. Fletcher
Kenneth J. Gerhardt
Richard H. Goldsborough
Dorothy E. Grant
Jennifer L. Gray
William W. Green
Alison M. Grimes
Anne E. Haihs
Mary E. Hallmark
Capt. Loren Stephen-Hart
Joel D. Hartinger
Joseph F. Henne
Capt. Brian J. Hill
Karl Hoover
Holly Hosford-Dunn
Susan M. Hyman
Herman Arthur Jenkins
Lynn M. Jones
Claire Kilcoyne
Harry Lee King
Michael W. Koskus
Georgette Koszczuk
John F. Kveton
James M. Labiak
Maryann LaFosse
Noelle L. Lamb

Carol A. Lambert
Capt. Jay W. Lehman
Richard M. Levinson
Eusebio G. Lim

Susan W. Lloyd
Beth Ann Longnecker
M.B. Lopez
Robert H. MacPherson
Deborah M. Manchester
Patricia G. Masticola
Mardi Jacobsen Mauney
James F. Maurer
Marie McCann
Adehne C. McClatchie
John W. McClellan
Pamella M. McMillan
Gorden T. McMurry
Maryanne Damanski Messineo
Deborah W. Miller
Geri Miller
Melvin D. Miller
Gerbert I. Moselle
Major Michael J. Moul
Linda K. Moulin
H. Gustav Mueller
Phillip W. Myers
Ann Birns Newman
Karen Rowland Newton
Paul S. Niswander
Robert G. Norton
Ardell E. Olson
Jane L. Omer
Eugene Ouellette
Mary Ellen Owen
Constance Paul
Judy Herz Peter
Dean Platis

Paul E. Poenisch
William J. Powell
Eileen A. Puterskil
Frederick A. Rahe
Melinda Redmon
Patti Reichle
Marilyn E. Reilly
Marilou G. Ruble
Beverly Schnabel
Eve J. Schneider
Joanne Schupbach
Marge Schurr
Robin N. Schwartz
Helen Sheban
Gregory B. Sheets
Marjorie R. Sherman
Joan M. Siegel
Ellen Carlton Sloan
Andree D. Smith
Arlene Smith
Susan Elizabeth Smock
Lakshmi V. Sonti
Mark T. Spears
Barbara H. Sprague
Jane F. Steckler
Barbara S. Stroer
Daniel S. Summerhays
Ellen Surowitz
William G. Sybesma
Richard Vallandingham
Robin H. Vaughan
Valerie A. Vornheder
Michael O. Webb
Barbara Weinstein
Rosalie A. Westerhold
Richard Winkelaar
Steven Wolinsky
Kathleen P. Young

ADA ADOPTS

cont. from page 1

III. Procedural Statements

- The Academy of Dispensing Audiologists supports the position that the Audiologist is the person best qualified by training and experience to perform or supervise the management of persons with non-medically treatable hearing impairments.
- The Academy of Dispensing Audiologists supports that provision of the U.S. Food and Drug Administration regulations concerning hearing aids that encourages persons considering the purchase of hearing aids to have a medical examination prior to such a purchase.
- It is in the interest of individuals suffering from Tinnitus that they undergo thorough otological and audiological evaluations prior to being considered a candidate for tinnitus maskers or hearing aids.
- Public health or industrial health programs which concern themselves with the prevention or management of noise-induced sensorineural hearing loss should be under the supervision of an Audiologist or physician trained in hearing conservation and the organization and administration of such programs.

IV. Certification & Licensing

- The requirements for the Certificate of Clinical Competence in Audiology of the American Speech-Language-Hearing Association are the most comprehensive audiological training standards currently in effect and should be references as part of national or state licensing or service provision regulations.
- The Academy of Dispensing Audiologists supports the licensing of Audiologists on the grounds that licensing enables the public to identify qualified professionals capable of assisting them in the non-medical management of hearing impairments.

V. Public & Professional Education

- The Academy of Dispensing Audiologists supports communication with unions, management, negotiators, Medicaid, Medicare, governmental agencies, television, and radio programs and personalities, newspaper columnists, state and national legislators, research organizations, public service organizations, and the public, to inform them of the ability of audiologists to advise and assist in any matters dealing with the non-medical management of hearing loss.
- The Academy of Dispensing Audiologists supports the efforts of any professional or public interest organization to increase the knowledge and understanding of its members regarding audition, Audiology, and rehabilitation of the hearing-impaired.

BRINGING UNITY TO AN INDUSTRY

Beltone Electronics Corporation recently embarked on a program aimed at bringing together all facets of the hearing health care field.

In 1981, Beltone President Lawrence N. Posen announced that Beltone had begun a search for the most outstanding professor of audiology in the United States and Canada. Beltone planned to honor that instructor with national recognition as well as a cash prize and a scholarship for a graduate student at the winner's university.

Posen's daughter, Laura, directed the program. She placed ads in national trade journals, various student newspapers and educational publications. Posters were sent to schools, along with letters urging the deans and department chairmen to help in this search. Nominations, however, would be accepted only from students.

Eleven Judges Chosen

Next, a panel of judges was chosen including a number of researchers, scholars and audiologists.

Students who responded to the publicity were sent a nominating package which included a form on which they were to tell why their instructor is the most deserving recipient of the Beltone Distinguished Teaching Award in Audiology, as it was named.

Nominations came from 22 states. Fifty-six teachers were nominated, most of them by more than one student. Some of the reasons cited were:

"His teaching methods are innovative, utilizing any and all available references to focus the student's understanding toward a particular system. He is extremely well informed and presents his students with state-of-the-art research. He is totally available to his students as a guide and as a caring instructor."

"His foremost concern as a professor is the intellectual growth of his students. His teaching responsibilities always take precedence over administrative duties and research interests. His lectures are consistently well organized and understandable and his examinations are well conceived and challenging."

"He encourages support rather than competition among the graduate students in audiology."

"His enthusiasm and interest in the subject of audiology is overwhelming and contagious. The depth of his knowledge of the subject is amazing. His terrific desire for students to understand and learn all material completely is reciprocated by students' desire to learn."

In addition to recommendations from students, deans, department chairmen and the usual list of vita and publications, the judges of the Beltone Teaching Award competition required nominees to submit a 400-600 word essay on "The Importance of Teaching to the Future Development of Audiology." The judges met in Chicago for two days, reading the essays and nominating forms and debating the merits of each nominee.

The winner that first year was Dr. Zahrl G. Schoeny of the University of Virginia. Schoeny was then invited to serve as a judge for the following year's competition.

Some very slight changes were made as the program entered its second year. A second and third place award were added, as was a student representative to the council of judges. The rest of the program remained intact, attracting nominations of 24 instructors the second year. The second year winner, as announced at the annual convention of the American Auditory Society November 17, was Dr. Terry L. Wiley of the University of Wisconsin at Madison. Tying for second place were Dr. Jay W. Sanders, Vanderbilt University School of Medicine and Dr. Frederick N. Martin of the University of Texas at Austin.

In the essay Dr. Wiley wrote for the Beltone teaching award competition, he addressed the problem of the "information gap," the disparity that exists today between published scientific evidence and clinical practice. He stressed the importance of people in practice sharing ideas and findings with the professional community, systematically recording both ideas and observations on which to base future research and ideas.

"The future of audiology as a profession," Dr. Wiley wrote,

"depends on close communication between scientists, clinicians and teachers."

Mr. Posen presented Dr. Wiley \$1,000, a plaque and a \$1,000 scholarship for a student at his school. The student who nominated him received \$100. Beltone will hold a banquet in Dr. Wiley's honor at the University of Wisconsin early in 1984.

"Selecting a winner this year was extremely difficult," Mr. Posen told the American Auditory Society gathering. "In fact, once the judges narrowed the competition to three finalists, they wondered if it was even possible to select one over the other two. They did, in fact, ultimately select a winner, but they declared a tie for second place."

Dr. Sanders and Dr. Martin, the runners-up, each received \$750, engraved bronze plaques and \$1,000 scholarships for students in their universities' audiology departments. The students who nominated them received \$100.

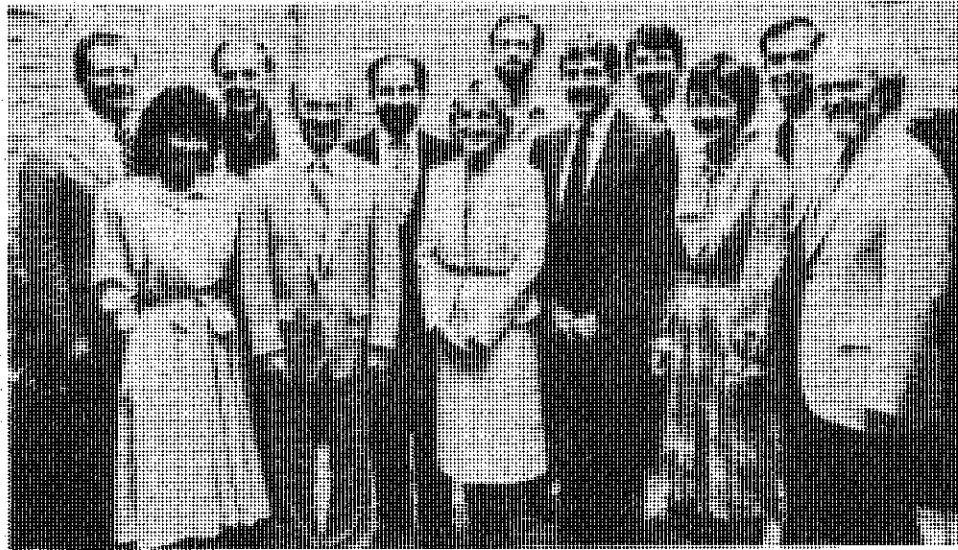
The chairmen of the Vanderbilt Department of Audiology, Dr. Fred H. Bess, wrote that Dr. Sanders "motivates students to search, inquire and go beyond what is given in class."

Beltone Proud of Program

Beltone's management has expressed considerable pleasure, in fact, amazement, with the outpouring of support the company has received in response to the Beltone Distinguished Teaching Award in Audiology program. Mr. Posen considers this association with the professional community a vital link to continued growth and success for helping the hearing impaired public.

In its first two years, the Beltone Teaching Award has already made inroads into familiarizing educators, researchers and students with the hearing aid side of the industry. It is an effort that Beltone plans to continue, interacting closely with all hearing disciplines.

The search for the 1984 Beltone Distinguished Teaching Award in Audiology will begin in February. Anyone wishing more information should contact Joan Siegel, Manager, Beltone Professional Relations, Beltone Electronics Corporation, 4201 West Victoria Street, Chicago, Illinois 60646, or call (312) 583-3600.



1983 BELTONE DISTINGUISHED AUDIOLOGY TEACHER JUDGING PANEL

(front row) LAURA POSEN, BELTONE PROJECT COORDINATOR; ARNOLD SMALL, PhD, UNIVERSITY OF IOWA; MARY E. KAWELL, UNIVERSITY OF ILLINOIS; DAVID J. LILLY, PhD, GOOD SAMARITAN HOSPITAL; JUDY A. RASSI, M.A., NORTH-WESTERN UNIVERSITY; DAVID M. LIPSCOMB, PhD, UNIVERSITY OF TENNESSEE. (back row) DON WORTHINGTON, PhD, BOYS TOWN; LAZLO STEIN, PhD, MICHAEL REESE MEDICAL CENTER; DAVID P. GOLDSTEIN, PhD, PURDUE UNIVERSITY; ZAHRL G. SCHOENY, PhD, UNIVERSITY OF VIRGINIA; ROSS ROESER, PhD, CALLIER CENTER FOR COMMUNICATIVE DISORDERS; BRUCE WEBER, PhD, DUKE UNIVERSITY.



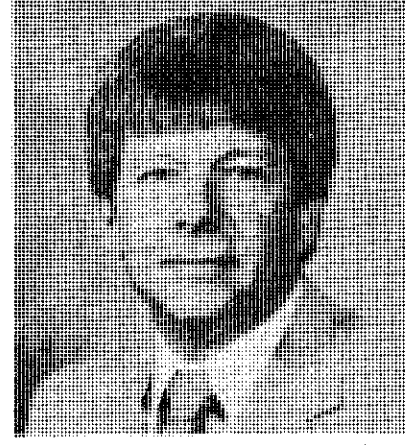
A full day of discussion and debate took place among the judges at Beltone headquarters in Chicago.



Dr. Sanders tied for 2nd place in the 1983 Beltone Distinguished Teaching Award in Audiology.



Dr. Martin tied for 2nd place in the 1983 Beltone Distinguished Teaching Award in Audiology.



Dr. Wiley, winner of the 1983 Beltone Distinguished Teaching Award in Audiology.

CONVENTION 1983



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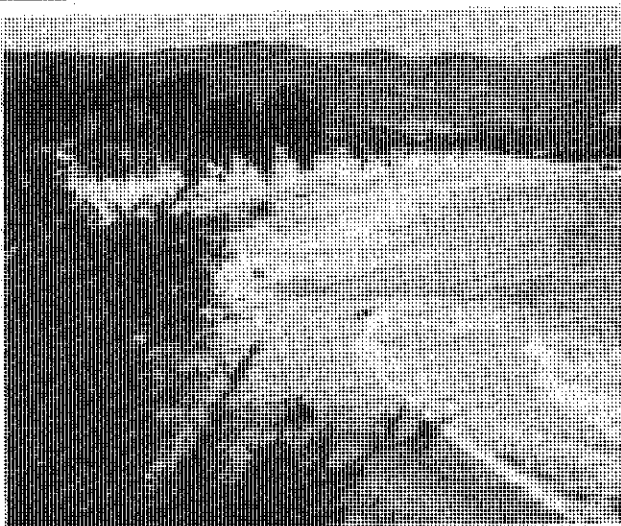


CORTI'S ORGAN

The Official House Organ of The American Auditory Society

Vol. 9, No. 2

Spring/Summer 1984



Audiology Congress and AAS to Meet in Santa Barbara August 26th

The 17th International Congress of Audiology convenes on the campus of the University of California, Santa Barbara, on August 26th, 1984. This is a significant event for the auditory sciences in North America because this congress has met in the U.S. only once before, in Dallas in 1970. It should be noted that the International Congress of Audiology is the only international meeting dealing with the subject of audiology in the most general sense. This 17th Congress, which is the biennial meeting of the International Society of Audiology, incorporates the 1984 meeting of the American Auditory Society. All aspects of the hearing sciences are contained within this four day meeting.

The Congress will have four plenary Round Table sessions. These are: (1) Etiology and prevention of hearing loss, chaired by Dr. Gisle Djupesland of Norway; (2) Audiology in developing countries, chaired by Dr. Tore Lundborg of Sweden; (3) Morphology and physiology of cochlear hair cells, chaired by Dr. Ake Flock of Sweden; (4) Psychoacoustics of the cochlear implant, chaired by Sanford E. Gerber of the U.S. Dr. Gerber is the president of the 17th Congress chosen by the general assembly of the International Society of Audiology at its 16th Congress held in Helsinki, Finland in May of 1982. In addition to the four plenary Round Table sessions, the organizing committee is preparing three special contributed sessions: one on standardization of the criteria for the auditory brain stem response, a second on middle ear implanted hearing aids, and a third on microcomputer electroacoustic analysis of hearing aids. Contributed papers dealing with the areas of audiology will be presented each afternoon.

The members of the organizing committee, in addition to Dr. Gerber, are: Jeffrey L. Danhauer, Ph.D., Vice President; Monica C. Goller, M.A., 2nd Vice President; Jorge A. Schwartzman, M.D., Vice President for Latin America; Maurice I. Mendel, Ph.D., Secretary General; and Gregory S. Keller, M.D., Medical Liaison. The organizing committee hopes that a large number of colleagues from Spanish speaking countries, notably Mexico and in South America, will participate in this congress. Consequently, the organizing committee has arranged for simultaneous translation into Spanish of the plenary sessions and the business meeting of the International Society of Audiology. Furthermore, each Round Table session has a Spanish speaking secretary: they are Dr. Jorge Schwartzman of Argentina, Dr. Jose Barajas of Spain, Dr. Luis Benitez of Mexico, and Dr. Pedro Berruecos of Mexico.

The venue for the 17th Congress is the campus of the University of California at Santa Barbara. Of course, many readers of Corti's Organ have visited UCSB in the past, and are aware of the beautiful site and the excellent accommodations. Santa

Barbara, as many of our readers know, is the "Riviera of the Pacific" and the university campus is located on the ocean shores. Registration is \$200 with accompanying persons paying \$25. Student registration is \$100. Housing will be provided at an extraordinarily low cost in university dormitories. The flat fee per person in a double occupancy room is \$300 for the entire congress, and that includes all meals incorporating the official banquet of the society and the welcoming fiesta. Considering the quantity and quality of the food, and the festive atmosphere, one can hardly stay home for that small sum. Advanced registrations for the congress as well as for housing are due by July 1, but the organizing committee will continue to accept them after that date. It is difficult and expensive to obtain hotel and motel accommodations in Santa Barbara, especially at that time of year; hence, those wishing such accommodations, really need to arrange for them instantly.

This will be the American Auditory Society's only meeting in 1984. It is the society's distinct pleasure to participate in the meeting of the International Society of Audiology and to consider its biennial congress our meeting. We will sponsor, as usual, the Carhart Memorial Lecture during the International Congress of Audiology. This lecture will occur on Tuesday evening, August 28, and our lecturer will be the distinguished Swedish scientist, Dr. Gunnar Liden. We will also have our Executive Committee Meeting during the course of the International Congress. The American Auditory Society urges all of its members to attend the 17th ICA at its 1984 meeting on Sunday afternoon.

New Telecommunications Devices Aid Hearing Impaired

A remarkable variety of new telecommunication devices make it easier than ever to communicate electronically with hearing-impaired people — whether they're right around the corner or as distant as New York or San Francisco.

Telecommunication devices for the deaf (TDDs) grow in popularity daily. A TDD lets a hearing-impaired person communicate directly, without the need for an interpreter. Both people need to have a TDD. Instead of speaking, they simply type their conversation from one machine to another. Here's a brief summary of how TDDs can help hearing-impaired people. This information was adapted from *Telephone Training for the Deaf* by Dr. Diane L. Castle (publisher: Alexander Graham Bell Association for the Deaf, Washington, D.C.).

Selecting a TDD

Choosing the right TDD depends on a person's needs; how they'll use the unit and where they'll use it. For example, if the deaf person has vision problems, a TDD with large, clear print is preferable. If space is limited in a home or office, a small TDD that is quiet may be better. Before buying a TDD, it's best to try out different models.

TDDs can be portable, semi-portable, or stationary, depending upon a person's needs, and can cost from \$150 to \$1,000 depending upon a person's needs, and can cost from \$150 to \$1,000. Some have a paper printout, and other have paper on a one line screen.

More information about TDDs is available from other deaf TDD users and Telecommunications for the Deaf, Inc. (TDI), 814 Thayer Ave., Silver Spring, Md. 20910. TDI is a non-profit organization with regional representatives to inform hearing or hearing-impaired persons about different TDDs and couplers and how to get them. Also, TDI publishes a special telephone directory listing phone numbers of TDD users in the United States and overseas.

A new, six-page brochure, "What You Should Know About TDDs," talks about new trends in TDDs, such as voice output, touch-tone signals, telephone lamp-flashers, and printers. It also contains a list of suppliers who can provide more complete product information. For a free copy write: Public Information Office, National Technical Institute for the Deaf, One Lomb Memorial Drive, P.O. Box 9887, Rochester, N.Y. 14623.

1984 AAS MEMBERSHIP DIRECTORY BEGINS ON PG. 3

PLEASE NOTE!

Due to mailing delays, the IAC/AAS meeting notice was delayed. Registration will be accepted until July 1st without a late fee. For further information contact Sandy Gerber, Ph.D., Speech & Hearing Center, University of California, Santa Barbara, California 93106.



Ross Roeser



Robert W. Keith

Ear and Hearing Changing Hands

After five years as Editor-In-Chief, Ross Roeser is turning over his command to fellow AAS member Robert W. Keith. The AAS executive board approved the decision at its Executive Committee Meeting last November and the change will be effective with Volume VI.

Ear and Hearing, as we are all aware, has evolved into a premier professional journal in our field, and all those involved expect nothing but continued growth and success in the years to come.

Thanks, Ross, for a job well done and welcome aboard to Bob Keith.

Contributors should now submit their papers to Bob for future editions.

Gallaudet President Resigns

Washington D.C. — Jane Bassett Spilman, chairman of the Board of Trustees of Gallaudet College announced today that at its January meeting the Board accepted the resignation of Dr. W. Lloyd Johns, fifth president of Gallaudet, effective January 20, 1984. Dr. Johns became Gallaudet's president officially in October of this past year following the presidency of Dr. Edward C. Merrill, Jr. Dr. Johns came to Gallaudet College from California State University at Sacramento where he served as president for five years. He has resigned for personal reasons, and the Board extended its wishes to him for success and happiness in his future endeavors.

Dr. Jerry C. Lee, vice president for business and administration at Gallaudet, has been named interim president. He will be assisted by a management review committee established by the Board of Trustees. The Board is initiating the search process to recruit and select Gallaudet's sixth president. The search committee will begin its work February.

Dr. Lee began his career at Gallaudet 13 years ago. Before that time he served as vice president for administration for the Commercial Credit Industrial Corporation. He received his doctorate from the Virginia Polytechnic Institute and State University and attended law school in Maryland. He is widely published in the area of administrative law and holds the rank of associate professor with Gallaudet's Collegiate Faculty. He has requested that he not be considered a candidate for the presidency, and the Board intends to honor this request.

Gallaudet College, located in our nation's capitol, is a multi-purpose educational institution service deaf people through educational programs, public service, and research. Since it was established by Act of Congress in 1864, it has grown and changed to meet the needs of succeeding generations of individuals with hearing impairments. What has not changed is Gallaudet's commitment to its mission to serve the deaf children, youth, and adults of this nation, to help bridge the gap between hearing the deaf people, and to be a resource on deafness to other educators from around the world.

CORTI'S ORGAN is a publication of the American Auditory Society, processed in Dallas, Texas.

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CORTI'S CALENDAR

June 6-9, 1984

Academy of Rehabilitative Audiology Summer Institute: Computers in Aural Rehabilitation. Watts Bar Dam, Tennessee.

Contact: Lloyd Graunke, Ph.D., 1008 Grace Drive, Johnson City, TN 37501.

June 24-28, 1984

The International Federation of the Hard of Hearing (IFHOH) arranges in cooperation with Hørselramjandets Riksförbund, Sweden "The 2nd International Congress of the Hard of Hearing" at Folkets Hus in Stockholm, Sweden. More information of the Congress will be given by the Congress Secretariat, 2nd International Congress of the Hard of Hearing, c/o RESO Congress Service, S-105 24 Stockholm, Sweden. Telephone: +46-8-14 49 10.

August 26-30, 1984

International Congress of Audiology and American Auditory Society joint meetings, Santa Barbara, CA.
Contact: Sanford E. Gerber, Ph.D., Chairman, Dept. of Speech, University of California, Santa Barbara, CA 93106.

August 31-September 4, 1984

The Jackson Hole Rendezvous will be held at the World Hotel and Convention Center in Jackson Hole, Wyoming. The theme for the educational session will be current trends in hearing aid technology and related topics. Further inquiries should be directed to: Arian E. Walter, 5185 Hov Road, Cheyenne, WY 82009. Phone: 307-635-0435.

October 18-20, 1984

The International Symposium on Evoked Potentials will be held in Lisbon, Portugal. (The Universidade Nova De Lisboa.) Topics addressed at the symposium will include both auditory and visual evoked potentials. For further information contact: Prof. Ferraz de Oliveira, Servico Universitario de oftalmologia, Hospital de Egas Moniz, Rua de Junqueira, 126, 1300 Lisboa, Portugal.

October 21-22, 1984

Audiological Resource Association Fall Meeting Topic: "Aural Rehabilitation" Roan Mountain, Tennessee
Contact: Faye Churchill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama 35209.

October 21-22, 1984

Audiological Resource Association Fall Meeting Topic: "Aural Rehabilitation" Roan Mountain, Tennessee.
Contact: Faye Churchill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama, 35209.

December 5-9, 1984

The Departments of Otolaryngology and Pediatrics, University of Pittsburgh School of Medicine present The 11th Annual Symposium EAR, NOSE AND THROAT DISEASES IN CHILDREN: A 1984 UPDATE to be held at The Breakers, Palm Beach, Florida. For further information, contact: Dept. of Otolaryngology, Children's Hospital of Pittsburgh, 125 De Soto St., Pgh., Pa. 15213 (412) 647-5466.

Letter to the Editor

Dear Editor:

This is in response to the article in Corti's Organ regarding hearing loss due to cordless phones. I am a member of The American Auditory Society and work for an otolaryngologist as a clinical audiologist.

We currently have two patients who claim hearing loss from loud sudden noises from cordless phones.

The first is a lady who was exposed to a loud blast from a Uniden, model EX 3000 B cordless phone to her left ear on July 15, 1983. Immediately following this exposure she complained of vertigo and tinnitus and hearing loss in the left ear. We initially saw her on July 18, 1983. This lady is employed as an executive secretary and this hearing loss has created communication problems in her occupation. She has been fitted with an in-the-ear hearing aid in the left ear which helps but she still experiences difficulty particularly trying to have phone conversations. The greatest presumed threshold shift is centered around 100 Hz.

The second case is a lady who was exposed to a loud blast from Midland cordless phone on January 10, 1984, to her left ear. Immediately following this exposure she complained of hearing loss in the left ear and later of tinnitus in the left ear. She has no record of hearing evaluations prior to the blast. Again, the greatest presumed threshold shifts are centered around 1000 and 2000 Hz. The lady also complains that there are effects on her career due to reduced communication skills related to the hearing loss.

I am terribly concerned that this information get to the public at large. One method to do this I feel is to inform professionals such as those belonging to the American Auditory Society so they can counsel their clients. In my opinion, people in particular who should be counselled regarding possible dangers to hearing from cordless phones are ones with an existing unilateral hearing loss who use the phone with the better ear; people who have children who may use the phone; and any other people who have an existing hearing loss.

I hope this is useful information.

Sincerely,

Elizabeth A. Van Dyke M.S.C.C.-A.
Clinical Audiologist

Editorial reply: Many thanks to Ms. Van Dyke for sharing this important information with us. If our readers are aware of additional incidents of hearing loss following use of the cordless phones please feel free to share them with us and/or contact Dr. Jerome Goldstein, AAO-HNS executive vice president at 1101 Vermont Ave., N.W., Suite 302, Washington, D.C. 20005.

PUBLICATION ANNOUNCEMENT

AUTHORS: Eugene C. Sheeley and Doris McQuiddy

TITLE: Steps Toward Effective Production of Speech (STEPS)

DESCRIPTION: A set of seven softbound booklets printed in large type. They are intended for the parents of children who have hearing and vision impairments. The booklets provide information about hearing loss, vision loss, where to find help, diagnosis, treatment, education, hearing aids, vision aids, etc.

PAGES: 323

SIZE: 8 1/4" X 5 1/4"

ILLUSTRATIONS: 112 line drawings

DATES: Booklet 1 — 1979, Booklet 2 — 1981, Booklet 3 — 1982, Booklets 4 and 5 — 1983, Booklets 6 and 7 — 1984

COST: A single set is free from the publisher.

PUBLISHER: Southeast Regional Center for Deaf-Blind Children
P.O. Box 698
Talladega, AL 35160

SPECIAL FEATURES

These booklets on hearing and vision loss can be used by parents with low reading levels, parents whose second language is English, parents who need large print aides and subprofessionals

Five hundred hearing and vision terms are defined in Booklets 2 and 3, creating the largest such glossary written for laymen.

The booklets are not copyrighted to encourage wider use.

Button Cell Ingestion Risk Increases

The Hearing Industries Association (HIA) has alerted all those serving hearing aid users to the increasing incidence of button cell ingestion, especially accidental ingestion of hearing aid batteries. According to statistics being compiled by the National Capital Poison Center, the vast majority of ingested button cells will pass through a person with no difficulty but some cases of batteries that have become lodged are being reported.

Become fully aware of some of the practical steps which can be taken in preventing hearing aid battery ingestion. Some of those steps are:

- Including warning copy on batter packaging directed towards keeping batteries away from children.
- Keeping batteries out of children's reach and discarding the batteries carefully.
- Not allowing children to play with batteries.
- Not changing hearing aid batteries in front of children.
- Never putting batteries in mouth for any reason as they are slippery and easily swallowed accidentally.
- Always checking medication before swallowing them as adults have swallowed batteries that were mistaken for tablets.

•Alerting users of hearing aids and parents of children who use hearing aids of preventive measures in handling batteries and hearing aids containing batteries.

•Disseminating the telephone number of the National Button Battery Ingestion Hotline, 202-625-3333. The Center will give immediate counsel in the treatment of individuals who accidentally ingest hearing aid batteries.

•Considering the possibility of altering the battery drawer to secure it from casual access by children.

The growth in sales of smaller types of aids increases the number of smaller, easy-to-ingest batteries in circulation. With proper preventative measures followed by all elements of the hearing health industry, the diminishment of the ingestion problem can be achieved.

INTER-NOISE 83 Proceedings Available

INTER-NOISE 83, the twelfth International Conference on Noise Control Engineering was held in Edinburgh, Scotland on July 13-15, 1983. The Conference was sponsored by the International Institute of Noise Control Engineering. It was organized by the Institute of Acoustics of the United Kingdom in cooperation with the Fellowship of Engineering.

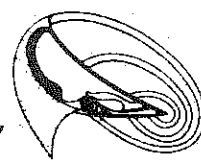
A total of 294 papers on all aspects of noise control engineering were presented at the Conference and are included in the Conference Proceedings.

A two-volume set of Conference Proceedings is now available for immediate shipment. Edited by R. Lawrence, the INTER-NOISE 83 Proceedings reflects the theme of the Conference: Noise Control: The International Scene. The two volumes contain 1,242 pages of technical material.

Copies of the INTER-NOISE 83 Proceedings are available from Noise Control Foundation, P.O. Box 3469, Arlington Branch, Poughkeepsie, NY 12603, U.S.A.

17th INTERNATIONAL CONGRESS OF AUDIOLOGY

AUGUST 26-30, 1984



AT THE
UNIVERSITY OF CALIFORNIA
SANTA BARBARA

TOPICS OF THE ROUND TABLES

- (1) International cooperation and audiology in developing countries (Moderator: T. Lundborg)
- (2) Prevention and etiology of hearing impairment (Moderator: G. Djupesland)
- (3) Cochlear hair cell morphology and physiology (Moderator: A. Flock)
- (4) Psychoacoustics of the cochlear implant (Moderator: S. Gerber)

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6th Annual Run for Better Hearing

Nineteen hearing help providers—representing the interdisciplinary support that made BHI the hearing field's most effective public educational program—will run in the sixth annual "Run for Better Hearing."

The Run is a fund-raising effort to strengthen BHI's hearing help message, already granted free media exposure worth over \$81 million in commercial time and space. BHI's program includes famous Americans who overcame hearing loss—Art Carney, Norm Crosby, Phyllis Diller, Nanette Fabray, Lou Ferrigno, Lorne Greene, Florence Henderson, Bob Hope, Frankie Valli, Keenan Wynn, and many others!

1984's Run doubleheader features BHI executive director Joe Rizzo in his fifth Boston Marathon on April 16. Then on June 16, in Duluth, MN, Joe will be joined in Grandma's Marathon by:

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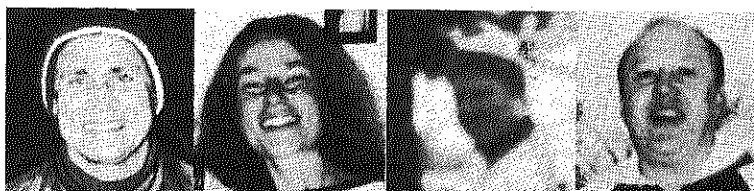


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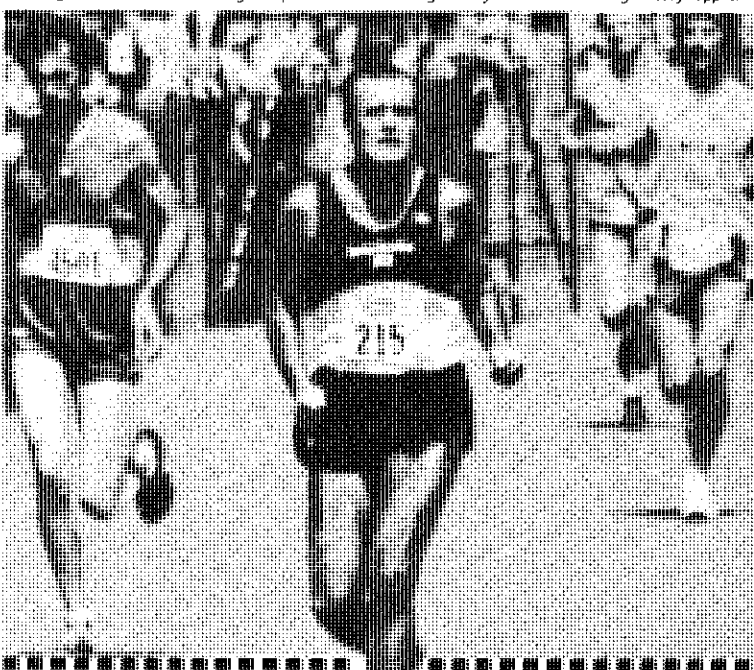


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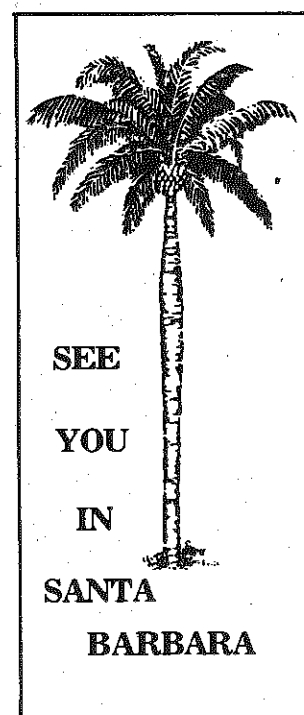
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Paulo Noronha Pizarro M.D. M.Sc.
Elda Dossena Ph.D.
Anne Barbara Kigerman Ed.D.
Hans E. Lindeman M.Sc.
P.E. Lyregaard M.Sc.
Edgar Chiossone M.D.
Wolfgang Niemeyer M.D.
Alfred G. Constam MSEE
Enrique Salesa



17th ICA Preliminary Program

(Specific sessions may be added or rearranged as needed)

SUNDAY, AUGUST 26, 1984

Check-In 12:00 - 5:00

Dinner: 5:00 - 7:00

Opening Ceremony & Reception: 7:30

MONDAY, AUGUST 27, 1984

Breakfast at 7:00-8:00

Round Table at 9:00

Prevention and Etiology of Hearing Impairment

Chair: G. Djupesland (Norway)

Secy.: J.J. Barajas P. (Spain)

Speakers:

A. Axelsson (Sweden)

F. Catlin (USA)

G. Mencher (Canada)

R. Ruben (USA)

R. Tomanek (Czech.)

Lunch at 12:00

Special Session at 1:45-3:15

Middle Ear Implants

Chairs: N. Yanagihara (Japan)

J. Danhauer (USA)

Speakers: K. Gyo (Japan)

K. Kodera (Japan)

H. Aritomo (Japan)

S. Hiki (Japan)

Contributed Papers at 1:45

International Audiology

B.C. Novaes & M.C. Bevilacqua; USA

The Practice of Audiology through the University in Brazil

P. Plath; West Germany

International Cooperation in Europe in the Fields of Audiology and Phoniatrics

R. Levinson; USA

A Survey of Hearing Aid Needs in the Caribbean

P.N. Nguma; Tanzania

State of Audiology in Tanzania

S. Nikam; India

Some Aspects of Audiology in India

A. Luts; USSR

Audiology and Rehabilitation in Estonia SSR

S.O. Olaniyan & J.M.A. Oyiborhoro; USA

Audiological Services in Nigeria

L. Sarkady; Kuwait

The Development of Audiology in Kuwait

V.A. Shah & M.N. Vyasamurthy; India

Research Contribution in the Field of Audiology in India

J.A.K. Barghouthi & L. Tieri; Italy

Audiological Cooperation Between Italy and Jordan

I. Silverman; USA

Audiologic and Other Services in Fiji

Aural Rehabilitation and Amplification

N.C.A. Chari; USA

Behavioral Comparisons of Canal vs. All in the Ear Aids

J.L. Danhauer & R.N. Kasten & C.E. Johnson & J.A.

Brimacombe; USA

The "Hearing Aid Effect"

A.D. Teigland & W. Wilson; USA

Backward Masking of Lip Postures

C.E. Johnson; USA

Validation of the Enhancement of Suprasegmental Parameters through Filtering

H. Ono, H. Ogawa, T. Deguchi, H. Nakahara, S. Sinohara & T. Okazaki; Japan

Development of the Lip Reading Display System for Severely Hearing Impaired Patients

O. Perier, A. Bochner, B. Everaerts & J. Michiels; Belgium

The Combination of Cued Speech and Signed French to Improve Spoken Language Acquisition by Young Deaf Children

T. Rahko, M. Karjalainen, T. Honkanen, M. Lindgren, A. Poivaara & P. Karma; Finland

Concept Learning and Self-Teaching System for Deaf Children

R.H. Hull; USA

Current Procedures in Aural Rehabilitation for the Older Adult

R.M. Parker; USA

Hearing Aid Candidacy in Children with Minimal, Fluctuating and/or Unilateral Hearing Impairments

Y. Onchi; Japan

A Fitting Test for Hearing Aids

S. Bornstein, R. Seewald & K. Randolph; USA

Hearing Aid Microphone Location, Binaural Listening, and Message Azimuth

G.F. Haas; USA

Compression Hearing Aids: Technical & Clinical Considerations

D.A. Preves; USA

Acoustic Feedback Rejection in Hearing Aid Fittings

L.M. Moser & J. Hellbruck; Germany

The Functional Gain of Hearing Aids Measured with a Psychoacoustical Loudness Scaling Test

C.L. Gammel; USA

Hearing Aid Fitting and Training for Very Young Profoundly Deaf Children

Auditory Physiology

R.J. Marchbanks & A.M. Martin; England

Assessing Abnormalities of the Cochlear Perilymphatic Pressure Using a Tympanic Membrane Volume Displacement Measurement Technique

S. Takashima, K. Osamu & K. Kanagawa; Japan

Pathological Changes in the Cochlea of Heritable Hyperlipidemic Rabbits

T. Inamori, H. Wakutani & T. Kumoi; Japan

Newly Designed Electrocochleogram's Parameters of SP Area in Meniere's Disease

T. Tanahashi, T. Hattori & M. Mori; Japan

Physiological Investigations on Tinnitus

J.H. ten Kate & P.M. van der Meer; Netherlands

Narrow Band AP to Click and Sine Bursts in Relation to 8th Nerve Response in Cat

J.H. ten Kate & M.F. van Bakkum; Netherlands

Rate vs. Time Coding in Spikes from 8th Nerve of Cat to Cosine Noise

R.S. Ackley, I.K. Arenberg & T.J. Balkany; USA

Electrocochleographic & Histopathologic Observation of Experimental Perilymphatic Fistula in Guinea Pigs

O.L. Nilsson, S. Rydmarker, D.E. Dunn & J. Grenner; Sweden

Noise-Induced Hearing Threshold Shift and Scanning Electron Microscopic Changes in the Inner Ear

K. Tsuzuki & N. Suga; USA

Complex-Sound Processing by Combination-Sensitive Neurons with Level-Tolerant Frequency Tuning

Break at 3:15-3:30

Psychoacoustics

A.T. Cacace & R.H. Margolis; York, USA

Loudness Summation and Critical Bandwidth

M. Suto, Y. Kato & S. Eguchi; Japan

Difference Limens for the Formant Frequencies: Comparative Study of the Value between Several Nations

F. Gradori; Italy

Pitch of Multicomponent Inharmonic Tones

K. Schorn & E. Swicker; West Germany

The Effect of an Additional Masker on the Frequency Selectivity of the Inner Ear

A. Quaranta & G. Cervellera; Italy

Brief Tone Audiometry and its Relation to Critical Band

C. Cave; France

Measurement of Temporal Acuity: Correlation between Detection and Double-Click Threshold in Normal-H Subjects

Pedaudiology

N.J. Johnsen, P. Bagi, J. Parbo & C. Elberling; Denmark
Evoked Acoustic Emissions from the Human Ear. Results in 100 Neonates

M. Ditoë & Y. Koike; Japan

The Risk Factors Related to Hearing Impairment Screening with the Crib-o-Gram

J.S. Johnson; USA

Early Identification/Intervention Programs: Cross-Cultural Perspective

H. Sugawara, H. Imai, S. Ogura, K. Asano, M. Okamoto, Yamamoto & S. Takano; Japan

The Follow-Up System for High Risk Registered Infant Crib-o-Gram Screening Tests

T. Kawakami, K. Asano, H. Akamatsu, K. Yamamoto; Japan

The Neurological Prognosis of the Babies who Failed Audiological Screening by Method of the Crib-o-Gram

W. J. Keith; New Zealand

A National Strategy for the Early Detection of Prelingual Deafness

H. Shimizu & M.C. Erskine; USA

Etiology of Prelinguistic Hearing Loss: A Retrospective Study

E.J. Kreul, R. Sandlin & J.C. Nixon; USA

Reliability of Simplified Method of Infant Hearing Screening

Cocktail Party & Mexican Fiesta at 6:00

TUESDAY, AUGUST 28, 1984

Breakfast at 7:00-8:30

Round Table at 9:00

Cochlear Hair Cell Morphology and Physiology

Chair: A. Flock (Sweden)

Secy.: L. Benítez (Mexico)

Speakers:

P. Dallas (USA)

A. Hudspeth (USA)

W. Brownell (USA)

Special Session at 1:45 - 3:15

Microprocessor electroacoustic Measurements

Chair: S. Hiki (Japan)

Contributed Papers at 1:45

Middle Ear and Impedance

F.J. Simmons, H.J. Greenberg & T.L. Sahley; USA
LDL Prediction Using Various Types of Acoustic Reflex Eliciting Stimuli

D.J. Lilly & R.A. Fishman; USA

Clinical Evaluation of Two Updated Tuning-Fork Tests

I. Bastos, A. Reimer, L. Janzon, K. Lundgren and B. Mollerstrom; Sweden

Otitis Media & Hearing Loss in Angolan Children: Epidemiological Study in School Children

A. Reimer & I. Bastos; Sweden

Otitis Media & Hearing Loss in Angolan Children - A Review from an ENT Clinic

D. Marincic; Switzerland

Temporal Summation in the Acoustic Stapedius Reflex: Clinical Application

Cont. on next page

J. Zakrisson, E. Borg & R. Nilsson; Sweden
The Function of the Stapedius Reflex in Impulse Noise

L.D. Benitez & R. Rodriguez; Mexico
The Middle Ear Cavities at Birth - Tympanographic Survey

N. Normandin & L. Perreault; Canada
Experimental & Epidemiological Study of the Effects of Nitrous Oxide Anaesthesia on the Middle Ear System in Humans

N. Watanabe, A. Yamamoto, M. Negishi, D. Nagai, H. Zusho & M. Okamoto; Japan
The Studies of Averaging Wave Patterns of the Acoustic Reflex on Subjects with Normal Hearing

M. Negishi, A. Yamamoto, N. Watanabe, D. Nagai, H. Zusho & M. Okamoto; Japan
The Studies of Averaging Wave Patterns of the Acoustic Reflex: Simultaneous and Bilateral Recording

Evoked Potentials

J.-M. Aran, R. Charlet de Sauvage, J.-F. Rouanet & J.-P. Erre; France
Electrical Stimulation of the Auditory System in Audiology

D. Hashimoto & M.I. Mendel; Japan
The Auditory Brainstem Responses in a Normal-Hearing Elderly Population

J.R. Woods, R.W. Keith & M. Pleassinger; USA
Development of Auditory Evoked Potentials in the Fetal and Newborn Lamb

D. McPherson, C. Tures & A. Starr; USA
Ontogeny of the Binaural Interaction of the Early and Middle Auditory Evoked Potential

R. Galambos, S. Makeig & D.R. Stapells; USA
The Phase Aggregation of Steady State Event Related Potentials: Its Use in Estimating Hearing Thresholds

J.J. Barajas; Spain
BSER and MLR in Audiological Diagnosis

G. Molinari, A. Martini & F. Comacchio; Italy
Effects of Click Repetition Rate on Brainstem Auditory Evoked Responses in Diabetes Mellitus

A. Martini, F. Comacchio, M. Agnoletto, F. Vespasiani & G. Molinari; Italy
Effects of Click Repetition Rate on Brainstem Auditory Evoked Responses in Hepatic Encephalopathy

F. Grandori; Italy
Analysis of the Sources of Auditory Evoked Brainstem Responses

N. Kraus, N.L. Reed, D.I. Smith, L. Stein & C. Cartee; USA
Middle Latency Responses in Infants and Children

D.R. Stapells, T.W. Picton & A.D. Smith; USA
An Evaluation of Eight EP Audiometry Techniques

J.A. Costello; USA
Normal Variabilities of the I/V Amplitude Ratio

M. Vogeeler & P. Clement; Belgium
Auditory Brainstem Response Findings in Noise Induced Hearing Loss

M. Harel, M. Englender, M. Demer, R. Kimhi & M. Zohar; Israel
Auditory Brainstem Responses in Acute Schizophrenic Patients

M. Hoke, R.E. Wickesberg & B. Lutkenhoner; West Germany
Retardation of the Postnatal Maturation of the Auditory System Revealed by Contralaterally Recorded Brainstem Evoked Responses

I.J. Schwartzman, V. Wilkinson & P. Bertola; Argentina
Pre-Natal Testing of Hearing through E.R.A. Preliminary

G.E. Hicks; USA
Signal & Noise Levels for Confident Waveform Identification

Tinnitus

R. Dauman, R. Charlet de Sauvage & J.M. Aran; France
The Significance of SP and AP Changes During Glycerol Dehydration in Meniere's Disease

D.A. Klodd, M. Killion, L. Bailey & E. Russell; USA
Recorded Objective Tinnitus; A Case Report

R.H. Nodar & G.B. Hughes; USA
Tinnitus Aurium and Stress: Analysis of 500 Patients

X.-x. Ge & Y.-y. Chen; China
Auditory Dehydration Test in Meniere's Disease

S.M. Van de Water; USA
Auditory Dehydration Testing: Glycerol vs. Urea

D. Cafarelli-Dees, M. McKee & F. Baddour; USA
Post-Treatment of Severe Tinnitus Sufferers

K. Murai, M. Ogasawara, K. Shishido, T. Saitoh, T. Tsuki; Japan
An Investigation of Three Examination Methods of Tinnitus

J.M. Snyder; USA
Evaluation of Dosage and Response Criteria for the Glycerol Test

T. Matsuhira, K. Yamashita, T. Miyazaki & Y. Kita; Japan
Some Aspects of Evaluating the Loudness of Tinnitus by Balance Test

M. Savastano, C. Andreoli, C. De Filippis & G. Molinari; Italy
The Meniere's Disease Bilaterality; Evaluation on 513 Cases

T. O-Uchi, J. Kanzaki & M. Kawaura; Japan
Repeatability of the Results in Tinnitus Tests

T. O-Uchi & J. Kanzaki; Japan
The Diagnostic Value of the Glycerol Loading Tinnitus Balance Test in Endolymphatic Hydrops

T. O-Uchi & J. Kanzaki; Japan
The Clinical Value of Subjective Expression in Tinnitus

Break at 3:15 - 3:30

Noise

W.D. Ward, D. Henderson & D.A. Fabry; USA
Intermittence and the Equal-Energy Hypothesis

M.H. Hasso; Iraq
Thirty-Five Case Study of Acoustic Trauma

F. Lindgren & A. Axelsson; Sweden
Interaction between Noise-Exposure and Other Factors Assessed by Clinical TTS Studies

R. Nilsson, E. Borg & J.-E. Zakrisson; Sweden
The Role of the Acoustic Reflex in Industrial Noise

R. Nishida, H. Kumagami & H. Ohsawa; Japan
Electrocochleographic Study in Sensorineural Deafness Due to Noise of Rock Drill

M. Sorri, P. Sipila, T. Pirila & H. Karjalainen; Finland
Snow Mobiles as the Cause of Hearing Loss

H.E. Lindeman, N.M. van der Klaauw & F.A. Platenburg; Netherlands
Hearing Acuity & Noise Load in Adolescents & Young Adults

D.M. Lipscomb; USA
Physiological Hearing Protection - A Different Idea

High-Frequency Audiometry

H.-G. Dieroff; East Germany
The Value of High-Frequency Audiometry by Prevention of Hearing Impairment

O. Ribari & J.G. Kiss; Hungary
Clinical Use of High-Tone Audiometry

D.W. Johnson, R.E. Sherman, J. Aldridge & A. Lorraine; USA
Extended High Tone Hearing Acuity in Musicians

M.H. Miller; York, USA
Electrostimulation for Auditory Diagnosis and Therapy

Dinner at 5:30 - 7:30

Carhart Lecture at 8:00

WEDNESDAY, AUGUST 23, 1984

Breakfast at 7:00 - 8:30

Round Table at 9:00

International Audiology

Chair: T. Lundborg (Sweden)
Secy.: P. Berruecos (Mexico)

Speakers:

O. Bentzen (Denmark)
H.-G. Dieroff (GDR)
R. Hinchcliffe (UK)
S. Khechinashvili (USSR)
F. Martinson (Nigeria)
S. Pransansuk (Thailand)
K. Rejto (Hungary)
J. Sekula (Poland)
T. Tsuki (Japan)
W. Zhizhong (China)

Lunch at 12:00

Special Session at 1:45

Standardization of the Auditory Brainstem Responses
Chair: M.I. Mendel (USA)

Contributed Papers at 1:45

Cochlear Implants

R. Dobie & N. Dillier; USA
Some Aspects of Temporal Coding for Single-Channel Electrical Stimulation of the Cochlea

S. Rosen, J. Walliker, J. Brimacombe & B. Edgerton; England & USA
The Effect of Single-Channel Electrical Stimulation on Speechreading Ability in the Profoundly Deaf: A Consonant Identification Task

N. Dillier & R.A. Dobie; Switzerland
Discrimination of Stochastic Pulse Patterns & Waveform Differences with Single-Channel Cochlear Implants

R. S. Tyler; USA
Speech Perception with Single & Multichannel Cochlear Implants

S.M. Walsh & I.J. Hochmair-Desoyer; USA
Optimization of Cochlear Implant Patient Performance by Use of Automated Fitting Procedures

F. B. Simmons, H.S. Lusted, T. Myers & C. Shelton; USA
Nerve Survival & Stimulation Sites in Cochlear Implant Patients

L.J. Dent, F.B. Simmons, R.L. White, D.V. Compennolle, L.A. Roberts, D.A. Huntington & E.D. Schubert; USA
Speech Comprehension Testing in the Stanford Cochlear Implant Programs

J.A. Brimacombe & L. Eisenberg; USA
The Effect of Electrode Length on Tone Decay in Subjects with the Single-Channel Cochlear Implant

R.C. Dowell, G.M. Clark, P.M. Seligman, Y.C. Tong & J.F. Patrick; Australia
Open Set Speech Recognition Using the Australian Multiple-Channel Cochlear Prosthesis

Y.C. Tong, G.M. Clark, R.C. Dowell & J.F. Patrick; Australia
Psychophysical Studies for Bipolar Stimulation in Cochlear Implant Patients

J. Schwartzman & V. Wilkinson; Argentina
Spanish List of Words for Pre-Op Selection and Post-Op Follow-Up of Cochlear Implant Patients.

Sensorineural Disorders

E.A. Dimitrov, L. Duckert, B.L. Martin & G. Martin; USA
The Effect of Cochleostomy on the Development of Endolymphatic Hydrops - Morphological Changes in the Rabbit Cochlea

J. Said & Aguayo; Mexico
The Use of Histamine in the Management of Meniere's Disease

R. Dauman, A.-M. Cros, D. Poisot & J.-M. Aran; France
Management of Sudden Deafness with Hemodilution & Hyperbaric Oxygen Therapy

Cont. on next page

D.A. Klodd, W. Ryan, D. Caldarelli & E. Russell; USA
Audio-Vestibular Findings in Patients with Paget's Disease

R. Carmen; USA
Audiometric Configuration as a Reflection of Metabolic Disorder

Y. Koike, Y. Ishitani & K. Nakamura; Japan
Application of a Quantification Theory to the Evaluation of the Treatments for Sudden hearing Loss

N. Kawashiro, K. Koga & A. Araki; Japan
Sudden Deafness in Children

E.K. Moscicki; E.F. Elkins, H. M. Baum & W.B. Kannel; USA
Sex Differences in Presbycusis: The Framingham heart Study Cohort

C.J. Moulton & J. Maurer; USA
Audiological Characteristics of the Monge Family of Costa Rica

M. Tapia & F. Olaizola; Spain
Evaluation of Sensorineural Hearing Loss in Children

M. Toriyama & H. Tauchi; Japan
Hearing Impairment in Hemodialysis

S. Niitsu & T. Tsuiki; Japan
Audiogram of Dominantly Inherited Sensorineural hearing Loss

T. Abe, Y. Kon, K. Murai & T. Tsuiki; Japan
Acute Sensorineural Hearing Loss in Low Frequencies

Clinical Audiometry

C. Andreoli, M. Savastano, G.F. Bruni & G. Molinari; Italy
Sudden Deafness: Clinical Evaluations on 160 Cases

S. Bornstein & K. Randolph; USA
Loudness Discomfort Level as a Function of Instructional Set

B. Farinella & P. Ferrara; Italy
Weber Tone Decay Test in Automatic Audiometry

H.J. Ilecki; Canada
The Clinical Variability of Using One Computer to Evaluate the Hearing of Two Patients Simultaneously.

S. Arlinger and L. Jerlwall; Sweden
Ambient Sound Levels in Pure Tone Audiometry

A.E. Lewis, J. Danhauer & B. Edgerton; USA
Normal Hearing Children's Responses to a Nonsense Syllable Test

J. McDonald, M.C. Erskine & R. Royall; USA
Masking Level Difference and Speech Recognition Scores Using a Multi-Talker Complex

R.M. Hurley; USA
Effect of Different Maskers on MLD Speech Recognition Measures

E.T. Mishler & D.H. Meyer; USA
Rollover Measurements with Auditec NU-6 Lists

D. Cafarelli-Dees & J.M. Bingle; USA
Audiologic & Hearing Aid Services for Foreign Language Patients

Break at 3:15 - 3:30

Retrocochlear

H. von Wedel; West Germany
Auditory Temporal Resolution of Interaural Time Delay Aphasia

M. Bergman; Israel
Auditory Perception of Speech in Brain-Injured Adults

R.H. Hull; USA
The Nature of Hearing Impairment in Aging - Update on Central Auditory Factors in Presbycusis

T. Jauhiainen & T. Palva; Finland
Audiometric Findings after Acoustic Neuroma Removal

M. Wada, S. Kawamura, K. Okabe & T. Abe; Japan
The Threshold Shift Following the Neck Torsion

Miscellaneous

E.H. Nober, H. Peirce & A. Well; USA
Waking and Evacuation Effectiveness of Auditory & Visual Smoke and Fire Alarm Devices

C.N. Wade; USA
The Microcomputer as a Multifunction Test Instrument

A. Yonovitz, C. Mitchell, JS. Ostrum & B. Evans; USA
Sinusoidal Signal Generation: Analog & Digital Design Techniques

H.M. James; USA
Non-Profit Corporation, Funding, at Home and Overseas

Cocktail Party, Banquet & Awards at 6:00

THURSDAY, AUGUST 30, 1984

Breakfast at 7:00 - 8:30

Round Table at 9:00

Psychoacoustics of the Cochlear Implant

Chair: S. Gerber (USA)
Secy.: J. Schwartzman (Argentina)

Speakers:

R. Bilger (USA)
B. Edgerton (USA)
I. Hirsh (USA)
J. Marquet (Belgium)
B. Moore (UK)

General Assembly at 11:30

Lunch at 1:00

Check-Out at 2:00

The Executive Committee of the American Auditory Society has announced the availability of Life Membership in our organization.

Eligibility requirements include membership status for ten consecutive years and an age of seventy years or more (we won't tell!)

For further information contact: Ross Roeser, Ph.D., Secretary/Treasurer AAS, 1966 Inwood Rd., Dallas, TX 75235.

THE ALL IN THE EAR GANG



James 'Bubba' Emery Karl 'Doc H' Hattler Matt 'Mad Dog' Smith

THE BOYS FROM THE *Hearing Evaluation Center*

612 Encino Pl., NE
Albuquerque, New Mexico 87102
(505) 842-6178

—ALSO AT—

HEARING EVALUATION CENTER-North
3924 Carlisle, NE
Albuquerque, NM 87107
(505) 881-0948

(In Association with R. Davies, D.O.)

THE PRESBYTERIAN PROF. BLDG.
201 Cedar, SE Suite 504
Albuquerque, NM 87102
(505) 243-1720

(In Association with B. Nagel, M.D.)

Welcome
New AAS Members
(See Page 9)

Executive Board Meets!
See Minutes Page 9

Carhart Memorial Lecture
Now On Video
(See Page 2)



Vol. 9 No. 3

Fall 1984

1984 Joint AAS/IAC Meeting A Success

Scenic Santa Barbara, California was the setting for the 17th International Congress of Audiology/American Auditory Society joint meetings. Referred to as "The Riviera of the Pacific," the history and beauty of the area was enjoyed by all in between meetings and a busy social calendar.

Upon arrival at the University of California at Santa Barbara, members and guests were greeted by the organizing committee and its very helpful staff. It was "back to college" for most members as housing was in the college dormitory in addition to several area hotels. Somewhat spartan, although very comfortable, Anacapa Residence Hall was home for over 540 conference attendees. Many new international friendships were initiated over the week — several during the long trek to the nearest "facilities" down the hill! Meals were served in a commons area and you can be certain more than one diet fell into ruin due to the abundant and well prepared meals. The courteous UCSB students were always ready to direct wayward souls to the proper food line, to clear away unwanted trays and to answer the countless questions posed to them by all in attendance.

Map in hand, it was off to participate in numerous round table discussions, scientific meetings and to view manufacturer's exhibits around the campus. The American Auditory Society's new display made its debut at the Congress as well. (See related story in this issue). Most of the larger for-

ums and the Carhart Memorial Lecture were held in the Lehmann Concert Hall. The setting was appropriate for the large number of participants who gathered to share current information on Cochlear Implants, Audiology in Developing Countries, Etiology and Prevention of Hearing Loss, and Cochlear Hair Cell Morphology. Distinguished speaker, Dr. Gunnar Liden, whose presentation may be read in its entirety in this issue of *Corti's Organ*, paid tribute to the late Dr. Raymond Carhart in his wonderful address entitled "Trends in Amplification for the Hearing Impaired."

The days and evenings in Santa Barbara that were not filled by attending lectures and professional meetings were occupied by other enjoyable activities. A Welcome Party, Mexican Fiesta (complete with mariachi band) and a Congress Dinner were times for socializing, getting to know new friends from around the world, and sharing international song, story, drink and dance. More than a few people were seen sneaking in a brisk swim in the ever-changing tides (despite the tar spots from a past oil spill), or taking a peaceful walk along the oceanfront.

The American Auditory Society wishes to extend its thanks to all members and our associates in the International Congress of Audiology, for the support of meetings such as this one and the opportunity for each of us to further our knowledge through the sharing of ideas. See you in Atlanta next year!

Call For Nominations

The American Auditory Society announces its call for nominations for the AAS Executive Board. The individual nominated should be willing to serve on various committees, attend the annual meeting and be interested in fostering the activities and direction of the American Auditory Society. Nominations should be sent to LaVonne Bergstrom at: Division of Head and Neck Surgery, Rm. 32-34 Rehab. UCLA, 1000 Veteran Avenue, Los Angeles, CA 90024. Deadline for nomination is November 1, 1984.

Ear and Hearing Awards Reinstated

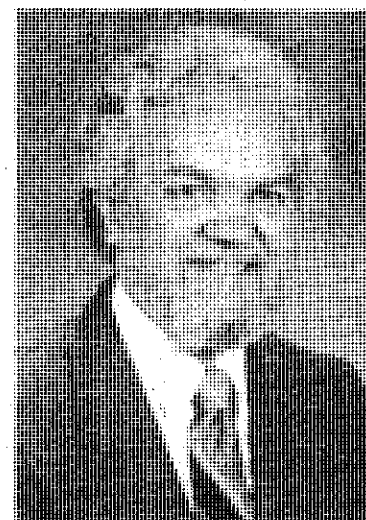
At the 1984 AAS Executive Board Meeting, one topic of discussion was the reinstatement of the Ear and Hearing Editorial Award for outstanding papers submitted during the publication year. After several opinions were expressed for and against the granting of the awards, the Board voted to reinstate the award effective with the 1985 annual meeting. One goal of presentation is to continue to foster and support the presentation of quality writing submitted to Ear and Hearing.

AAS Display Unveiled



The 1984 AAS/IAC joint meeting in Santa Barbara was the scene for the unveiling of the new American Auditory Society Display Booth. Construction was overseen by 1985 AAS President Don Worthington who expressed his appreciation to his staff for their assistance in this project. The tri-fold display was built to increase word-of-mouth activity about AAS at various meetings and functions around the country. It features both advantages of membership and publication in a portable, attractive manner. The display is certain to encourage additional membership into our organization. Thanks Don for a job well done!

Coming Attractions



DAVID LIPSCOMB

David Lipscomb, 1985 AAS Meeting Program Chairman has announced the preliminary program for the joint AAS/AAO national meeting to be held in October, 1985 in Atlanta, Georgia. The theme for the meeting is "Technical Innovations in Clinical Hearing Science." Contributed papers should relate to the theme, emphasizing applications of our burgeoning technology.

For the first time, there will be a half-day workshop during the meeting leaving one half day for contributed papers. The title of the workshop is Auditory Electrostimulation Applications. Audimax has agreed to sponsor the workshop and will provide several of the participating speakers. Included in the slate at this time is Dr. Juergen Tonndorf, Dr. Jerry Northern and Dr. Robert Goldstein. We are indebted to Mr. Irwin Klar for his generous support of this program.

Watch for further details about the 1985 American Auditory Society Meeting in coming issues of *Corti's Organ*.

Carhart Memorial Lecture Trends in Amplification for the Hearing-Impaired

By Gunnar Liden, M.D., Ph.D., Professor
Department of Otolaryngology, University of Gothenburg
Gothenburg, Sweden
and
Visiting Professor
Department of Otolaryngology
University of Minnesota
Minneapolis, Minnesota

First of all, I want to thank the American Auditory Society for its generosity in selecting me to deliver the Carhart Memorial Lecture. I appreciate this very much and I am glad to be able, in this auditorium, to honor the memory of Dr. Raymond Carhart, who has had a major influence on the development of the science of audiology.

I think it is appropriate to remind you of some of the highlights of his career. He was born in 1912 and died in 1975 at the age of 63 years. Raymond Carhart went to Northwestern University in 1932, barely 20 years old, as a hopeful graduate student. He took his M.A. and Ph.D., majoring in speech pathology, experimental phonetics, and psychology.

In 1936, at the age of 24, he joined the faculty of Northwestern University as an Instructor in the School of Speech, where he worked hard. For the next 40 years he was a contributing member of the faculty. In 1947 he made his most important contribution to audiology by successfully establishing the first academic program in audiology in the United States as well as in the world. The bridge to the medical field was built when he became a Professor of Otolaryngology in

Continued to page 4

CORTI'S CALENDAR

October 26-28, 1984

AUDIOLOGICAL RESOURCE ASSOCIATION FALL MEETING, Roan Mountain State Park, Roan Mountain, Tennessee. Topics: "Speech Audiometry: Past, Present and Future," William Rintleman, Ph.D., "Computers in the Audiology Practice". Contact Fay Churhill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama 35209.

December 5-9, 1984

The Departments of Otolaryngology and Pediatrics, University of Pittsburgh School of Medicine present **The Eleventh Annual Symposium EAR, NOSE AND THROAT DISEASES IN CHILDREN: A 1984 UPDATE** to be held at The Breakers, Palm Beach, Florida. For further information contact: Dept. of Otolaryngology, Children's Hospital of Pittsburgh, 125 DeSoto St., Pittsburgh, PA 15213. (412) 647-5466.

January 4-6, 1985

WESTERN SECTIONAL MEETING — American Laryngological, Rhinological, and Otolological (Triological Society), Santa Barbara, California. Sponsored by the Triological Society, to be held at the Marriott Biltmore in Santa Barbara. For further information contact: Joseph DiBartolomeo, M.D., Secretary, 2420 Castillo Street, Santa Barbara, CA 93105.

January 7-8, 1985

"THE ROLE OF IMMUNITY IN DIAGNOSTIC AUDIOLOGY: STATE OF THE ART." Marymount Manhattan College, New York, NY. Contact Carol A. Silverman at (212) 472-3800, ext. 576 for further information.

February 3-7, 1984

MIDWINTER MEETING OF THE ASSOCIATION FOR RESEARCH IN OTOLARYNGOLOGY at Surfside Holiday Inn Clearwater Beach Hotel, Florida. For further information contact: W.A. Yost, ARO, Parmlly Hearing Institute, Loyola University, 6525 North Sheridan Road, Chicago, IL 60626.

February 10-13, 1985

SECOND INTERNATIONAL FORUM ON ASSISTIVE DEVICES FOR HEARING IMPAIRED PERSONS, Fort Lauderdale, Florida. For Preregistration information and a copy of the preliminary program write to: Fellendorf Associates, Inc., P.O. Box 32227 Washington, D.C. 20007.

February 22-24, 1985

AUDIOLOGICAL RESOURCE ASSOCIATION WINTER MEETING, Gatlinburg Tennessee. Contact Faye Churchill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama 35209.

March 10-16, 1985

The 19th **COLORADO OTOTOLOGY-AUDIOLOGY WORKSHOP** will be held at the Continental Inn and Aspen Conference Center in Aspen Colorado. For further information contact Jerry Northern, Ph.D., Colorado Hearing Foundation, Box B210, 4200 E. 9th Avenue, Denver, CO 80262.

April 4, 1985

CONTINUING CARE OF THE HIGH-RISK INFANT, Park Ridge, Illinois. Sponsored by Ross Laboratories and the Department of Pediatrics, Section of Neonatology, Lutheran General Hospital. Guest faculty include: Marshall Klaus, M.D., Michigan State University, and David Caldarelli, M.D., Rush Medical College of Rush University. Additional information contact: Mary Lou Mumford, Newborn ICU Office, Lutheran Medical Hospital, 1775 West Dempster Street, Park Ridge, IL 60068. (312) 696-5313.

May 26-31, 1985

XIII WORLD CONGRESS OF OTORHINOLARYNGOLOGY, Miami Beach, Florida, USA. For further information contact: Anthony J. Maniglia, M.D., FACS 1500 N.W. 12 Avenue, Suite 874, Miami, FL 33136. (305) 325-8899.

Letter to the Editor

Dear Editor:

I read with interest your previous article and "Letter to the Editor" from Ms. Van Dyke about hearing loss caused by cordless phones.

I am an attorney who handles product liability cases and have several cordless telephone cases. In fact, I have what will probably be the first case to go to trial in the country. In this case, the plaintiff is an M.D. and the defendant is the Uniden Corporation. My brother, Daniel Schumaier of Johnson City, Tennessee, and Daniel Orchik of the Shea Clinic, both Ph.D. Audiologists, tested the suspect telephone at the Audiotone Laboratory in Phoenix. Both the ring and page tones were in excess of 140 dB.

There is simply no reason for such a loud dB level or for the location of the ringer to be in the earpiece. The product is unquestionably defective and unreasonably dangerous.

Manufacturers and distributors of this \$600 million plus a year industry which was fueled by the AT&T divestiture jumped into the market place without adequate design engineering. When these products were found to cause injury, band-aid surgery in the form of warnings were issued rather than adequate measures such as product recall and design changes. The warnings placed by these manufacturers and distributors are inadequate and ineffective. They are there less to warn than to attempt to disclaim liability in this unreasonably defective product.

Changes in industry come only through legislation or financial messages. Perhaps significant liability judgments around the United States will persuade these manufacturers to relocate the ringing device to a place on the back of the handset and render the device safer. This cost to relocate the ringer is only \$1-\$3. The cost to each human being in the form of decreased hearing and tinnitus is incalculable. The people who have not yet been injured could possibly be warned by the subscribers to your publication. Those who have already been injured should seek legal redress from a qualified trial attorney. The maybe the industry will listen.

Yours very truly,
Steven G. Schumaier
Taylor, Schumaier & Sluggett
Attorneys at Law

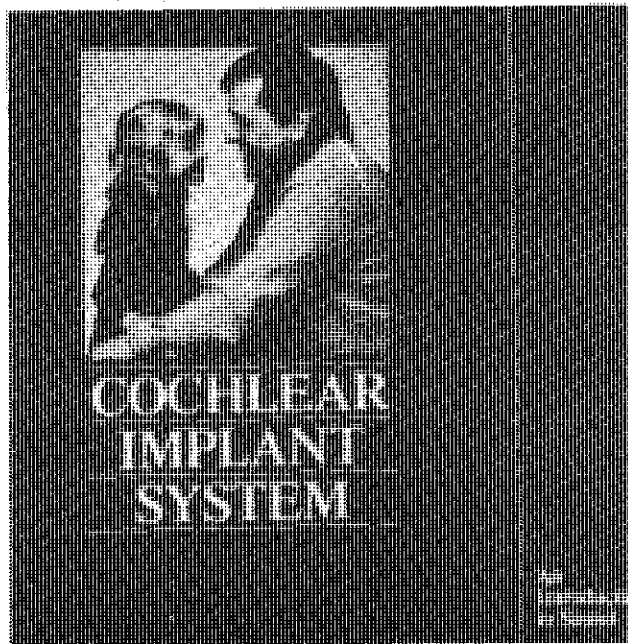
Brochure Available

A cochlear implant system that can provide a sense of hearing to profoundly deaf people is described in a new brochure available from Otologic Products/3M.

The brochure gives a brief introduction to the cochlear implant and explains how it can help a damaged ear hear sounds. In addition, the brochure tells who is most likely to benefit from using the device and outlines the elements of a typical cochlear implant program.

A discussion of both the benefits and the limitations of the cochlear implant is included.

For a free copy of the brochure, write: Otologic Products/3M, Department SU84-106, Box 33600, St. Paul, Minnesota 55133.



This brochure, which describes cochlear implants, is available free from 3M.

NOW AVAILABLE THROUGH AAS
A full length videotape of the 1984 Carhart Memorial Lecture presented by Gunnar Liden, M.D., Ph.D. at the 1984 IAC/AAS Joint Meeting is now available on a loan basis. For availability and reservation please contact Ross Roeser, 1966 Inwood Road, Dallas, TX 75235.

Audiological Resource

Association Fall Meeting

The fall meeting of the Audiological Resource Association will be held at Roan Mountain State Park, Roan Mountain, Tennessee, on October 26-28, 1984. An excellent program is planned in two areas of special interest to all audiologists. The first topic is "Speech Audiometry: Past, Present and Future" and will be presented by William Rintleman, Ph.D., Professor, University of Pennsylvania School of Medicine.

Many feel speech audiometry is a test area that is often misunderstood, misinterpreted, and under-utilized. Dr. Rintleman's presentation will help clinicians develop a fuller appreciation for the diagnostic potential of speech audiometry.

The second topic will be "Computers in the Audiology Practice: More Thoughts". Gene Bailey, Ph.D., Professor of Computer Science, East Tennessee State University will discuss a number of topics important for an understanding of computers and their applications in today's business world. Both this presentation and the final one are a continuation of the winter meeting and reflect the organization's recognition of the ever growing role computers play in today's society.

Larry Hutto, M.A., Audiological Resources, Inc. will discuss the application of computers to the audiology practice. His lecture will deal with the many ways computers can be useful to an audiologist and he will give special attention to the use of computers in industrial testing.

The meeting site is a rustic mountain setting with individual cabins and many hiking trails. It is expected that the mountains will be made more beautiful by the fall colors which are expected to be near their peak at that time.

Registration will be open to all interested individuals. Further information may be obtained from the ARA Secretary, Ms. Faye Churchill, Suite 402, 2022 Brookwood Medical Center Drive, Birmingham, Alabama 35209.

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Immittance Workshop Announced

A two-day workshop titled "The Role of Immittance in Diagnostic Audiology: State-of-the-Art" will be given January 7-8, 1985 at Marymount Manhattan College in New York City. The featured speakers are Dr. Shlomo Silman and Dr. Stanley A. Gelfand. Dr. Shlomo Silman is Associate Professor of Audiology, Brooklyn College, Brooklyn, New York. Dr. Stanley A. Gelfand is Chief, Audiology and Speech Pathology Service, Veterans Administration Medical Center, East Orange, New Jersey. Both speakers are authors of numerous publications on acoustic immittance. The topics include: immittance theory and concepts; calibration of immittance devices; measurement of the temporal parameters of immittance devices and the time course of the acoustic reflex; quantification of acoustic-reflex magnitude; probe-frequency effects in tympanometry; prediction of hearing loss with the acoustic reflex; effects of pathology, hearing loss, and age on the acoustic reflex; monitoring of acoustic-reflex artifacts; discussion of case studies and review of problem cases from the audience. In addition to lectures and discussions, demonstration of procedures will be provided and immittance devices will be on display. The tuition is \$175 (\$115 for full-time students) until December 1, 1984. After December 1, 1984, the tuition is \$190 (\$130 for full-time students). There is an extra charge of \$6 if ASHA CEUs are requested. One lunch and coffee breaks are included in the tuition fee. Substantial handouts will also be provided. The workshop is sponsored by the Communication and Learning Center, Marymount Manhattan College, 221 East 71 Street, New York, N.Y. 10021. The workshop is co-sponsored by Guinta Associates, Inc., 67 Leuning Street, S. Hackensack, N.J. 07606. Questions should be directed to the contact person: Carol A. Silverman, Ph.D., Program Director (212-472-3800 ext. 576). Marymount Manhattan College is approved by the American Speech-Language-Hearing Association to sponsor continuing education in speech-language pathology and audiology. The above activity is offered for 1.4 CEUs in partial fulfillment of the requirements for the Award for Continuing Education.

Patent Obtained

Associated Hearing Instruments of Upper Darby, Pa. announced that E. Robert Libby has been issued United States Design Patent No. 247,839 on July 24, 1984 for the design and development of the "Libby Horn". The Libby Horn is based on Mead Killion's original research on the 8CR and 6EF type earmold constructions. Most earmold laboratories throughout the world utilize the "Libby Horn" in order to obtain a smooth, wideband transparent hearing aid response. Libby also received the prestigious Fletcher Award from the "New York League for the Hard of Hearing" for the development of the horn.

ARO In Its Second Decade

For over a decade (since 1973) the Association for Research in Otolaryngology (ARO) has provided a forum for research in all areas of otolaryngology. Its membership has grown to almost 600 researchers with approximately 400 participants attending its annual Midwinter science meetings.

The ARO was an outgrowth of the Committee for Research in Otolaryngology of the Old American Academy of Ophthalmology and Otolaryngology (AAOO), now the American Academy of Otolaryngology — Head and Neck Surgery (AAO-HNS). For the seventeen years prior to 1973 the Research Committee provided the major focus for research with AAOO. In 1973 the demand for research led to the formation of a new society, ARO, which held its first fall meeting in Palm Beach, Florida in 1974. Although ARO is now an independent society, it still maintains close ties with AAO-HNS primarily in the joint sponsorship of the Research Forum held each year at the annual meetings of AAO-HNS (this year's meetings were in Las Vegas with the Research Forum taking place on September 15).

ARO, thus, sponsors its annual Midwinter Meeting (at Clearwater Beach, Florida, February 2-7, 1985), co-sponsors the Research Forum at the annual meeting of AAO-HNS, and publishes four Newsletters each year along with the abstracts of papers presented at the Midwinter and Research Forum meetings. The Midwinter Meeting is usually a combination of special topic symposia-workshops and contributed papers covering all aspects of basic and applied research in otolaryngology. The ARO recognizes an outstanding scien-

tist(s) as its Achievement of Merit Winner at each Midwestern Meeting.

Membership categories of Active, Associate, Corresponding, Honorary and Senior members include 287 Ph.D.s, 244 MDs, and 26 joint MD-Ph.D. degrees. Members are from 46 states and 21 foreign countries. The membership has been growing at the rate of approximately 10 percent a year.

The present officers of the society are: President: William Stebbins, Ph.D.; President-Elect: Robert Ruben, MD; Past-President: Maxwell Abramson, M.D.; Secretary-Treasurer: William Yost, Ph.D.; Historian-Editor: David Lim, M.D.; and Council members: Bobby Alford, M.D.; Donald Nielsen, Ph.D.; and Murray Sachs, Ph.D.

The 1985 Midwinter Meeting will feature four symposia-workshops: Comparative Hearing, Comparative Reception of Complex Stimuli, Auditory Perception of Complex Non-Speech Stimuli, by Humans, and Inner Ear: Morphology and Physiology.

Additional information about ARO, membership applications or information about the Midwinter Meeting can be obtained from the ARO Secretary-Treasurer, William Yost, (312-508-2710), Parmlly Hearing Institute, Loyola University of Chicago, 6525 North Sheridan Road, Chicago, IL 60626.

Berlin Announced

As '84 BDTAA Winner



CHARLES I. BERLIN

Charles I. Berlin, Ph.D., director of the Kresge Hearing Research Laboratory of the South Louisiana State University Medical Center (LSUMC) in New Orleans has been named the winner of the 1984 Beltone Distinguished Teaching Award in Audiology (BDTAA).

The BDTAA is the only teaching award bestowed in the field of audiology. To be eligible, instructors must be nominated by a current or former student and have five or more years of experience in teaching audiology.

The result of this year's search was announced by Joan Siegel, M.D., Beltone manager of professional relations, on August 29 at the International Congress of Audiology in Santa Barbara, CA.

In making the presentation, Siegel noted Berlin's outstanding reputation among students, audiologists, doctors and laypersons as a teacher, lecturer and researcher. She illustrated his commitment to the future of audiology by quoting from his required essay, "From Student to Practicing Audiologist."

Berlin's essay, adapted from a "family recipe" of his father's, the late Dr. Sol Berlin, ended with this advice: "When the product is finally finished (some aging is almost always useful), take the audiologist back into the hot academic ancestral kitchen and teach him how to 'bake' even better than you did. Each generation has an obligation to produce better offspring than the one that preceded it."

Berlin has taught advanced clinical audiology to medical and audiological students for 25 years. He is especially well known for the educational materials he has designed and his work in ultra-audiometrics. He is the founder of Kam's Fund, a national organization for the study and management of ultra-high frequency hearing loss. Berlin is a frequent lecturer and author, with almost 250 verbal presentations and 150 written presentations to his credit. Among the many other honors he has received, the most recent is the 1983 Louis DiCarlo Award for outstanding clinical contributions from the Louisiana Speech and Hearing Association.

Francis Shipley-Brown, a former student of the Berlin's, is currently pursuing her doctorate in audiology at the University of Maryland. In her essay, she summarized why Berlin is held in such high regard: "He is acknowledged by his colleagues and his own former teachers as a man who makes the most difficult ideas clear. Whenever his name is on a program, I make a point of attending his lectures; he consistently teaches us new things in a kindly, lucid and supportive fashion."

Berlin was chosen from a field of 21 candidates. His essay was one of seven factors weighed by a blue-ribbon panel of judges. The panel was composed of 10 prominent professionals in the field of audiology — including the two previous BDTAA winners — plus one student representative chosen by NHSSLA.

The judges were Dr. Fred Bess, Vanderbilt University; Dr. Bradley Edgerton, House Ear Institute; Dr. Jack Katz, State University of New York; Dr. Bob Keith, University of Cincinnati; Brian Lee (student) University of Montana; Dr. Geary McCandless, University of Utah; Dr. Ross Roser, University of Texas Callier Center; Dr. Zahrl Schoeny (1982 winner), University of Virginia; Dr. Bruce Weber, Duke University Medical Center; Dr. Terry Wiley (1983 winner), University of Wisconsin; and Dr. Don Worthington, Boys-town Institute.

Membership Addressed

During the 1983 Executive Meeting of the American Auditory Society, the board members approved Ross Roeser's recommendation that I assume the position of Editor in Chief of *Ear and Hearing*. Recently, Suzanne Brown wrote and asked if I would like to submit an "Editor's Address" to *Corti's Organ*. Her request provided me with an opportunity of sharing some thoughts with AAS members as I begin my duties as editor.

Many of you know that the journal *Ear and Hearing* evolved from *The Journal of the American Auditory Society* that began in 1975. The first editor-in-chief was J. Donald Harris, followed by Ross J. Roeser. Under their direction and with the help of a large group of section editors and referees, the journal has grown in stature and has become an important source of scientific and clinical information. It is an honor to follow Don and Ross as editor of this fine journal. I deeply appreciate the support of the Executive Committee and the members of the American Auditory Society.

As editor, I have only one goal — and that is to continue the level of excellence for which the journal is already known. There will be a few minor surface changes, some sections will be renamed and some new section editors will be announced in the first issue of 1985. There will not be any fundamental changes in the philosophy of the journal, however, and we will continue to publish basic and applied research that relates to the clinical interests of our readers.

As members of the American Auditory Society and potential contributors of *Ear and Hearing*, you can help in a number of ways. If you have ideas and suggestions that might help the journal, we would like to hear from you. If you are interested in serving as a peer reviewer, let us know, and provide us with information about your special area of expertise. If you have an interesting manuscript that is appropriate for the journal, send it for review. And finally, if you talk with your colleagues, let them know about the journal and invite them to join the society. You should be aware that increased membership provides, among other things, additional support for the journal.

I would like to thank those of you who have written with expressions of support and good wishes. I would also like to congratulate Suzanne Brown of her appointment as Editor of *Corti's Organ*, and to urge your support of her work. Together the new editors of the two publications of the American Auditory Society may be remembered for "boldly splitting infinitives that have never been split before" (Hitchhiker's Guide to the Galaxy, p. 114), so we will appreciate all the support and help from the members that we can get.

Robert W. Keith, Ph.D.
Mail Location 528
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the Medical School as well as a Professor of Audiology in the School of Speech at Northwestern University.

Carhart's impact on the community of scholars can be measured in a variety of ways. He was a superb teacher. His ability to clarify the most complex issues was recognized and appreciated by all his students. He personally guided 45 students through successful doctoral and post-doctoral study. He had a unique insight into human behavior and he was a warm and compassionate human being. This combination allowed him to instill a sense of confidence and self-worth not only in those who successfully completed their programs, but in all of his students.

Carhart exerted a significant influence on the development of his field. He held chairmanships, trusteeships, and consultantships in dozens of organizations at the local, state, and national levels. In 1963, he became the only member of his profession to receive a Research Career Award from the National Institutes of Health. Dr. Carhart's era of greatness was mainly spent in the University barn. As a visitor, I was impressed that so much exceptional work could come out of those plain quarters. However, he finally moved into new facilities worthy of his qualifications.

My personal contact with Ray Carhart started in 1950 in Stockholm, where he served as a highly appreciated lecturer at the First International Course in Audiology. This course was in fact the impetus for the birth of audiology in Europe. During recurrent visits I got an opportunity to get acquainted with his research. Throughout his career, he was concerned with basic problems of psychoacoustics including such issues as forward and backward masking, masking level differences, binaural fusion, and lateralization. Nevertheless, his major contribution to his field resulted from the attention he gave to problems relating to clinical audiology. If any aspect of Carhart's research efforts can be singled out as representative of his significant contributions, it is his work relating to the refinements in interpreting the pure-tone audiogram. He detected individual deviations from expected patterns of response which led him to systematic explorations of the phenomena. "Carhart's notch" is an example of this.

When Ray had a difficult and tiring scientific problem, he loved to draw himself back to his Shangri-La, where he recuperated by alternately writing papers, or fishing. Carhart's contributions to the evolution and refinement of speech audiometry and the application of this tool to the assessment of the efficiency of hearing aid performance in the individual patient are widely recognized. From his scientific audiological will, published as an introduction to the textbook **Amplification for the Hearing Impaired** by Michael C. Pollack, it is evident that he wanted clinical audiology to develop faster and to live up to his expectations. Unfortunately he never did get to witness the enormous revitalization of research on his favorite topic, the selection of hearing aids. In order to pay homage to his memory, I have chosen to spend the rest of this lecture in talking about current trends in amplification techniques.

In an overview of the history of methods of selection of hearing aids, Studebaker points out that three distinct periods can be recognized: before, during, and following Carhart's era. As all of you are aware, his procedure for evaluating hearing aids was principally based on the methods of speech audiometry. Emphasis was especially given to sensitivity, limits of tolerance, performance in noise, and discriminative efficiency. Besides Carhart's comparative and more flexible methods, the Harvard Report and MedResCo Study dominated for a long time with their recommendations that a single frequency-gain characteristic would provide the optimum amplification for most hearing-impaired subjects.

In the mid-seventies, the role of selective amplification regained popularity. One main reason for the increase in nonverbal methods of selection of hearing aids compared to the conventional Carhart method was that speech tests do not differentiate between differences in performance of hearing aids. However, new methods in the testing of speech seem very promising for the selection of hearing aids. According to Hagerman, determination of a threshold value of the signal-to-noise ratio for synthetic sentences in speech-noise at 50 percent intelligibility has proven to differentiate between different hearing aids. His performance/intensity function has a very steep slope of 25% dB.

The term "prescriptive selective amplification" means that the frequency response of the hearing aid is tailored to conform with the patient's individual needs. The goal is to achieve the highest possible intelligibility of speech as well as good listening comfort, in order to make speech comfort-

tably audible. The optimal placement of speech energy within the patient's auditory area has to be determined. To accomplish this goal, the physical dimensions of the gain-frequency response curve and the saturation sound pressure level (SSPL) or maximum power output (MPO) of the hearing aid must be in concert with the thresholds and comfortable and uncomfortable levels of the patient.

Many different methods of prescriptive selection have been developed in order to find the optimum amplification or the best frequency response. One well recognized method uses the tone threshold or the threshold for one-third octave band noise for describing the gains that are needed across the spectrum. Lyberger introduced the half-gain rule and proposed using an amount of gain in each frequency region equal to about half of the hearing loss. The threshold levels can also be inserted into formulas that take into account the spectrum of speech. They base their recommendations on predictions derived from the relationship between hearing level and preferred gain at each frequency. Berger et al. have used similar methods.

Another popular method bases the desired gain-frequency response curve on the subject's Comfortable Loudness Contour, and the difference between this contour and a normal subject's auditory threshold or comfortable level. These methods differ in many details but common to most of them is that the prescribed frequency selective amplifications should be verified by some sort of real ear measurements. It is a well known fact that the frequency response curve of a hearing aid measured in a coupler or ear simulator will be altered by different types of molds and horn couplings and does not give a very reliable picture of the sound pattern in front of the eardrum. A more realistic assessment of the real ear frequency gain is obtained with psychoacoustic measurement of the functional gain, i.e. the difference between unaided and aided thresholds. Liden and Kankkunen used it as an indispensable method for selection of hearing aids for children.

There seems to be some uncertainty about what shape of functional gain produces the highest discrimination scores. According to Pascoe, a uniform hearing level gives satisfactory help for subjects with moderately severe hearing loss. There is, however, a risk of using functional gain because it can lead to the use of too much gain in hopes that lower thresholds will give better results. Measurements of insertion-gain obtained with an ear-canal microphone or with a soft probe/tube microphonic system have gained in popularity and are excellent for real ear measurements. This technique simplifies the fitting of the hearing aid.

Hearing aid technology and fitting techniques can today offer most patients satisfactory intelligibility and listening comfort. In noisy situations, comprehension of speech may be improved by selective amplifications of high frequencies, at the price of somewhat less comfortable listening. In quieter environments, the high frequency gain may be decreased without lowering comprehension of speech but with improvement in listening comfort. So far, these two competing desires in listening have had to be met with two different types of hearing aids, just as many people have a separate pair of prescriptive sunglasses.

In an interdisciplinary research project between Chalmers Technical University and our Department of Audiology at Sahlgren's Hospital, Gothenburg, a wearable, programmable hearing aid with multi-channel compression has been devised. Basically, this aid has a memory built in by which different frequency response curves can be programmed from a computer. The signal-processing chosen for this wearable, programmable hearing aid is multi-channel compression using three channels with two programmable crossover frequencies. The compression threshold of the AGC circuits and the gain are programmable for each channel. The hearing aid is thus fitted to suit different types of hearing loss by way of a microcomputer based psychoacoustic measuring and fitting unit. This unit measures the equal-loudness contours of the subject at comfortable levels and calculates the differences between the equal-loudness contours of the hearing-impaired subject and the normal hearing person. Further, the parameters of the programmable hearing aid are calculable and the memory of the aid is programmed. By means of a probe-microphone or an ear-canal microphone, the real ear insertion gain is determined. The computer verifies whether the gain in frequency response obtained deviates from the gain desired.

... a computer-based system, elderly untrained users with moderate sensorineural loss preferred considerably less gain in everyday listening situations than had earlier been suggested. During the last decade we have witnessed new developments in the area of non-conventional hearing aids, such as middle ear implants, cochlear implants, and bone-

anchored hearing aids. I will dwell especially on the last mentioned topic and later describe it in some detail.

Non-Conventional Hearing Aids

Middle Ear Implants

There has been considerable interest in the last ten years in such non-conventional hearing aids as middle ear implants. Generally speaking, these consist of a motion-transducer which is partially or fully enclosed within the middle ear space. The transducer transmits energy (vibration) into the inner ear via the ossicular chain or via the cochlear capsule. A conventional, regular hearing aid amplifier may be used to drive the transducer.

One type of transducer has relied upon induced magnetic field effects. The induction devices use a small permanent magnet which is attached to the ossicular chain or the tympanic membrane. Electric current led to a small coil of wire placed close to the magnet produces an alternating magnetic field corresponding to the fluctuations of the sound. The alternating magnetic field causes the magnet to move in a pattern that mimics the input signal. According to Glatke, this type of transducer can transmit intelligible speech, but the efficiency of energy transfer is poor. Piezoelectric devices have also been implanted and have received considerable attention.

Cochlear Implants

The use of electrical auditory stimulation in the management of postlingual deafness has advanced considerably and is no longer looked upon as human experimentation. The information which can be conveyed by single-channel stimulation can assist the totally deaf to achieve partial rehabilitation. The cochlear implant can give release from the world of silence and help to identify important environmental sounds. It is recognized as an aid to lipreading and may help to improve the subject's intonation and articulation. A relief from tinnitus is also reported.

Progress toward restoration of intelligibility of speech has, however, been slow. Even if frequency were properly distributed in space and in time by means of multiple electrodes, a real improvement in the intelligibility of speech could not be expected. The reason lies in the lack of coding of the input in the cochlear nerve fibres, normally provided by the hair cells. Unless such coding can be provided, there is little chance that a signal will reach the right place in the higher processing centers where it can be interpreted.

Bone-Anchored Hearing Aids (BAHA)

A quite different and new approach for a special group of subjects with conductive or mixed hearing loss is the bone-anchored hearing aid. Although the objective of surgery or medical treatment for middle ear disease and conductive hearing loss is to get a dry ear with satisfactory hearing, we know that this goal cannot always be reached. Some patients are in need of a hearing aid but are unable to use a device that transmits the sound via the external ear canal. These patients may benefit from a conventional bone conduction hearing aid. The most conspicuous indications for such a device are:

- Chronic ear condition that drains or starts to drain if the ear canal gets obstructed.
- Malformations of the ear, absent ear canals, and extensive conductive dysfunctions which for some reason cannot be corrected by surgery.

However, a bone conduction hearing aid has many disadvantages:

1. The transducer must be applied with a constant force to the mastoid region with resultant discomfort, irritation, and sometimes exzema of the soft tissues.
2. The fixation of the bone vibrator is often unsatisfactory. When supplied via "hearing glasses," the function deteriorates with flaccidity of the frames.
3. The quality of the transmitted sound is generally poor.
4. The aesthetic appearance is not always cosmetically satisfactory.
5. Due to the relatively high signal velocity needed, the transducer and the electronic part of the aid must be kept apart to avoid acoustical feedback.

The present use of bone conduction hearing aids in Sweden is 140-1,000,000, which corresponds to about 3 per cent of all annual fittings. The actual need for bone conduction hearing aids might, however, be greater, were it not for the poor function of the conventional bone vibrator. Many patients do not use any aid at all or they prefer an ordinary aid even if the ear starts to drain when they use it. One way of improving the situation is to implant some sort of device directly into the temporal bone and to establish a permanent reaction-free penetration of the skin.

This idea has been implemented in the bone-anchored hearing aid. Due to the pioneering work by Branemark et al.

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in Gothenburg on osseointegrated titanium implants, and by Tjellstrom et al. using this implant in the temporal bone, a new approach to wearing bone conduction hearing aids has been developed. The method is based on the idea of permanently anchoring a threaded cylindrical titanium screw (fixture) into the temporal bone and connecting an external hearing aid to the fixture by a titanium abutment penetrating the skin. The problems in accomplishing a direct bone-anchorage with a permanent and reaction-free penetration of the skin will first be discussed.

The soft tissues covering the skull dampen sound energy considerably. Arlinger and Kylen observed in their work on drill-generated noise levels during ear surgery that the acceleration levels of the temporal bone increased 10-25 dB when the transducer (minishaker) was in direct contact with the temporal bone, as compared to when intact soft tissues were covering it. This knowledge indicates that a direct contact between the hearing aid transducer and the bone might be of great value in bone-conducted transmission of sound. Many techniques for implantation of different metals into various bones of the body have been tried during the last ten years, but many have not been successful because of adverse side effects on tissue.

Osseointegration of an implant means direct contact between the implant and the living bone tissue. Many different opinions on the possibility of achieving and maintaining osseointegration have prevailed. According to Jacobs, osseointegration is only possible with coated metal implants or with ceramic implants. Branemark et al. used titanium for implants. The surface of titanium becomes instantaneously coated with an oxide layer when exposed to air. Because of this property, titanium as an implant material may be regarded as a ceramic, not a metal.

Although more knowledge has to be gained, there seems to be a chemical bonding between titanium and bone. Clinical experience of more than fifteen years has shown this technique of bone-anchorage to yield excellent long-term results. The method has also been used in treating edentulousness, but inserting titanium screw implants into the maxillary and mandibular bones. According to Branemark et al. and Adell et al., more than 3,000 dental implants have been inserted in about 400 patients with a 10-year success rate of more than 90 percent.

Osseointegrated titanium implants have been found capable of penetrating the skin without adverse reaction, provided that the free movement of the skin is restricted. The first titanium screw implant in the temporal bone was done in Gothenburg in 1977. Since then, 245 titanium fixtures have been inserted (June, 1984), partly for procuring a bone-anchored aid, partly for attaching an auricular prosthesis in patients suffering from malformations of the ear or with a missing pinna after tumor surgery or traumatic injuries. A five-year report by Tjellstrom et al. indicates that the titanium fixtures have remained stable and had no side effects from the skin-penetrating abutments.

The surgical procedures are generally performed under local anesthesia and consist of two stages described by Tjellstrom et al. During the first step, a series of drills is used to create a cylindrical bone defect which the is tapped. The fixture is then gently inserted into the bone. All preparations of the bone are done to assure minimal injury to the tissue. The titanium fixtures are osseointegrated and stable after about four months. Then, at the second surgical procedure, the skin-penetrating titanium abutments are attached to the implant.

Only two fixtures out of the 245 implants have failed to integrate with the bone. The first failure was found in a young girl with a hemifacial malformation. The thickness of the bone was only 1.5 mm where the implant was placed. The second failure was in a patient who had been treated with radiation due to a squamous cell carcinoma. However, four other implants in the same irradiated area did integrate without any problems. A fixture in a third patient had to be taken out because of psychological problems.

The first-generation bone-anchored hearing aids, used during the period 1977 to 1981 by 14 patients with conductive lesions, consisted of a conventional plastic-cased Oticon bone vibrator which was applied to the titanium fixture by means of a simple snap-connection. Due to impedance mismatch, this new direct bone conduction hearing aid suffered from troublesome resonances and distortion which resulted in displeased patients. Other common reasons for this dis-

pleasure were poor functioning of the mechanical connection and the unaesthetic arrangement. Moreover, the microphone and the transducer had to be kept apart to avoid acoustical feedback, and from this standpoint, no improvement had been achieved by this first generation bone-anchored aid.

Comprehensive measurements of mechanical impedance revealed that the magnitudes of mechanical impedance of the skin-penetrated human head are 10 to 39 dB higher than those of the skin-covered human head. This knowledge about impedance made it possible to develop a new bone-anchored hearing aid with all the parts in a single housing. During 1981, the prototype of this second-generation of bone-anchored hearing aids was successfully tested on one patient. At the end of 1981 it was decided that a sufficiently high level of safety had been reached, and a series was manufactured and fitted to ten of the 14 first-mentioned patients.

The result of evaluation of this group are reported. They investigated with Bekesy audiometry the difference in hearing thresholds among these ten subjects when an Oticon transducer (Oticon 10381-F 06-3) was applied a) rigidly to the titanium fixture, and b) conventionally, to the intact soft-tissues. The average improvement in the threshold in terms of electrical quantities fed to the transducer varied between approximately 10 and 20 dB in the frequency range of 600-6,000 Hz. The threshold shift was also measured in terms of mechanical quantities generated by the transducer in seven patients. The transducer was now rigidly attached to a miniature accelerometer (B & K 4344). The average lowering in acceleration thresholds when measured directly on the titanium screw as compared to when measured on the intact surface of the skin was found to be between 16 and 29 dB, with an average over all frequencies of 20.8 dB. The lowering of hearing thresholds means lower gain in the amplifier, lower consumption of power, and lower levels of distortion.

Another series of bone-anchored hearing aids was manufactured during 1983 and fitted to 15 subjects with conductive or mixed hearing losses. The evaluations of this group are only partly finished. The judgment is based on tests with newly developed lists of spoken sentences, edited in a computer, word by word, and presented in speech noise. The intelligibility curve has a maximum steepness of 25% dB at threshold. The patients' faculties for understanding speech in noise are graded by their threshold values of the speech-to-noise (S/N) ratio for 50% intelligibility (the speech level was held constant at 63 dBA). The threshold values can vary from -7 to +7 dB signal-to-noise ratio depending on hearing loss. Repeated measurements of S/N thresholds in speech noise showed a standard deviation of 0.4 dB for subjects with normal hearing and 0.71 dB to 1.1 dB for moderate to severe hearing-impaired subjects. Eight of the patients with pure conductive hearing loss showed an improvement of the signal-to-noise thresholds with, on the average, +5.6 dB. Among these individuals, the improvement ranged from -0.9 to 10.1 dB. The other seven patients had considerably pronounced mixed hearing loss. The S/N threshold improvement for all 15 patients was, on the average, +3.8 dB.

At this moment, no general rules can be given about the amount of superimposed sensorineural loss which can benefit from the bone-anchored hearing aid. However, the present study indicates that patients with mixed hearing loss and a bone conduction curve around 50 dB of hearing loss make good use of the bone-anchored hearing aid. All patients' subjective evaluations were very positive, indicating superiority of the new aid. The audiological indications for using a bone-anchored hearing aid can briefly be summarized as including:

1. Any patient who uses a conventional bone conducting hearing aid.
2. Any patient who uses air conduction hearing aids with a mold in spite of draining ears. These patients should use a conventional bone vibrator, but dislike it because of its disadvantages.
3. Any patient who needs amplification but conventional air conduction hearing aid cannot be used. Medically, these patients will be diagnosed as including those with: (a) congenital atresia in whom surgery is contra-indicated; (b) operated congenital atresia but draining ear if mold is used, or if satisfactory hearing has not been obtained; (c) chronic otitis media, operated or non-operated, with conductive and/or mixed hearing loss; (d) radical mastoidectomy and meatoplasty experiencing acoustic feedback when using air conduction hearing aid.

4. Amount of hearing loss: (a) air conduction levels up to a pure-tone average of 80 dB hearing loss (.5 to 2 kHz); (b) bone conduction levels up to a pure-tone average of 50 dB.

Contra-indications for using bone-anchored hearing aids include:

1. Subjects with mixed hearing loss in which bone conduc-

tion thresholds are greater than a pure-tone average of 50 dB hearing loss (.5 to 2 kHz).

2. Patients with pure sensorineural hearing loss.

3. Emotionally unstable or developmentally delayed patients.

4. Patients under the age of 16 years.

Choice of Ear for BAHA: The ear with the best bone conduction should be chosen. The present advantages of the bone-anchored hearing aid (BAHA) compared to conventional bone conduction aids can be summarized as:

- improved wearing comfort, because no static pressure on the skull is needed to transmit sound vibrations to the cochlea and no steel spring is needed to hold the transducer in place;
- improved aesthetic appearance, as the BAHA is available in a single case;
- improved quality of sound due to lower distortion;
- improved intelligibility of speech, especially in noise;
- reduced consumption of batteries.

The major steps forward in technical performance of the bone-anchored hearing aid have been taken, but improvement will be seen in the next generation of aids. The inconvenience of having the titanium screw implanted seems, at least to Sweden, to be surpassed by the advantages mentioned here for this new type of aid. Hopefully, the bone-anchored hearing aid will benefit a considerably larger group of the hearing-impaired than the conventional bone vibrator does. A multicentric study group recently established will try to accomplish this goal. The groups are located at the University of Minnesota, Minneapolis; Columbia University, New York; University of Texas, San Antonio; University of California, San Francisco; and the University of Gothenburg, Gothenburg, Sweden.

Looking back, we can state that Ray Carhart was a very demanding man, often blaming clinical audiologists for functioning primarily as consumers of research performed by others instead of being producers of it. He may have been right. On the other hand, I am certain that if Ray were alive today, he would have been pleased with the developments in selective amplification, programmable hearing aids, computerized fitting of hearing aids, middle ear and cochlear implants, and bone-anchored hearing aids. Somehow I have a feeling he is aware of these developments and is providing silent encouragements to many who continue to work in these and other challenging areas of research.

Notice: Stimulating News

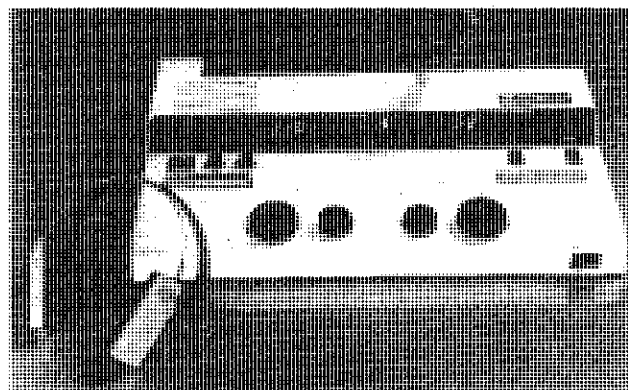
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For more information, contact Mr. Irwin Klar, Vice President of Marketing, Audimax, Inc. (201) 448-4444.



DO WE HAVE YOUR CORRECT ADDRESS?

The Delivery of Information to Patients with Hearing Loss

By Frederick N. Martin, Ph.D.

As clinical audiologists we usually find ourselves, upon completion of a history and examination with a great deal of information regarding a patient's hearing. When we provide much of this information to patients or their families we are reinforced for what we say by words of appreciation. We have all heard phrases like "Nobody ever really explained this to me before, even though I have been tested many times," or "Of all the places we have taken our child no one has ever taken the time to try to make us understand what hearing loss is all about." These words of appreciation are so good for our egos that we find ourselves go into more and more detail, outdoing by great distances those "disinterested" clinicians whom the families may have encountered earlier. Who is to say whether we are burdening the family with test details that are beyond their comprehension and whether we enjoy our "jargon" because it makes us feel important.

Before proceeding I believe I owe it to the reader to be candid about the source of my keen interest in the subject at hand as well as my main outside information resources. More than a quarter of a century of dealing with patients in the counseling process, which I believe to be the most important aspect of the audiologist's responsibility, have led me to seriously question the methods we use in dealing with families of hearing-impaired persons. A dramatic personal experience, which I will relate shortly, brought much of this conjecture into sharp focus.

Many of the statements I will make come from the writings of those authors whose works are listed in the bibliography which accompanies this paper. The writings, especially of Luteran, Webster, Kubler-Ross and Stream and Stream, are essential reading for any clinician who will need to deliver "bad news" to another human being. I was recently a recipient of sudden bad news and speak of this with deep personal feeling.

About 4½ years before this writing, my son, who was 20 years old and about to graduate from college to enter medical school, noticed a sudden and dramatic change in his vision. What followed was a series of visits to specialists including ophthalmologists, optometrists, neurologists and specialists in internal medicine. They felt that indications were that this might be normal eyestrain associated with being a university senior. One ophthalmologist became furious at learning he was being seen for a second opinion and when we asked him to repeat the visual perimetry test he refused saying it was a waste of his time and our money. He further suggested that "neurotic behavior" on the part of the parents could create neurotic behavior on the part of the son that a six foot college senior "...does not need his daddy to take him to the doctor."

Audiologists have little training in the visual system, except for what they remember from courses in sensory psychology, but what we know about central auditory lesions makes us wonder when similar symptoms appear elsewhere in the sensory system. For this reason I persisted in finding a more complete diagnosis of my son's problem and finally located, through a colleague, a neuro-ophthalmologist in Dallas, about 200 miles north of our home in Austin, Texas. What followed there was the incident that has precipitated this paper.

After performing a brief physical examination and visual perimetry test in Dallas, my son was sent to radiology for some skull films. My fears of a central visual lesion became exacerbated at that time but I was fairly calm. When the x-rays were completed and we were standing in the hospital hallway the physicians came from the radiology department with the films in his hand. I asked what he thought the problem was, halfway expecting to be told it was nothing. What I was told rocked me to my very core. He said, and I use quotation marks because these are, to my best recollection, his very words, "David has a tumor pressing on his optic nerve. He needs immediate surgery or he will be blind in two weeks and dead in four." It is here that I learned what a crisis reaction really is, and no amount of reading or observation of families or patients could have taught me this lesson better.

That night we drove home to Austin where my wife flooded me with questions; all logical and important ones. Somewhere much of this information had been provided to me by the physician in Dallas, but I recalled none of it. I did not know the nature of the surgery, the probably type of tumor, the prognosis both for our son's recovery and for the return of his vision, the length of stay in the hospital, other side effects, etc. I was useless as a source of information. When the key words, "blind", "tumor", "dead" hit me I became incapable of processing any further information. I am cer-

tain in my own mind now that to some extent these are the events which occur when people are told words like "deaf."

I have found, both clinically and personally, that different people react differently to bad news depending on their personality makeup. Audiologists, of course, do not tell people that they or their loved ones are going to die. But to some people the irreversibility of their or their child's hearing loss impacts in much the same way as impending death. It is a situation which, at the time, they cannot handle. Some of the common stages people go through when dealing with bad news will follow, but first reactions usually involve shock, denial, anger or open confrontation as a main defense in the face of bad news.

Part of the assimilation of bad news includes at least some time in the grieving process, and time is essential to passing through this process. To rush it is to risk poor or no adjustment. Some people feel that if they cannot have their life the way they want it, with normal health, a normal child, normal hearing, then they don't want their life at all. The patient or parent may lose the desire to "go on." For many people who face what they believe to be catastrophic disorganization of their lives, guilt is the eventual result of anything that might even bring them a small amount of pleasure.

When adults enter the audiology clinic it is with the awareness that they have a hearing disorder. They often oversimplify it in their minds and expect an easy solution to their hearing problems. Being told that the loss is sensorineural and that the "treatment" involves a good deal of expense and effort on their part can be shocking and disappointing. However, they are better prepared for bad news, in most cases, than are the parents of small children who are being seen for what they have begun to feel may be a general communication disorder.

As Luteran points out, most parents do not consider hearing loss very seriously when they begin to wonder whether something is wrong with their child. This awareness usually occurs by the time the child is six months of age. When children do not do what their parents expect them to do in the way of development, the parents' first fear is of mental retardation, a fear that often does not leave them even after a completely different diagnosis has been made.

Often some considerable period of time is lost after one parent first suspects that something is wrong. The other parent's response may be that there is over concern. If they suspect that hearing loss is a possibility in their child's apparent lack of response to the environment, they may set off on a series of home-designed "hearing tests," which will, of course, lead to responses by the child which may be real, imagined, or provoked by stimuli other than auditory ones. Surely what will result is inconsistency.

When the parental concern for the child becomes mutual they may decide to seek a professional diagnosis. Often, however, one parent takes the child to a specialist without the knowledge or approval of the other. The professional seen first is usually a physician, often a pediatrician. Because physicians are accustomed to seeing parents who are "overanxious" about their children their initial response is frequently to try to comfort the parents and to put the best face on the child's problem. In addition, the physician's attempts at hearing testing will probably be no more sophisticated than those of the parents. The usual advice is to either forget about the possibility of a problem and that all is fine, or that children have to be older than the child seen before accurate tests can be carried out. "This 'waste of time' is often severely resented by parents and hearing-impaired children after a correct diagnosis is made.

Eventually the diagnosis of hearing impairment is determined. This is usually done by an audiologist and it is the audiologist who should convey the information to the parents. What happens in many situations is that an otolaryngologist receives the information from the audiologist, delivers the diagnosis to the parents who are then referred back to the audiologist for detailed counseling and recommendations for remediation. This is a most unfortunate process since the interruptions and the discontinuity add confusion to a complicated process of handling shocking and very bad news. What ensues is a series of reactions from the parents.

While experts may differ slightly in the precise terms they use to describe the various stages of reaction to bad news people experience, and even in the exact number of stages through which individuals may pass, there is general agreement on the progress of events. For example, after being told that their child has a severe hearing loss, according to Luteran parents go through five stages which are shock,

recognition, denial, acknowledgement and constructive action. These will be discussed now in order.

Shock is a response which separates the self from reality as a means of dealing with stress. While in a state of shock it is virtually impossible to process new information in any meaningful way. Heaping data, suggestions, plans of action and various strategies for dealing with situations which cannot be fully grasped may be less than a waste of time because individuals may realize their helplessness and be unable to do anything about it. Parents have told me that once the key words, such as "permanent hearing loss" have been heard what follows might just as well be in a foreign language. In some cases people come out of their shock rather quickly; in other cases it may take months or years.

The natural reaction to shock is a strong desire to flee; to get to what Luteran calls a "safe place." This safe place may be home, the company of a loved one, or into the personal automobile on the way home. Being totally unprepared for bad news and on "foreign ground" at the same time may be overwhelming and the individual may panic. Obviously description of the audiogram, results of other tests and designs for remediation cannot be understood under these conditions.

When the patient or family reach a "safe place," recognition of what has happened begins to occur. A curtain of disbelief begins to raise from around what is viewed as a terrible occurrence and the reality of what has been told there conceptualizes. At this juncture the emotions which have been suppressed come to the surface. At this point, patients describe the onset of grief which is experienced as much physically in some cases as emotionally. People describe a deep sense of pain in which the other mundane matters of their world fade instantly from importance. The car payment, the mortgage, the home and job difficulties which have been bothering them all seem silly and unimportant in the face of what seems a terrible loss. People are simply overwhelmed.

In the stage of recognition comes the realization that they are totally unprepared to deal with what must be dealt with in some cases, the rearrangement of social life and career; in other cases the rearing of a handicapped child. The feelings of inadequacy which may have been handled with some bravado in the past are exacerbated in the face of new and unusual circumstances. People look for someone to save them from this awful situation and, as Luteran points out, all too often there are audiologists or other clinicians who feel that they can step in to act as the saviors. Having someone else "take over" the situation may seem to the patient or parent the ideal thing to happen at this point but the actual result is more likely to be a deepening of a sense of inadequacy and the development of a dependent relationship on the professional. The patient or family may not mature to the point where they can handle the actions and decisions necessary to remediate the situation on a long-term basis.

An emotion which may develop at any time and which often really never leaves is anger. Part of the anger is self-directed since individuals feel that they should have known what was coming and been better prepared for it. Some of the anger may be directed at professionals who have "missed the diagnosis" and wasted what may be precious time in therapy. Some anger may be directed at people or situations which may have caused the problem, for example, each parent may actually feel a sense of hatred for the other when they are told that their child is "deaf" and feel that it must, in some way, be the other person's fault. Sometimes a repressed anger is felt towards the patient themselves. For an audiologist to attempt to dismiss this anger as silly and unproductive may seem logical but it is fruitless. As a matter of fact, audiologists may be the recipient of the anger for it is they, after all, who have dropped the bombshell of bad news.

Often clinicians attempt to jar the family to reality by placing responsibility on them. Kubler-Ross relates the story of a physician who got angry at a mother for crying when she was told that her daughter would soon die of leukemia. When she was told that she must get hold of herself for the child needed her strength, the mother felt her inadequacy to this task so deeply that she became confused and lost. At the other extreme is the clinician who offers to step in and solve all the family's problems. This action may seem generous and may even be welcomed but it increases parental or patient inadequacy and fosters a dependent relationship.

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People are angered by situations over which they have no control. When their hopes for a miracle cure have been dashed, they direct their anger at those whom they feel may have held out false hopes. When they must make important decisions rapidly without being prepared for these decisions they become angry at having been rushed. The fact that hearing aids are less than perfect amplification devices and do not solve auditory deficiencies in a manner similar to the way eyeglasses solve visual problems may produce anger. When their lives and the lives of their families are altered in many ways, anger results. There is little that an audiologist can say to the angry parent of a small child who demand to know why they were previously told that their child was alright or that the difficulty would be outgrown.

Despite their anger, people sooner or later realize that it is they who are responsible for their lives or the well-being of their children. It is fine to be angry at someone else and to look for ways of placing blame for what they have or have not been told in the past. It is **guilt** which sets in somewhere around this time. People ask themselves what they may have done or not done to cause the situation and sense the guilt for not having acted sooner. Often the feelings of guilt are so deep that the situation cannot even be discussed. The illogical anger which the parents feel towards each other fosters the sense of guilt and deepens the sense of mourning.

Since dealing with the situation may be difficult, a simple way out is to deny that it exists. The notion may develop that a different clinician may give brighter news and so parent or patient may be going to shop for a rosier diagnosis or a system of dealing with the situation which is less demanding. All experienced clinicians have seen parents who virtually never stop shopping for a "better" diagnosis or a treatment that will result in a better "cure" for the deafness rather than do what must be done in terms of retraining. The **denial** may be short-lived or may last indefinitely.

What is to be desired is to help the family to the stage of acceptance of the problem. The individual may say "Well, I guess I'm going to have to get used to the idea that my hearing will not come back," or "If I'm going to get anything done for my child I might as well acknowledge that his deafness is permanent and get on with the purchase of a hearing aid and some language stimulation." These words may or may not reflect true acknowledgement of the situation that can result in positive actions. All-too-often people know the right words to say without really meaning them.

Luterman describes, as a stage which follows acknowledgement, a time for **constructive action**. At this point the individuals begin to take charge of the situation, accept their new status and set about to the tasks at hand. This is not to say that people do not return as situations change to earlier and less productive stages, but having reached the point where positive things begin to happen is surely a milestone.

It is important to realize that individuals do not work through these stages by themselves. For them to be able to develop the skills that they need to deal with their new lives requires the skills of a sensitive and strong clinician. Surely our patience and our support of the family do not pay off in every situation. We are often frustrated at what appear to be foolish and fruitless actions. Often we are excluded from the situation at a point where we feel we can do a great deal of good. We must resist the temptations to rush people out of stages which they are not ready to leave. We must develop in ourselves the warmth and nurturing we would expect from others if we needed it. We must show that we care by getting involved, but cannot assume responsibility for managing the lives of others who must learn to do this for themselves.

Some of the mistakes that audiologists make are inherent in their very training. We are taught many things to do and are shown how to do them well. When we engage in less than a great deal of activity, it seems to us we are not doing our jobs. Now, after all the technical tasks have been done in the way of diagnosis, we must wait and guide the recipients of our services in a sometimes painstaking way. Helping others to deal with their feelings so that they can sooner or later accomplish what we feel they must accomplish is tremendously demanding on us. We must be helpful without being condescending. We must be keenly interested without becoming emotionally involved. And we must do all of these

things for each case with a full caseload waiting for us. The demands on the audiologist are greater than we may have been prepared for in graduate school.

The audiologist-counselor seems to fail or succeed more on the bases of individual personality traits than on professional training. How does one teach another to be a warm and nurturing individual? The audiologist who is technically excellent may lack the compassion necessary to work with parents of deaf children. Professors and supervisors must look for these characteristics in their students but are limited in the career choices which they can impose on others.

The reader is directed specifically to the humanistic approach Richard and Kathryn Stream describe in the counseling of parents of hearing-impaired children. Such sensitivity is rarely seen in the audiological literature. They help us to realize that every person counts, that we all need help, that we must all take full charge of our own destinies and cope with difficult situations. We must learn to give information judiciously at times when families and patients can utilize the information, we must familiarize ourselves with systems of psychotherapy that can be beneficial to others, and we must learn when to make referrals when people need more help than we can provide.

Management Of The Hearing Impaired Child

Perspectives of a Physician-Parent

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I would like to briefly comment on the problem of the hearing impaired child from the viewpoint of a physician (pediatrician) /parent of a hearing impaired child.

My almost 6-year-old daughter suffered a profound bilateral hearing loss at age 14 months during an episode of H-influenza meningitis. She had gone to bed one Sunday night to awaken on Monday with a low grade fever and ataxia. A neurological consultation followed by a lumbar puncture revealed only a couple of white blood cells in her spinal fluid. However, she appeared septic and was admitted and treated within four hours after she awoke ill. Her spinal fluid grew out H-influenza. Likewise, her hospital course was uneventful—no seizures, a few days of fever, and home in approximately 10 days. But my wife and I knew that something was not right, she didn't seem as responsive as the child we had known before. I checked her ears. Despite myringotomies in the hospital, I noted a reaccumulation of fluid. Antibiotics were immediately given and within a week ventilatory tubes were placed—and still she was not hearing. The days following now seem blurred, but audiometry followed by BSER were done without delay and the news was bad; our worst fears had been confirmed—Elizabeth was profoundly deaf.

The thunderbolts of a statement struck us hard and marked a significant change in the life of our family. This change is not static but dynamic, daily affecting us in an ongoing manner. The challenge of raising a deaf child is difficult, especially for the mother who is usually relegated the primary responsibility. Although difficult, we have sensed a growth in our personal lives, making us more aware of what really counts in life. And, as a physician, my eyes were opened.

Quite frankly, from my personal, non-professional contacts with parents of deaf children, it is unfortunately apparent that physicians are often unpopular with these individuals — often for good reasons. Commonly, pediatricians will be blamed for delays in diagnosis, having made unfortunate comments such as "Your child is too young to test."

The otolaryngologist will often make the diagnosis but in the perceptions of the parents, appear insensitive to their tragedy and unknowledgeable about habilitation options. If these perceptions are in fact accurate, the consequences for the child can be devastating, especially in the smaller community where the otolaryngologist is the hearing expert and logically in the layman's thinking should be the deafness expert. We are all acutely aware that in 1984 no physician alone can adequately meet the needs of the hearing impaired child. This physician needs help from the audiologist, educators, and social service agencies. However, that fact does not allow otolaryngologists to abdicate their pivotal roles in this story. What are my suggestions to help the otolaryngologist play a successful role?

Number one, be aware of the need for a team approach and, more importantly, find out in your community who will

While bad news about one's hearing or the hearing loss of one's child may be difficult to accept, it is the responsibility of the audiologist to assist the family in making the best possible adjustment so that steps toward habilitation or rehabilitation can be taken. To suppose that more exposure to facts can result in constructive action is often an error. Until people are brought to the point where they can properly process information, they cannot utilize either their own talents or the talents of the audiologists trying to help them. Hearing loss, like many maladies of humankind, can produce deep suffering, and we must work through this with our patients so that we can help to improve their lives.

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be helpful members of the team, giving parents sensitive counseling and knowledgeable answers to their questions. Furthermore, communicate with these other professionals. Help smooth the way for the patient and parents. They will appreciate your help and sense a firm control and a caring approach.

Know your audiologist and expect and demand an audiological consultation completed within six weeks. In your locale establish contacts with reputable hearing aid dealers who have expertise in dealing with young children, can instruct parents on the uses and limitations of hearing aids, and can help the parent successfully implement an amplification program.

Secondly, the otolaryngologist can help support the efforts of parents in obtaining optimal educational opportunities. Although otolaryngologists are not expected to be authorities in deaf education, their knowledge of hearing and its tremendous role in language acquisition and psychosocial development, must make them aware of the tremendous demands required to educating a hearing impaired child — to educate them for a functional and psychologically satisfying role in our society. Be sophisticated and realize that the educational approach to the deaf child is not homogeneous but must be tailored to meet the needs and abilities of the individual child and not tailored to meet the educational philosophies of the education institution or professionals contained within.

Number three, be an activist! A physician's support of parents struggling to achieve optimal educational experience (especially in a small community) might be the necessary element from a respected member of the community to sway sluggish educators. Also, be aware that by public law 94.142 lack of funds to provide appropriate special education is not an acceptable excuse by local school officials.

Number four, realize that ongoing otologic care is mandatory and essential for optimal hearing aid use. From personal experience, I know that a serious otitis media can completely knock out any benefit from amplification of residual hearing. If this occurs in your patients, realize that they are cut off from the hearing world and please schedule them early and treat them aggressively. Along the same lines, residents in a training program should have the opportunity to meet and treat these children, to be aware of their problems, and to feel comfortable in their presence.

Private otolaryngologists, in addition to meeting medical needs as a part of ongoing care, should become involved with these institutions or schools who have a mission for deaf education and habilitations. Serving on a medical advisory board, promoting public education about these problems, and supporting fund raising activities are always appreciated and helpful.

Number five, for those otolaryngologists doing research on deafness, realize the tremendous potential and never forget the tremendous gift of hearing that someday can come out of your efforts. Keep on working despite the obstacles. However, be aware that unfounded and premature

Continued to page 8

RUN FOR FUN!
(SEE BACK PAGE)

Continued from page 7

public statements on advances can psychologically traumatize an already traumatized family and patient.

A sixth point is that as a counselor you should advise parents against trying to be the ultimate "perfect parents", mythological superhumans who donate 24 hours a day to the handicapped and leave no time for themselves or other family members. Suggest that shared experiences and support with other parents of hearing impaired children can foster more appropriate perspectives. A number of agencies both nationally and locally are available to help meet this need.

Finally, I have saved this point for last, not because it is less important but because it is the most important and I want you to take it home. Realize, especially in the early stages of learning about the diagnosis of deafness, what this diagnosis means to the parents. The wise physician knows that when the parents learn of this diagnosis in their child, that a part of the child has died — the bright dream for the future has been dimmed for them. At this time the emotions are mixed and varied: denial, anger at the apparent injustice of the situation, sadness, frustration, and depression. With this in mind, counsel the patient as a caring friend, truthfully and empathetically. Allow sufficient time in your schedule to listen and discuss this new diagnosis. Giving the diagnosis to parents and walking out is cruel, the empathetic physician realizes the intensity of the situation and is not uncomfortable or surprised if the mother and/or father cry. The empathetic physician listens and supports, truthfully admitting that he does not know everything, especially the future. The physician however, can truthfully state that the future of the child's life still can be satisfying despite the hearing loss, the child is still acceptable, still valued, and still loved.

Amplifon Chooses Winner

On March 21, Professor Nils Gunnar Henriksson of Lund University was awarded, at the Milan Press Club, the Amplifon Research and Studies Center International Prize for 1983.

This prize is awarded yearly to the international personality who has most contributed to the advancement of studies on deafness.

The 1983 edition of the prize was granted to Professor Henriksson by decision of the Italian, European and American Scientific Societies of Otorhinolaryngology and Audiology, and the board of Directors of the Amplifon Research and Studies Center.

Professor Henriksson is a pioneer in the field of vestibology, the medical branch which deals with the pathological disorders affecting the vestibular system and which may cause a loss of balance, visual disorders, tinnitus and deafness.

The prize was delivered to the Swedish scientist by A.C. Holland, President of CRS Amplifon.

To honor Professor Henriksson a Round Table on "New Techniques of Functional Analysis in the Field of Neurology" was held at the end of the ceremony and attended by a crowd of specialists from all over Italy.

Professor Boccardi (Director of the Physical Medicine and Rehabilitation Department of the S. Carlo Hospital, Milan), Professor Boeri (Scientific Director of the C. Besta Institute of Neurology, Milan), Professor Maffei (Director of the Laboratory of Neurophysiology, National Research Council, Pida), Professor Mira (Associated Professor of the ENT Clinic of the University of Pavia), Professor Pignataro (Associated Professor of the ENT Clinic of the University of Milan) were the lecturers: Professor Schmid (Director of

the Department of Computers and Systems Science of the University of Pavia) was the Round Table chairman.

The choice of the prize-winner and the prize-awarding ceremony itself focused everybody's attention on the state of the art of vestibology, a science which is going to play a more and more relevant role in the future.

How much this is true was proven by one of the last Shuttle space missions and the launching of Spacelab, the first European Space Laboratory, the research program of which comprised, amongst many other targets, the so-called "Science of Life," a wide project dedicated also to the study of the reciprocal influence between the vestibular system and the brain with the aim of discovering the causes of "space sickness."

The CRS International Prize (amounting to 7 million It. Liras) has been awarded for the past 13 years.

Previous winners were: Dr. Tokuro Suzuki, Dr. Erik Wedenberg, Professor Hallowell Davis, M.Me. Suzanne Borel Maisonny, Professor James Jerger, Professor Joseph J. Zwislocki, Professor Michele Arslan, Dr. Aram Glorig, Professor Ettore Bocca, Professor Horst L. Wullstein, ex-aquo: Professor Jean Mari Aran and Professor Heim Sohmer, Professor Wolf D. Keidel.

Sign up a friend for AAS!

1984 New Members To AAS

Bernard Azdima
Patricia Abramowicz
Carol Alberts
Bryant H. Aldstadt
Sally A. Arnold
Martha C. Auslander
Carol L. Babcock
Margaret Barnes
Denise Lynn Bauman
Jane H. Baxter
Karen I. Berliner
Robert C. Bilger
Merrilee Bonslett
Bob Boyd-Whitley
Kevin Breshike
Denice P. Brown
Sara Budoff
Christine J. Christy
Carol L. Clifford
Mary E. Collard
Susan M. Davis
Jean-Pierre Dupret
Alan Eckel
James J. Freeman
Virginia Galvin
Hyman Goldberg
Kathy L. Goodman
Kathy Grieve
Victoria A. Hamilton
Arthur S. Marris
W.F. Samuel Hopmeier
Blake F. Iserman
Theresa Jabaley
Elizabeth Johnson
Alison Kahn
Ann E. Kalberer
John L. Kemink
Deborah L. Kinder
Sonya M. LaBauve
Gunnar Liden
Karon B. Lynn
Glenn Martin
W.T. Mathes
John P. May
Giampaolo Mazzoni
Linda K. McLean
Margaret D. McElroy
William Melnick
Maurice I. Mendel
Randall G. Michel

Jan F. Miller
Janice A. Mills
Linda E. Murrans
Wendy A. Myers
Sheina Nicholls
Jennifer Patterson
Barbara F. Peek
Graham F. Pick
B.D. Power
Donna L. Proctor
Maurice Rainville
Patricia R. Robertson
Richard S. Saul
Gerald Schuchman
Theresa Y. Schulz
Richard J. Scott
Neal a. Sloane
Richard G. Storer
Claire A. Standish
Daniel T. Stoppenbach
Susan M. Stroble
Kurt Trede
Bruce Vircks
Roger J. Walters
Helen M. Waters
Donna K. Watts
Vicki L. Wiman
Tad Zelski
Harvey B. Abrams
Cathleen A. Alex
Linda A. Arectos
Robert S. Asby
Victoria M. Ashoff
Clement G. Austria
Lois H. Averell
Nancy J. Avishar
Gene K. Balzer
Loren J. Bartels
Pamela K. Bartol
Natan Bauman
Marilyn Beaubien
Steven Berman
Laura M. Bernard-Morris
Catherine Bieri
Terry L. Burke
McKay C. Burton
Richard E. Carlson
Donna M. DiCasimiro
Tommy J. Cattey
Steven J. Chargo

Mary C. Chisholm
Virginia Corley
Leslie W. Dalton, Jr.
Cheryl L. Davidson
Susan T. Deahl
Carol De Filippo
James J. Dempsey
J. Michael Dennis
Karen M. Ditty
Sherry C. Ducombs
Tom Ducombs
Sherrie J. Duhl
Kathleen D. Eccard
Lou Echols-Chambers
Dennis R. Elonka
Linda Erb
A. Eliza Evans
Susan T. Ferrer-Vinent
Debra Fried
Brad W. Friedrich
Charles Gammel
Paul Gancher
Maurice T. Gauz
Connie Geonnotti
Patricia Gillilan
Suzanne Gillam
Mauris E. Godbey
Lawrence A. Gordon
Sandra Gordon-Salant
Gail R. Graber
Monica G. Grent
Julie Handel
Donald A. Hansen
Ellen K. Hansen
Edward J. Hardick
Robert J. Harrison
Cecil W. Hart
Nancy A. Hawes
Polly Heckler
Robert J. Henry, Jr.
Alice B. Hill
Seaford R. Hoffman
Alice E. Holmes
David W. Holmes
Laurie B. Holt
E. Kimberly Hoover
William E. Hudson
Gordon B. Hughes
Edward W. Iandoli
Lois Isaacs

Kenneth R. Johnson
Candace A. Kamm
Darlene M.L. Kau
Rebecca Kooper
Marvin R. Kolodny
Steven J. Kramer
Kay D. Krebs
Sandra Kreeger
Margaret K. Kubiak
Karent J. Kupiec
Karen J. Kupiec
Marcia Kushner
Karen D. Labutta
Constance A. LaPosta
Randy Laskowski
Lewis Leidwinger
Armando Lenis
Graig O. Linnell
Francis M. Locks
Joan L. Luckett
Donna M. MacNeil
Robert D. Madory
Michael J. Malone
E. Gail Marcupulos
Thomas A. Martone
Mary Ann Mastroianni
Patricia C. Mattern
Antonia B. Maxon
John M. McGinnis, Jr.
Eugene O. Mencke
Lee E. Micken
Laura L. Middleton
Victoria H. Miller
Greg Moore
Byron J. Moulton
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Christine E. Ogden
John F. Orton
Richard J. Osborn
Judy Ott
Donna I. Ouellette
John R. Owen
Nora C. Patwell-Hagen
Dru A. Petras
Alissa Marcia Pianin
Joseph P. Pillion
James E. Powell

Todd A. Pribilsky
Michael A. Primus
Chris W. Pruitt
M. Susan Queen
Douglas E. Rehder
Steffi B. Resnick
Mary D. Reynolds
Ned Risbrough
James R. Robertson
Sharon L. Robinson
Jeffrey D. Roffman
Dawn Roth
Jackson Roush
Robert H.S. Saltsman
Lynn G. Salzbranner
Terese N. Sansalone
Gerald A. Scott
Zella Shabasson
Marilyn Shinto
Rose Shovlin
Debra A. Siegel
Carol Ann Silverman
Mindy W. Sirkin
Margaret W. Skinner
Phyllis L. Sochrin
Sandra Solomon
Fay Sorenson
Jody L. Pursley
Lynn G. Spivak
Susan Stanek-Prats
Michael L. Sterrett
Lloyd A. Storrs
Lloyd A. Storrs
Rosanna P. Suppa
Elca Swigart
John H. Sylwester
John E. Tecca

Christine C. Tellee
Stephen F. Teodoro
Aaron Thornton
Denny L. Ticker
Suzanne M. Tillman
Stuart G. Trembath
Thomas W. Tucker
Marilyn Ulius
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Elizabeth A. Van Dyke
Peter Van Orman
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Edward T. Whitson, Jr.
Judith E. Widen
Ann L. Widener
Laura A. Wilber
Peggy S. Williams
Jody Winzelberg
Robert D. Wolfe, Jr.
Robert E. Wright
Michael K. Wynne
Sara E. Zacharia
Albert Zimmer

Associate
Members

Tim Brocheisen
Joseph C. Demase

Bell Catalog

The Spring/Summer Alexander Graham Bell Association for the Deaf publication catalog is now available. The catalog features three new books plus many other highly respected educational texts and support material for parents. The texts, reprints, and audiovisual materials emphasize the auditory-oral components of communication. Please contact: Elizabeth Quigley, A.G. Bell Association for the Deaf, 3417 Volta Place, N.W., Washington, D.C., 20007, for your copy (copies) of the catalog.

American Auditory Society Executive Committee Meeting Minutes

DATE: August 26, 1984

PLACE: "Classroom", Santa Cruz Resident Hall, Santa Barbara, CA

TIME: 1:00 p.m.

MEMBERS PRESENT: Charlie D. Anderson, LaVonne Bergstrom, Susanne Kos Blum, Suzanne G. Brown, Earl Harford, Deborah Hayes, David Lipscomb, Ross J. Roeser, Wayne J. Staab, W. Dixon Ward, Don W. Worthington

MEMBERS ABSENT: F. Owen Black, E. Robert Libby, William L. Meyerhoff, James A. Nunley, James J. Pappas, Michael F. Seidemann

GUESTS: Marion P. Downs, Hiroshi Shimizu, Ken Startt

1. President Anderson opened the meeting at 1:08 p.m.

2. The minutes from the 1983 meeting of the Executive Committee were approved.

3. The treasurer's report for the period 1/84 through 7/84 was reviewed and approved.

4. David Lipscomb reviewed the plans for the 1985 meeting in Atlanta. Tad Zelski, the local arrangements chairman, and Ross Roeser met in Atlanta on August 4th and discussed all of the details regarding local arrangements. Dr. Lipscomb identified several individuals who he will appoint to the program committee. The theme for the meeting will be "Technical Innovations in Clinical Hearing Science." The possibility of having a 1/2 day workshop, rather than individual invited speakers, to present information on one topic was discussed. It was decided that the program chairman would investigate this possibility.

A possible Carhart speaker was identified and it was decided that LaVonne Bergstrom would contact this individual to invite him to the meeting. If he accepts, Don Worthington, as the president of AAS, will contact him formally on the behalf of the Society.

5. The procedure for identifying the Carhart speaker was discussed. Since there is no formal procedure established to nominate speakers, it was decided to form a committee consisting of LaVonne Bergstrom (chair), Hiroshi Shimizu, E. Robert Libby, David Lipscomb, and Don Worthington to develop a list of names for Carhart speakers for future meetings. This list will be presented at the 1985 Executive Committee meeting.

6. The 1986 meeting was discussed. It has been decided that the American Auditory Society will meet with the American Speech-Language-Hearing Association in Detroit in 1986. The names of two individuals were presented for program chairman. It was decided that Don Worthington would contact one of these two individuals and request that he accept the position as program chairman. Possible local arrangements chairman were discussed. The idea of holding the meeting in a local facility such as the Henry Ford Hospital, was discussed.

7. It was decided that the 1987 meeting will be held in Las Vegas, NE in conjunction with the American Academy of Otolaryngology/Head and Neck Surgery. The dates for the meeting are September 11-17.

8. Ross J. Roeser was appointed secretary/treasurer for 1986.

9. Suzanne Kos Blum was appointed assistant secretary/treasurer for 1986.

10. LaVonne Bergstrom was appointed as vice president/president elect for 1984-86.

11. A discussion was held regarding the Ear and Hearing editors awards. At the 1983 meeting it was decided that the editors award would be discontinued for a period of one year. Since then several members of AAS took it upon themselves to circulate a petition among the members of the society requesting that the awards be reinstated. This petition was presented to the Executive Committee by President Anderson. After discussion a vote was taken regarding the awards. Seven favor reinstating the awards, one opposed, and two abstained. Based on this vote the editors award was reinstated. It was decided that Bob Keith, as the new Editor In Chief of Ear and Hearing, will be the chairman of the committee to identify papers for Volume V and Volume VI (1984-85). The members of the committee will be the section editors. Ross Roeser will be an ex-officio member of the committee.

12. The CRS Amplifon Award was discussed. This year the CRS committee provided the American Auditory Society with a list of distinguished individuals who were felt to deserve the award in the area of neurophysiology of the auditory system and coding strategies for sound and signal processing. After reviewing the impressive list of candidates it was decided that no additional names would be provided.

A letter will be sent to the CRS committee informing them of this information.

13. The issue of liability insurance was discussed. The question of whether the American Auditory Society should have liability insurance has been raised at several meetings in the past. Investigation of this issue with an insurance carrier revealed that for approximately \$500.00 per year the Society could purchase the insurance. However, after discussion it was felt that this was not a necessary expense and the recommendation was made that the Society not have liability insurance. Ken Startt pointed out that the Williams and Wilkins Company has liability insurance for Ear and Hearing that would protect the editors and authors.

14. In the past, manufacturers have contacted the American Auditory Society to present awards during the annual meeting. This is felt to be a highly worthwhile activity and such activity is encouraged at future annual meetings of the Society. However, it was recognized that some means should be available to monitor and/or control the material that is presented during the awards ceremonies. Thus, the following motion was made and passed: "Any awards presented during the American Auditory Society meetings from outside organizations be given by the president of the American Auditory Society."

15. The issue of CME/ASHA/AMA credits was discussed. It was recognized that in view of certification/licensure requirements, having continuing education unit (CEU) credits for the annual meeting is desirable and should be explored. Several possible plans were outlined, and Deborah Hayes was asked to look into having CEU credits for the 1985 meeting. She will report on this area at the 1985 Executive Committee meeting.

16. Don Worthington reported on the membership/promotion committee. There were 1,516 members of the Society. This compares favorably to last year's membership of approximately 1,325. The membership still is lacking in otologists, with less than a 10 percent representation. This year's promotional activity involved the building of a display that will be set up at the International Audiology Congress in Santa Barbara and at the annual meeting of the American Academy of Otolaryngology/Head and Neck Surgery.

17. Suzanne Kos Blum reported on the qualifications committee. The Executive Committee reviewed the names of 265 individuals who had submitted their applications for membership. All of these individuals have the necessary requirements for membership, including signatures from active members. After reviewing the list the individuals were approved for membership without exception. This list will be published in the upcoming issue of Corti's Organ.

18. Ralph Naunton, chairman of the long range planning committee, was not able to attend the 1984 Executive Committee meeting. In his place Charlie Anderson reviewed data from his report. A questionnaire has been sent to past Executive Committee members, as well as to the present members. Each respondent was requested to provide information on a number of activities that the Society has or should become involved in. As the various activities were presented they were discussed. President Anderson will report back to Ralph Naunton regarding the reaction of the Executive Committee to the issues discussed. It was highly recommended that Ralph Naunton continue as chairman of the long range planning committee.

19. Seven members of the Executive Committee will be replaced by December, 1985. These members include LaVonne Bergstrom (otology), Earl Harford (audiology), Suzanne Kos Blum (audiology), William L. Meyerhoff (otology), James Nunley (hearing aid industry), W. Dixon Ward (hearing science), and Don W. Worthington (audiology). LaVonne Bergstrom, as the chairman of the nomination committee, was asked to identify two individuals and one alternate for each of the seven positions that will be vacated. The individuals nominated should represent the professional areas of the individuals up for election. This list should be presented to President Worthington by the end of October, 1984 so that the candidates can be contacted and the necessary information obtained for balloting in 1985.

20. The report of Ear and Hearing was given by Ross Roeser, Robert Keith, and Ken Startt.

A. Ross Roeser indicated that the transition of the editorship to Robert Keith has been a smooth one. Many discussions have taken place and a formal meeting was on May 8, 1985.

By June, Volume V was filled and all new manuscripts were being forwarded to Dr. Keith. There were enough

manuscripts in the review process left over from Volume V to fill at least one issue of Volume VI.

B. Robert Keith reported on his plans for the journal. The new section editors will be: Dan Schwartz for the Hearing Aids and Aural Rehabilitation Section, Jerry Northern for the Clinical Notes in Audiology section, Gary Neeley for the Clinical Notes in Otology section, Deborah Hayes for the Speech Audiometry section, Lazlo Stein for the electrophysiologic Techniques in Audiology and Otology section, and Eugene Sheeley for Book Reviews. Irving Gerling will continue as the Editorial Assistant. The January/February issue will be devoted to the Nova Scotia Conference in Pediatric Audiology. It was reported that 36 manuscripts had already been received for the period June, July, and August. It was indicated that Ear and Hearing will continue to publish clinically relevant manuscripts and, with only minor changes, the editorial procedures will be essentially the same as the past.

C. Ken Startt reported on the financial condition of Ear and Hearing. There has been a healthy increase in paid subscriptions in the past year. Total paid circulation is expected to reach approximately 3,000 by the end of 1984. Paid advertising will be about the same for 1984, as it was for 1983. Earnings are expected to be about \$10,000.00 for 1984, which will reduce the accumulated deficit to about \$36,000.00. The overall financial picture for Ear and Hearing was reported to be quite good.

21. Suzanne Brown reported on Corti's Organ. The next issue will appear in October, 1984. Paid advertising has not been as available as expected. Plans for Corti's Organ will continue as they have been for 1985.

22. Earl Harford reported that he will make a video tape of Gunar Liden's presentation when he returns to Minneapolis. This video tape will be available for distribution to AAS members at the nominal fee. Announcement of the availability of the video tape will be made through Corti's Organ.

23. The possibility of having a hospitality at the ASHA meeting in San Francisco for the AAS Executive Committee was discussed. Wayne Staab indicated that his company will have a suite and volunteered its use. A time will be set for this hospitality and announced to Executive Committee members.

24. There being no further business the meeting was adjourned.

See you
in Atlanta
Fall 1985

Tracoustics, Inc.

Changes Corporate Structure

Tracoustics, Incorporated has recently announced major changes in its corporate structure. Ernest Butler, M.D. has assumed the position of Chief Executive Officer for the Austin, Texas based manufacturer. Dr. Butler is an Otolaryngologist in Austin and has been a major stock-holder in Tracoustics since its inception 13 years ago.

John Franks, Ph.D. has been promoted to Vice President for Tracoustics' Instrument Division. Dr. Franks joined the company in 1982 after a distinguished academic career in Audiology.

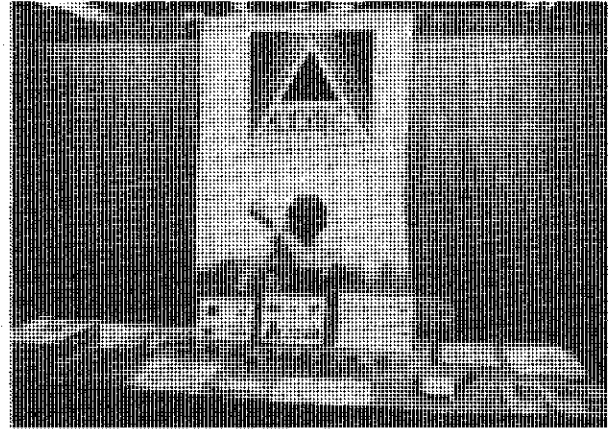
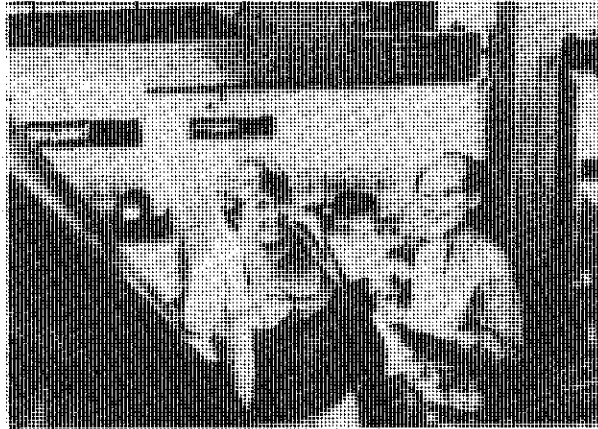
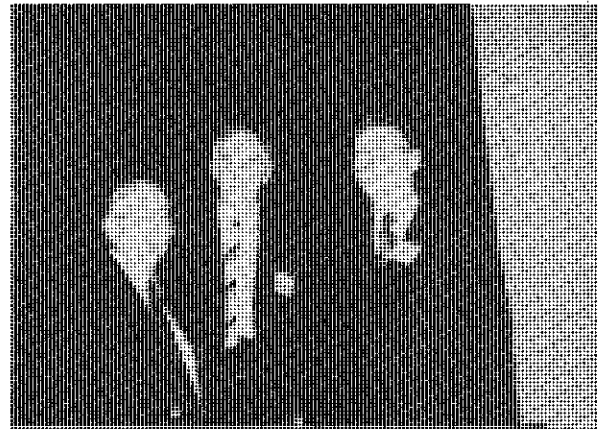
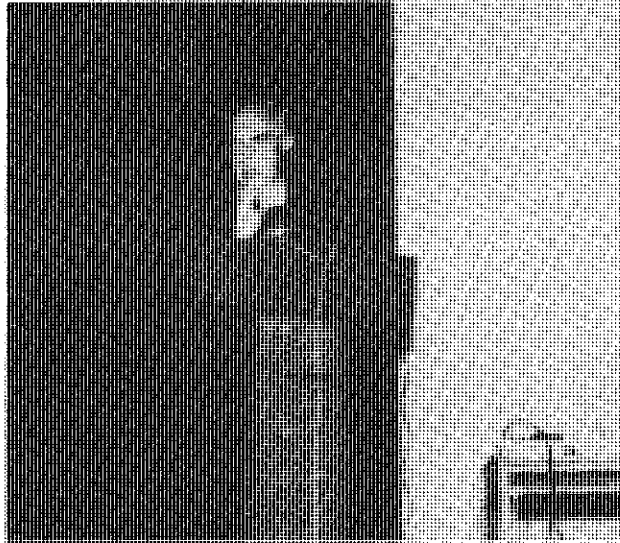
Jeff Schmitt has been named Vice President of the Enclosures Division in the reorganization. Mr. Schmitt is an acoustical engineer, who will also head up Tracoustics new test laboratory.

Wynyard Ellis is now the Corporate Secretary and is Executive Director of Sales. Ms. Ellis has been with Tracoustics for more than nine years and is familiar with all aspects of the company's operation.

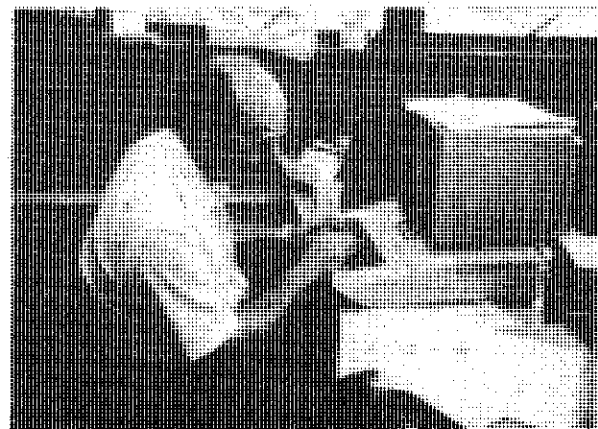
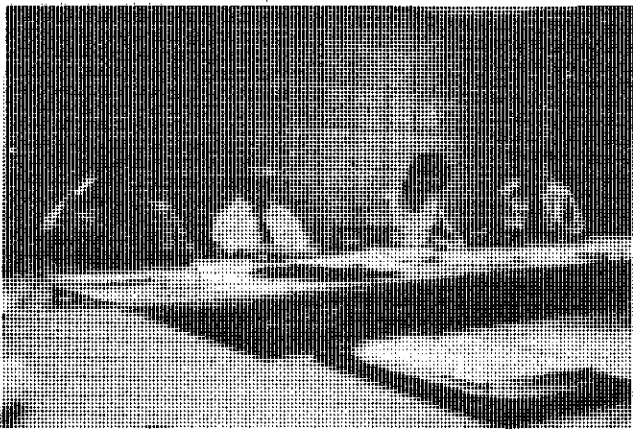
Together these four capable professionals make up the Executive Committee for Tracoustics. Under their guidance and leadership, Tracoustics is planning increased sales and continued excellence in the Audiometric Room and Instrument market.

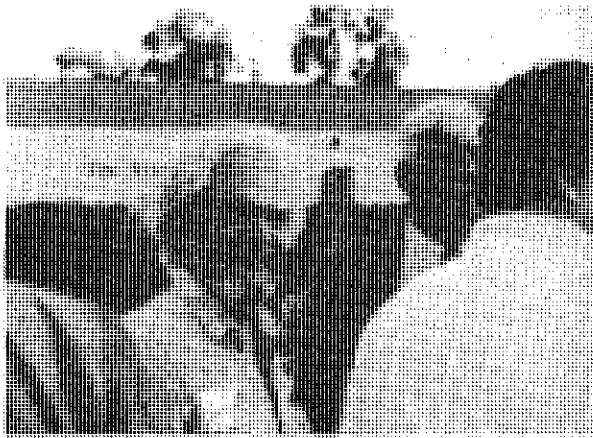
Santa Barbara 1984

Presentations...

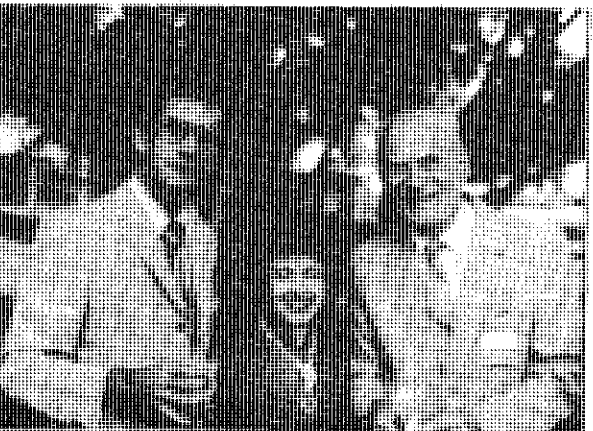
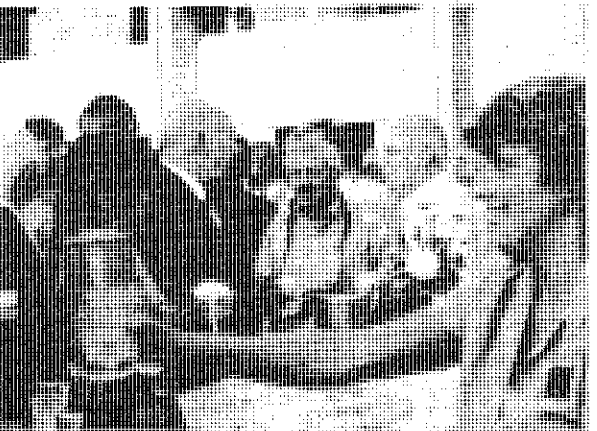


Planning...





Parties...



Queens Independent Living Center Expands Services to Deaf

Beginning on August 15, 1984, the Queens Independent Living Center will expand its services to the deaf by having an onsite interpreter available from 5:30-7:30 p.m. No appointment is necessary and people will be seen on a first come first serve basis.

The Queens Independent Living Center, a non-residential resource Center administered by and for disabled people, offers peer counseling, housing assistance, benefits advisement, information and referral and advocacy. Regular office hours are 8:30-4:30 p.m., Wednesdays until 7:30 p.m.

The Queens Independent Living Center is located at 4-21 27th Avenue in Astoria and can be reached by subway to Queens Plaza then Q19 or Q102 bus, or RR to 30th Avenue, then Q18 or Q102 bus. Telephone number for voice 728-0011, TTY 728-7812.

Inter Noise Seminar Offers Two Courses

The Institute of Noise Control Engineering (INCE) is offering two short courses on noise measurement and noise control as part of the 1984 INCE Seminar. The Seminar will precede INTER-NOISE 84, the 1984 International Conference on Noise Control Engineering which will be held in Honolulu, Hawaii on 03-05 December, 1984. One of the two courses will cover: "Techniques of Noise Control." The other will be devoted to "Sound Intensity Measurements." The second short course is being offered for the first time because of current interest in the applications of sound intensity measurements to problems related to noise control.

The short courses of the INTER-NOISE Seminar will be offered in parallel beginning on Thursday, November 29 and concluding on Saturday, December 01. The short courses will be presented at the Westin Ilikai Hotel in Honolulu, Hawaii, the location for INTER-NOISE 84 which will be held in the week following the INCE Seminar.

The staff of the Seminar serves at the invitation of the INCE/USA Board of Directors. All staff members have extensive backgrounds in the field of noise control engineering and sound intensity measurement. The staff members have donated their time as Seminar leaders to further the understanding of the fundamentals of noise and its control and the basics of sound intensity measurements.

Professor Malcolm J. Crocker, Editor-in-Chief of Noise Control Engineering Journal, is the Chairman of the short course on "Techniques of Noise Control." Professor Jiri Tichy of Penn State is Chairman of the short course on "Sound Intensity Measurements."

The "Techniques" short course will appeal particularly to those individuals who are new to the field of noise and its control. The "Sound Intensity" short course will be of interest not only to those who are involved directly in such measurements but to others who wish to become current on the latest technique for noise analysis.

Interest in the INCE short course on "Techniques of Noise Control" has been growing over the years. This will be the twelfth offering. One of the principal objectives of this short course is to enable the participants to acquire an understanding of the fundamentals of noise control so that the state-of-the-art papers presented at INTER-NOISE 84 are accessible to them.

This first offering of the short course on "Sound Intensity Measurements" is in response to the expanding interest in this subject. Recent advances in instrumentation, particularly signal processing software and hardware, have made it possible to measure acoustic intensity directly in the field. This type of measurement has numerous applications, including the determination of the sound power levels and the identification of propagation paths from noise sources.

The INCE Seminar is undertaken by the Institute to fulfill one of its basic responsibilities to the public.

Further information on both of these courses is available from the INTER-NOISE 84 Conference Secretariat, Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, NY 12603, U.S.A. Telephone: (914) 462-6719.

AMERICAN AUDITORY SOCIETY

1984 5 MILE FUN RUN

NOVEMBER 17, 1984

6:45 A.M.

MEET IN FRONT OF THE HILTON HOTEL



☐ YES I WANT TO RUN:

By signing below you acknowledge that the AAS or any of its officers and/or members are not responsible in case of accident or injury resulting from this Fun Run. Also, that there are no provisions made for emergency medical care.

Name _____

Address _____

NOT ONLY DO I WANT TO RUN, BUT I WOULD ALSO
LIKE A 1984 AAS FUN RUN COMMEMORATIVE
T-SHIRT AND HAVE ENCLOSED \$5.00

MY SHIRT SIZE IS ☐ SM. ☐ MED.

☐ LG. ☐ X-LG.

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AAS Annual Meeting
October, 21, 1985
Atlanta, GA.

Meet the Candidates
for the AAS
Executive Committee
Pages 3-5

1985 AAS
Membership
Directory
Begins on Page 9



CORTI'S ORGAN

The Official House Organ of The American Auditory Society

Volume 10, No. 1

Spring 1985

Nominations Open for 1985 BDTAA

The 1985 search for excellence in audiology instruction has begun with the opening of nominations for the 1985 Beltone Distinguished Teaching Award in Audiology (BDTAA).

The BDTAA is the only teaching award bestowed in the field of audiology. To be eligible, instructors must be nominated by a current or former student and have five or more years of experience in teaching audiology.

More than 7000 brochures containing nomination forms were mailed by Beltone to audiology students and department chairmen at universities across the country. Deadline for nominations is April 15, 1985.

The nomination form is one of eight factors weighed by the judges to determine a winner. It is worth 10 percent of the overall evaluation. A new aspect of the judging process is the additional input that is being requested of the nominees's students and colleagues.

The other six factors and their values

1985 Poster Child Chosen for Better Hearing & Speech Month



ROCKVILLE, MD. — Five-year-old Nancy Jones of Warrensville Heights, OH, who is hearing-impaired, has been named the 1985 Poster Child of the Council for Better Hearing and Speech Month, a consortium of 23 national organizations united to

Please see Poster, Page 2

are curriculum vitae (30 percent), nominee's required essay (20 percent), former student evaluation (20 percent), overall impression (5 percent), nominee intention form (5 percent) and department chairman/dean evaluation (5 percent). The title of this year's required essay is "The Future Role of the Audiologist in the Health Care Field."

The 1985 judging panel is composed of 10 outstanding professionals from the field of audiology — including the 1983 and 1984 BDTAA winners — plus one student representative selected by the National Student Speech, Language and Hearing Association. The judges are Charles I. Berlin, Ph.D. (1984 winner), Louisiana State University; Fred Bess, Ph.D., Vanderbilt University; Michael R. Chial, Ph.D., Michigan State University; Marion R. Downs, M.A., University of Colorado; Gloria Garne (student), University of Georgia; Jack Katz, Ph.D., State University of New York; Bob Keith, Ph.D., University of Cincinnati; Geary McCandless, Ph.D., University of Utah; Frank E. Musiek, Ph.D., Dartmouth-Hitchcock Medical Center; Ralph R. Rupp, Ph.D., University of Michigan; and Terry L. Wiley, Ph.D. (1983 winner), University of Wisconsin.

Announcement of the 1985 BDTAA recipient will be made at the Oct. 21 meeting of the American Auditory Society in Atlanta, GA. Beltone will award the winner \$1000 cash and a commemorative plaque. The firm will also host a banquet in the winner's honor at his or her university and will sponsor three lectures by the instructor at leading universities around the nation. An invitation to sit on the 1986 judging panel is also extended.

In addition, the award package includes a \$2500 scholarship from Beltone to the audiology department at the recipient's university, and a \$100 cash award to the student nominating the recipient.

The 1985 winner will be the fourth audiology instructor honored through the program. Beltone established the BDTAA program to recognize contributions by the teaching profession in the field of audiology.

Interested students who were not mailed nominating forms may request materials by contacting Raina Gernstetter, BDTAA Coordinator at Beltone, 4201 W. Victoria St., Chicago, IL 60646.

Samuel Lybarger to Address 1985 AAS Convention



Samuel Lybarger

It has been announced that Samuel F. Lybarger will be this year's Carhart Lecturer at the 1985 AAS Convention in Atlanta. (Further information will appear in the pre-convention issue of Corti's Organ.)

Call for Papers

The 12th annual meeting of the American Auditory Society will be held in Atlanta, Georgia on Monday, October 21, 1985. This year the meeting is scheduled with the annual convention of the American Academy of Otolaryngology — Head and Neck Surgery.

The theme of this year's meeting will be "Technological Innovations in Clinical Hearing Science." The program will incorporate segments containing invited papers as well as contributed papers.

The program committee encourages the submission of papers consistent with the theme of Technological Innovations in Clinical Hearing Science. Papers in other areas, however, may be submitted.

Interested persons are invited to submit six copies of an abstract approximately 300 words in length. The deadline for submission is May 1, 1985. Notification regarding program committee decisions will be mailed to presenters by July 15, 1985.

Abstracts should be sent to:

Michael F. Seidemann, Ph.D.
 LSU Medical Center
 Department of Communication Disorders
 1900 Gravier Street
 New Orleans, LA 70112

Corti's Calendar

April 4, 1985

CONTINUING CARE OF THE HIGH-RISK INFANT, Park Ridge, Illinois. Sponsored by Ross Laboratories and the Department of Pediatrics, Section of Neonatology, Lutheran General Hospital. Guest faculty include: Marshall Klaus, M.D., Michigan State University and David Caldarelli, M.D., Rush Medical College of Rush University. Additional information contact: Mary Lou Mumford, Newborn ICU Office, Lutheran Medical Hospital, 1775 West Dempster Street, Park Ridge, IL 60068. (312) 696-5313.

May 26-31, 1985

XIII WORLD CONGRESS OF OTORHINOLARYNGOLOGY, Miami Beach, Florida, USA. For further information, contact: Anthony J. Magniglia, M.D., FACS, 1500 N.W. 12 Avenue, Suite 874, Miami, FL 33136. (305) 325-8899.

June 12-15, 1985

"AMPLIFICATION: VALIDATION OF PERFORMANCE" Academy of Rehabilitative Audiology Summer Institute, Lake Arrowhead, California. Contact: Sharon Fujikawa, 10 Goldstone, Irving, CA 92714.

June 14 & 15, 1985

THE EIGHTH WORKSHOP, LASER TECHNIQUES IN OTOLARYNGOLOGY - Head and Neck Surgery (including Facial Plastic). Santa Barbara, CA. Contact: Joseph R. DiBartolomeo, M.D., 2420 Castillo Street, Santa Barbara, CA 93105.

Poster

Continued from Page 1

promote public information about speech, language, and hearing disorders and to highlight the availability of help for those disorders. Better Hearing and Speech Month will be launched in Washington, DC in May.

Nancy and this year's Better Hearing and Speech Month Chairman, actress Florence Henderson, will serve as national spokespersons for the Council and the more than 22 million Americans with communication handicaps whom it represents.

During May, Nancy will be featured in television, radio, and magazine public-service announcements, and will travel with her parents to Washington, DC to participate in the Better Hearing and Speech Month national kick-off activities.

Nancy's hearing loss developed as a result of spinal meningitis, which she had at eight months of age. She now attends the Millridge Center for Hearing Impaired Children in Highland Heights, OH and enjoys such activities as swimming and bicycle riding with her family.



CORTI'S ORGAN
The Official House Organ of The American Auditory Society

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Major Hearing Aid Study Completed

WASHINGTON, D.C., JANUARY 10, 1985 — A major study of the U.S. hearing-impaired population has been completed by the Hearing Industries Association (HIA), headquartered in Washington, D.C.

In announcing the completion of the twelve-month market research effort, HIA President James C. Keyes noted, "This research is the most complete and comprehensive data now available regarding the approximately 16.4 million Americans who experience some degree of hearing loss." Keyes, who is President of Audiotone, Phoenix, Arizona, continued, "We have analyzed the beliefs and attitudes of a sampling of this population regarding their hearing losses, professional hearing health care, and hearing aid use. We are confident that these findings will enable us to expand and enhance information, services, and products available to America's hearing impaired population."

The study of a randomized sample of 1,550 hearing-impaired individuals was conducted for HIA by the market research firm of National Family Opinion, Inc. of Chicago, Illinois. Marketing Consultant to the effort was Robert E. Burnkrant, Ph.D., Associate Professor of Marketing at Ohio State University. The project was coordinated by HIA's Market Development Committee, chaired by John Zei of Beltone Electronics Corporation, Chicago, Illinois.

The survey sample included 500 hearing aid owners and 1,050 hearing-impaired adults who do not currently own a hearing aid. Based on a response rate of nearly 80% to a 120-item questionnaire, the results obtained are highly projectable to the entire hearing-impaired population in the U.S.

Of major importance is the finding that 6.3 million non-owners of hearing aids — fully 68% of the estimated 10.5 million people who do not currently use a hearing aid — have obtained professional evaluation of their hearing loss. Over 40% have discussed their hearing problem with their family doctor and an equal percentage with an ear specialist; 32% of this group have visited an audiologist, and 10% a hearing aid specialist.

Based on the high percentage of individuals who have sought professional help for their hearing problems, the

survey probed the reasons for an individual's decision to purchase a hearing aid. Survey results confirmed in other industry statistics that approximately 3.9 million Americans currently use at least one hearing aid and an additional 8 million people could benefit from hearing aid use.

Of major importance in a hearing aid purchase is the recommendation to use a hearing aid from a hearing health care provider. Additional elements that encourage a hearing aid purchase are the recommendation of family and friends, and the social advantages of better hearing — easier conversations, better comprehension and improved ability to hear television and radio. According to these survey results, appearance factors and expense do not significantly influence an individual's decision to purchase a hearing aid.

The HIA Market Research Survey also yielded information regarding purchaser demographics, hearing aid sales, product performance and hearing aid batteries. This additional information will assist the industry in carrying out its continued commitment to quality products and service for America's hearing-impaired population.

HIA is the trade association of manufacturers and distributors of hearing aids and component parts, and suppliers to the industry.

Amplifon Winner Announced

The Amplifon Research and Studies Center Board of Directors met on November 30th in order to scrutinize the votes which had arrived from the national and international societies for the election of the winner of the 1984 Amplifon CRS International Prize.

The winner, resulted from the pool, is prof. P. Dallos from Auditory Physiology Laboratory and Department of Neurobiology and Physiology of the Northwestern University, Evanston, Illinois.

I wish to thank you very much for your precious cooperation. The prize awarding ceremony will be held on March 22nd, 1985.

KNUD TERKILDSEN, M.D. 1918 - 1984 A Memoir



Knud Terkildsen

It is with great sadness that we record the passing of Knud Terkildsen in September of this year. He leaves a widow and two daughters and we feel sure that all our readers will join us in sending sympathy to them. He touched all of our lives and the lives of countless others through his work in the hearing health field, whether as researcher, lecturer, physician, colleague or friend.

To a privileged few who counted him as friend he was unstinting in giving of himself and his time; to those who counted him as colleagues he was that rarity among men — one who was untouched by professional jealousy; to his patients he was the caring physician whose only frustration was that medical science was unable to do more to alleviate human suffering; in the lecture hall he was known for the precision of his arguments, infinite care in preparation, and generosity in sharing his knowledge; as a researcher he is best known for teamwork — usually as team leader but equally at home as team member.

Knud Terkildsen — "Terk" to many in the hearing field — trained at the University of Copenhagen, did his Residency in Kansas and became the Chief of Audiology in Copenhagen University Hospital, a position he held until he took early retirement in 1983. By one of the great ironies of life he succumbed to one of the disorders to which he devoted a great deal of research.

Best known for his work in the field of impedance audiometry — he was a member of the triumvirate of Terkildsen, Scott Nielsen and Madsen whose collaboration produced the electro-acoustic impedance bridge — in later years his contribution was in the field of Evoked Potentials. His work was generally published in European journals — predominantly Scandinavian Audiology — but many a contribution has appeared in the more familiar U.S. publications.

Since the very early 1970's, Terk was a regular visitor to these shores and was to be seen at ASHA, at AAO and at the San Diego meetings which became famous as "the Annual Evoked Response Symposium". He also traveled extensively in Latin America and the Far East as lecturer and researcher and received a constant stream of visitors from around the world in his office in Copenhagen, one of whose walls adorned with a "Metz Bridge" — invented by Otto Metz, a fellow Dane who is sometimes called the grandfather, while Terk is known as the father of impedance.

In his private life Terk lived modestly with his family, and took great pleasure in taking his dog for walks in the country around his home, and in the peaceful enjoyment of the simple pleasures of life.

A many-faceted man, we shall not see his like again. He will be sorely missed.

Meet the Candidates for the AAS Executive Committee Election

This summer an election will be held to replace returning members of the Executive Committee of the American Auditory Society. We have asked each nominee for the office to provide the membership of the Society with some basic bibliographic information, and to provide their thoughts regarding the future direction of the Society. (A membership ballot will be mailed to you shortly.)



Patrick E. Brookhouser, M.D., F.A.C.S. Director, Boys Town National Institute for Communication Disorders in Children, Flanagan Professor and Chairman Department of Otolaryngology and Human Communication, Creighton University School of Medicine, 555 North 30th Street, Omaha, Nebraska 68131. Bachelor of Science, summa cum laude Creighton University - 1962. Doctor of Medicine Johns Hopkins University School of Medicine - 1966. Internship, Residency and Fellowship in Otolaryngology Johns Hopkins Hospital, Johns Hopkins University School of Medicine.

It is somewhat ironic that we profes-

sionals representing disciplines concerned with normal and disordered human communication have, in the past, experienced communication difficulties among ourselves and our professional organizations. Too often, the occasional breakdown in communication among our senior professional society representatives has been interpreted, incorrectly, by policy makers and funding agencies as representative of a true schism among physicians, clinicians, and scientists in the communicative disorders field. The American Auditory Society provides a unique forum to foster collegial interaction among all disciplines interested in the diagnosis, treatment and prevention of hearing disorders. It is important to provide young professionals in our respective fields, particularly otolaryngology residents, with proper role models in the form of senior otolaryngologists who interface in a productive fashion with other clinicians and researchers in the auditory sciences. It has been my privilege, as Director of the Boys Town National Institute for Communication Disorders in Children, to help foster these relationships among our clinical and research staff to the mutual benefit of all concerned. The promotion of mutual trust and respect for the unique viewpoint and skills which each discipline brings to our joint clinical and scientific endeavors should continue to be a major goal of the American Auditory Society.

Robert A. Dobie, M.D. M.D. Stanford University, 1971. Associate Professor, Dept. of Otolaryngology, University of Washington, RL-30, University of Washington, Seattle, WA 98195.

The American Auditory Society fills a unique niche among professional organizations in the field of hearing. Recognizing that, for legitimate reasons, separate societies have been formed to serve the



needs of otolaryngology, audiology, the hearing aid industry, and basic scientists working in audition, the AAS offers an ecumenical forum for all who are interested in hearing and its disorders. By careful design, our Society has transcended parochialism and established a firm reputation; both its meetings and its journal satisfy a persistent and growing need for interdisciplinary communication.

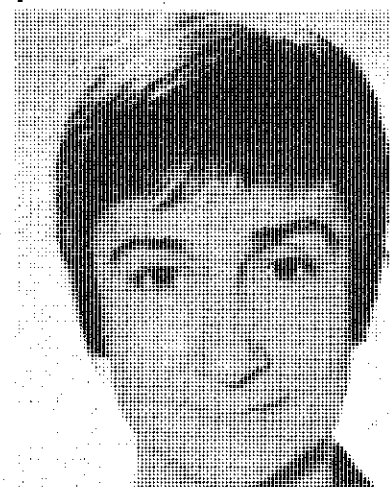
I see no need for major shifts in goals or strategies for the Society. Annual meetings should continue in conjunction with ASHA and AAO-HNS; free-standing meetings would be a mistake. *Ear and Hearing* should continue to grow in stature as a strictly referral journal, with a small proportion of invited review or tutorial papers. The Society should regularly review the professional composition of its membership and its journal contributors, and take appropriate steps, when needed, to encourage balanced representation.



Allison M. Grimes. Humboldt State University, California: BA 1973, MA in Speech Pathology, 1974. University of Denver, Colorado: MA in Audiology, 1975; Assistant Chief of Audiology, The Clinical Center, ACRF 5C306, The National Institutes of Health, Bethesda, MD 20205, and Clinical Supervisor in Audiology, University of Maryland, College Park, MD 20742.

The American Auditory Society is the national organization which represents most completely the interaction of all professional groups involved in the study of audition. The Society provides a unique opportunity for non-political dialogue and dissemination of information among a number of specialties. It is clear that a successful relationship among those serving the needs of the hearing impaired is of the greatest importance to professional and patient alike. While it is to the mutual advantage of all such disciplines to be proportionately represented in the AAS, at this time audiologists account for the overwhelming majority of the membership. This is a less than satisfactory situation, and one which I believe deserves continuing effort to remedy. In order for the aims

of the Society to be fully realized, the resources and concerns of audiology, otology, education and industry must be represented. Cooperation and collaboration by all of us will ensure the aims of the Society: knowledge and understanding of the auditory process, conservation of hearing and rehabilitation of the hearing impaired.



Barbara Kruger, Ph.D. C.U.N.Y. Graduate School and University Center, the City University of New York, Dept. Speech and Hearing Sciences, Doctorate in Audiology and Hearing Sciences, 1974. M.A. Audiology and Speech-Language Pathology, Queens College of C.U.N.Y. Dept. Communication Sciences, 1971. CCC/A.S. B.A. Psychology major, Biology and Speech Minors, Queens College C.U.N.Y., 1967. Director of Audiology and Speech-Language Pathology and Director of Audiology Research Laboratory, Dept. of Otorhinolaryngology, Albert Einstein College of Medicine and Montefiore Medical Center, VE5C8, 1300 Morris Park Ave., Bronx, New York 10461.

The American Auditory Society provides a unique forum for communication among the largest group of professionals with different backgrounds who serve the hearing impaired. True to its purpose, which is to foster and disseminate knowledge about the auditory process and hearing impairment, the AAS draws its membership from the various disciplines with special expertise in hearing. It is the only organization of its kind devoted solely to hearing. The society offers informal and formal exchange of ideas concerning clinical practice and scientific research through its annual meeting and its quality publication *Ear and Hearing*. The greatest strength for the future of the AAS, however, is as an arena for dialogue among its diverse membership. The vitality of the society will endure by encouraging understanding of and respect for the strengths, individual differences, and perspectives of each of the specialties which share a common interest in audition and hearing health care.

David J. Lilly, Ph.D., University of Pittsburgh, 1961, Director of Audiology, Good Samaritan Hospital and Medical Center, 1015 NW 22nd Avenue, Portland, OR 97210.

In just over a decade, the American Auditory Society has emerged as a major association for many workers in audition. The success of the society stems, in part, from the diverse backgrounds of its members. Indeed, the American Auditory Society has been unique in its ability to provide a common forum for audiologists, engineers, hearing-aid specialists, otolaryngologists, neurophysiologists, physicists and for psychoacoustics.

During this same period our journal has become an important archival repository for manuscripts concerned with near-

Please see Candidates, Page

POSITION AVAILABLE DIRECTOR AUDITORY EVOKED POTENTIAL LABORATORY Department of Otorhinolaryngology Division of Audiology and Speech-Language Pathology Albert Einstein College of Medicine of Yeshiva University and Montefiore Medical Center Bronx, New York 10461

Primary responsibilities include coordination and provision of AEP clinical services, and active research. This position provides an excellent opportunity for challenging clinical research with a multi-disciplinary team. A suitable candidate should be prepared to conduct research applying evoked response technology to areas of auditory physiology and psychoacoustics. Demonstrated research interest and expertise in understanding the normal and abnormal development of the auditory system is desired. The candidate would participate as a co-investigator in the Clinical Research Center in Communicative Disorders in Children along with colleagues in Audiology, Otolaryngology and in Neuroscience.

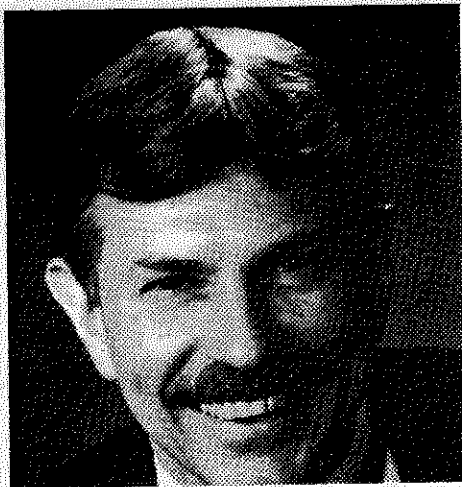
Clinical experience with sophisticated auditory evoked potential recording (BSAEP & MLP) is required. Additional responsibilities include teaching medical students, and residents. Administrative experience is desired, but not required. Doctorate is required. ASHA Certification (CCC-A) and eligibility for New York State Licensure are preferred. The position offers a full-time faculty appointment. Rank and salary are commensurate with qualifications and experience. AECOM/MMC is an EOE.

Contact:

Dr. Barbara Kruger
Albert Einstein College of Medicine, VE5C8
Dir. of Audiology and Speech-Language Pathology
1300 Morris Park Ave.
Bronx, New York 10461
(212) 430-8386, 430-5421

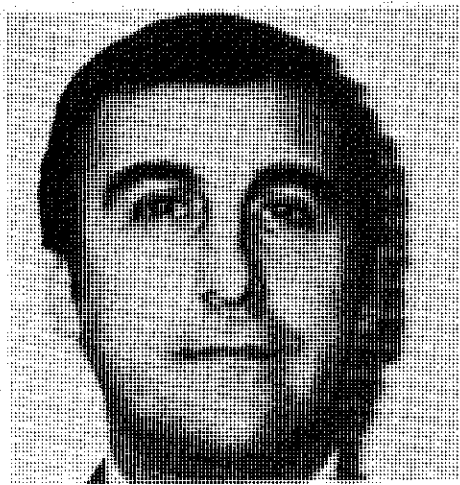
Candidates

Continued from Page 3



every aspect of audition. The rapid and equitable review process instituted by *Ear and Hearing* and its minimal publication lag are attracting first-rate manuscripts. Moreover, the "special issues" on selected topics have become required reading in many training programs.

The growth and success of the American Auditory Society and *Ear and Hearing* could not have occurred without the dedication and efforts of its officers, editors and executive committee. In consequence, I consider it an honor and a challenge to have been chosen by the Nominating Committee to serve as a candidate for election to the Executive Committee. If elected, I shall do my utmost to foster the continued growth of our society in an environment that emphasizes scientific achievement and clinical excellence while avoiding the "professional" and political issues that have attenuated the growth of so many other organizations.

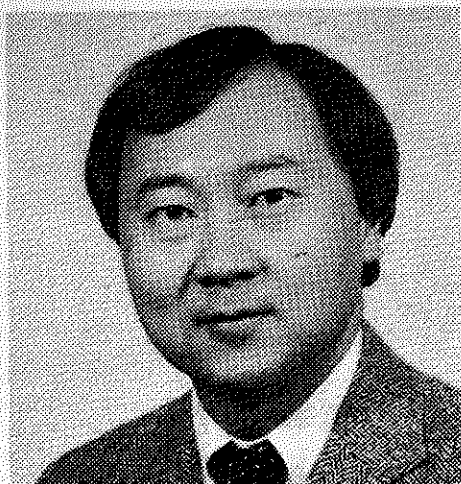


Serge A. Martinez, M.D. Doctor of Medicine, University of Miami School of Medicine, 1969. Professor of Surgery, Director, Division of Otolaryngology - Head and Neck Surgery, University of Louisville. Myers Hall, University of Louisville Medical Center, Louisville, Kentucky 40292.

The American Auditory Society has emerged into a position of respect with regard to its role as coordinator of activities and education relative to audition. Its publication is of high quality and its members support its annual meetings. However, it seems that the organizational membership is predominately non-physician in nature and therefore a give and take of theory and practice is limited to relatively few of all the individuals who provide patient or client care. Indeed, most of the articles produced in *Ear and Hearing* are of interest to the audiologist or basic researcher with very few being geared to the general otolaryngologic public. This is unfortunate since most diseases seen by practitioners are related in some way to the ears and hearing.

In order for the Society to be successful in its aims as described in the bylaws, and

increase the interdisciplinary interaction, it should add emphasis to the clinicopathologic aspect of ear disease and/auditory dysfunction, encourage clinical papers in the journal and market itself more enthusiastically at national and local meetings of physicians and non-physicians alike.



Richard T. Myamoto, M.D. F.A.C.S. Wheaton College, Wheaton, IL, B.S., 1966; University of Michigan, Ann Arbor, MI, M.D., 1970; University of Southern California, Los Angeles, CA, M.S. (Otolaryngology), 1978; Indiana University School of Medicine, Indianapolis, IN, Resident in Otolaryngology, 1975; Otolaryngologic Medical Group and St. Vincent Hospital, Los Angeles, CA., Fellowship in Otolaryngology and Neurology, 1978; Associate Professor & Chief of Otolaryngology, Dept. of Otolaryngology - Head and Neck Surgery, Indiana University School of Medicine; Board of Governors, American Academy of Otolaryngology - Head and Neck Surgery; Secretary-Treasurer, Indiana Academy of Otolaryngology - Head and Neck Surgery.

It is a privilege to share this candidacy and voice my support of the stated aims of the American Auditory Society. The Society provides a unique forum for interaction among professionals with diverse backgrounds and expertise who are involved with the study of hearing and the rehabilitation of the hearing impaired. The future growth and strength of the Society is dependant upon its continued ability to promote this open dialogue and cooperation. As an otologist, I understand the importance of communicating with professionals of related disciplines who have a common interest in hearing because of the increasing complexity of knowledge. Considering the depth and wealth of experience represented in the Society's broadly based membership, I perceive the American Auditory Society as a key organization in our quest to stimulate research and provide care to our hearing impaired patients.

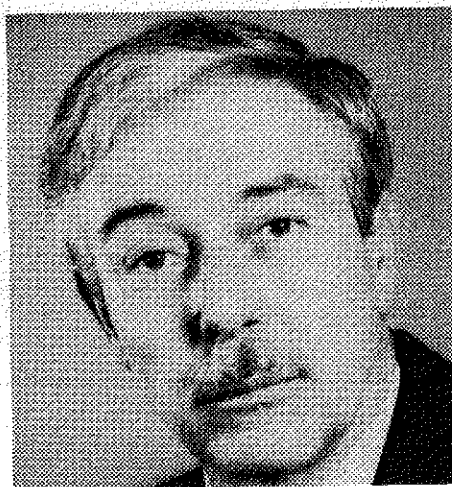


David A. Preves, 1963 B.S., M.S. in Electrical Engineering University of Illinois; Ph.D program in Biomedical Engineering University of Minnesota

1980-present; Chairman, ANSI committee for hearing aid standards; Vice President, Engineering, Starkey Laboratories, 6700 Washington Ave. S. Eden, Prairie, MN 55344; 800-328-8602.

It is truly an honor to have been chosen as a candidate for the Executive Committee of the American Auditory Society. My interest in actively participating stems from the desire to better the communications between hearing aid manufacturers, audiologists, psychoacousticians and physicians working in the hearing health care field. Only through such a diverse group with so wide a variety of perspectives working together can we hope to meet the challenge of providing the best possible hearing rehabilitation.

Formulating a viable model which represents all of the attributes of the auditory system has been a long-standing problem. Once we have obtained a better understanding of how the auditory system functions though the efforts of auditory physiologists and psychoacousticians, it may be possible to design more effective hearing aids. Although, the design and effectiveness of the hearing aid prosthetic itself is vital, the importance of the one-on-one rehabilitation process performed by the audiologist during the fitting and post evaluation stages cannot be minimized. An organization such as the American Auditory Society is the ideal body within which to exchange ideas and further knowledge about such considerations.



William F. Rintlemann, Ph.D. B.S., Arizona State University, 1952; M.A., Indiana University, 1957; Ph.D., Indiana University, 1960; Post-doctoral Fellow, Northwestern University, 1961-63; Present position: Professor and Chairman Department of Audiology, Wayne State University School of Medicine, 4201 St. Antoine, 5E, Detroit, MI 48201.

A unique feature and major strength of the American Auditory Society is that the membership is composed of a broad spectrum of individuals with varying interests and activities related to hearing impairment, hearing conservation, and aural rehabilitation. The range of activities of the membership encompasses: 1. Teaching; 2. Research; 3. Clinical evaluation/patient management 4. Aural rehabilitation including hearing aid selection, fitting, sales and counseling; and 5. Product (i.e. hearing aids, audiometers, etc.) development, engineering, manufacturing and sales. No other organization has such a broad scope of activities related to serving the hearing impaired. Because the membership of the American Auditory Society deals with nearly every aspect of serving the needs of hearing handicapped persons, the Society has a unique opportunity to serve as a catalyst for not only technological development of amplification devices, but also advancement in patient evaluation/management skills.

The leadership of the American Auditory Society should strive to find the best possible ways to maximize open communication among all of its members in

order to foster "state-of-the-art" advances in education, research, patient care and product development.



Laszlo K. Stein, Ph.D. B.S.E. Northern Illinois University, 1953; M.A. Northwestern University, 1957; Ph.D. Northwestern University, 1963. Director David T. Siegal Institute for Communicative Michael Reese Hospital and Medical Center; Associate Professor Department of Surgery (Otolaryngology) University of Chicago. Lake Shore Drive at 31st Street, Chicago, IL 60616 (312) 791-2910.

Expansion of clinical knowledge in the field of hearing and its disorders will increasingly depend on a healthy interaction among a wide variety of once compartmented fields. Contributions by otologic surgery, psycoustics, electrophysiology, neurobiology, and computer science, to name only a few, illustrate the mix of sciences that have yielded some positive effects as well as considerable promise. Growth of knowledge, however, tends to be asynchronus, especially when findings must be interlocked to form specific clinical strategies.

In my view, the American Auditory Society is in a unique position to foster the mix of sciences and disciplines necessary to achieve unique and worthy advances in clinical practice. The very nature of the Society's clinical practice — open to anyone with scientific or professional experience who has demonstrated an interest in the field of hearing — is key to the interaction of professional disciplines up until quite recently thought to be outside those traditionally utilized by otology and audiology. By actively promoting the interactive nature of research for the auditorially impaired through its sponsorship of meetings and publications, the Society fills a vital clinical scientific, and humanitarian role. The expansions of this role should be the paramount objective of the Society in future years.



Michael C. Vivion, Ph.D. Product Marketing Manager, Nicolet Instrument Corporation, Biomedical Division, 5225-4 Verono Road, Madison, WI 53711. B.A. in Speech Pathology and Audiology, 1968, Baylor University, Waco, Texas; M.S. in

Please see Candidates, Page 5

Candidates

Continued from Page 4

Communicative Disorders, 1971; Ph.D. in Communicative Disorders, 1976, University of Wisconsin-Madison.

As society enters the age of information, computers and accelerated technological advances, I believe that the various hearing-related disciplines will experience considerable pressure to adopt and utilize the latest technological advances. Evidence of this already can be seen in such areas as cochlear implants, digital hearing aids, computerized patient record keeping, to name just a few. As we, the members of the American Auditory Society, implement these innovations in order to perform research and to provide service and healthcare to the hearing- and communicative-impaired, the needs for information exchange, for standardization, and for quality assurance will also become greater. Given the multi-disciplinary nature of the Society, I think it is an ideal group to address these needs and issues. Through its annual meetings and its publication, *Ear and Hearing*, the Society has the opportunity to lead in the development of standards for new diagnostic testing methods, of protocols for information exchange and record keeping, and of criteria for the performance of devices for the hearing-impaired. I believe the Society has grown and matured sufficiently that it can now call upon the resources of its members to generate proposals for solutions to these needs as well as others that I have not mentioned or that are unforeseen at present.

Kenneth E. Wolf, Ph.D. B.A. and M.A., University of California, Santa Barbara, 1970 and 1972; Ph.D., University of Wisconsin, Madison, 1977. Chief of Communicative Sciences and Disorders and



Assistant Professor of Otolaryngology, King/Drew Medical Center, 12021 So. Wilmsington Avenue, Los Angeles, CA. 90059.

The membership of the American Auditory Society enters the second half of the 1980s facing newer and more specific challenges. Many changes in the health care delivery and educational systems will impact us.

The short history of the AAS has emphasized that all aspects of the hearing health community be represented among the membership and Executive Committee. Audiologists, hearing aid specialists, hearing scientists, and otologists have productively interacted at the annual meetings. The Society's publications have fostered increased intellectual growth and promoted diagnostic, habilitative and rehabilitative advances. Future progress will be achieved through continued interdisciplinary efforts. Collective activities across specialty areas are needed to expedite expansion of science and service directed toward prevention, detection and treatment of the hearing handicapped.

Caution Required When Removing Earwax

WASHINGTON, D.C. — If it is smaller than your elbow, it does not belong in your ear, claims a new leaflet published by the American Academy of Otolaryngology — Head and Neck Surgery. The AAO-HNS is the national society of doctors who treat ear, nose and throat and related areas of the head and neck.

Reaching for a cotton swab to remove earwax is not the method otolaryngologists recommend to clean ears. According to the leaflet, the eardrum is one of the most delicate tissues of the body and one of the most easily injured. Using a cotton swab to remove earwax, or absent-mindedly playing with a bobby pin inside your ear are possible ways to push wax further down the ear canal and block hearing, and also injure the skin of the ear canal.

Earwax, which is formed by glands in the skin of the outer part of the ear canal, does have an important function — to trap dust and other particles and prevent them from reaching the eardrum. Usually, the wax accumulates the particles then dries up and falls out by itself. But if wax is accumulated near the ear canal and is blocking your hearing or the hearing of someone in your family, it needs to be removed.

Otherwise, this four step method should be employed to effectively wash out earwax:

1. Begin by softening the wax before you try removing it. Instill in the ear canal several drops of a product such as Deborx twice a day.

2. Use bath temperature water and an infant enema or a plain rubber bulb syringe.

3. Lean over a sink, and with one hand pull the outer ear upwards and backwards while squirting water into the ear with the other hand. When finished, turn and pull the ear downward to let the water drain out. You may have to repeat washing 10, 20 or more times if the ear is still blocked. Watch for the wax to fall out.

You can prevent "swimmer's ear" by placing an eye-dropperful of rubbing alcohol into the ear canal and then letting it drain out. Don't eliminate this step — it is important and could prevent future problems.

To keep your family's ears clean and healthy, request a single complimentary copy of the new "Earwax" leaflet by writing: AAO-HNS, 1101 Vermont Ave., N.W., Suite 302, Washington, D.C. 20005. Please specify "Earwax" leaflet and enclose a stamped, self-addressed business size envelope. Multiple copies are available for sale; contact the Academy for details.

ATTENTION: Please send ALL changes of address for AAS publications (*Ear and Hearing* and *Corti's Organ*) to:

**American Auditory Society
1966 Inwood Rd.
Dallas, TX 75235**

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7th Run for Better Hearing...

A Marathon Challenge for Hearing Health Team!

Record entries for the 26-mile challenge in the 1985 "Run for Better Hearing" include 33 hearing help providers from across the country and abroad. They include ear doctors, audiologists, hearing aid specialists, manufacturers, suppliers and researchers—representing the interdisciplinary support forging BHI as the hearing field's most cost-effective public education program.

The seventh annual Run is a fund-raising effort to strengthen BHI hearing awareness projects. Broadcast and print media have donated the equivalent of more than \$102 million in commercial time and space to BHI hearing help messages, highlighted by famous Americans who overcame hearing loss. They include Art Carney, Norm Crosby, Phyllis Diller, Nanette Fabray, Lou Ferrigno, Lorne Greene, Florence Henderson, Bob Hope, Kiel Martin, Clara Peller, Frankie Valli, Keenan Wynn, and others.

1985's Run doubleheader features BHI executive director Joe Rizzo in his sixth Boston Marathon on April 15. Then on June 15, in Duluth, MN, Joe will be joined in Grandma's Marathon by: Bob Hanrahan, Wilmington, DE; Jim Keisow, Menomonie, WI; John, Geri and Mark Keisow, Eden Prairie, MN; Jim Anthony Kolokoski, Elm Grove, WI; Anne L. Kuklinski, Champaign, IL; Becky Kurtz, Superior, WI; Arnie Monk, Manitoba, Canada; Randy Nelms, Jr., M.D., St. Paul, MN; Nita Marie Rizzo, Alexandria, VA; Stephen Richard Rizzo, Jr., Ph.D., Chillicothe, OH; Ross J. Roeser, Ph.D., and Sharon Lynn Roeser, Dallas, TX; Emil Strickler, Singapore; Wayne Lee Whitney, Strum, WI; Don Worthington, Ph.D., Dallas, TX; John N. Beall, K. Jeffrey Dahlberg, Tod Eckberg, Richard Edward Marschinke, Leonard L. McMillion, all from Dahlberg Electronics, Golden Valley, MN; Charles Best, Duncan F. Clifton, Byron L. Nielsen, Gary C. Salter, David Edward Somppi, Dr. Richard H. Tomlinson, all from Linear Technology, Ontario, Canada; Steven C. Hannibal, and James D. Kothe, both from Oticon Corp., Green Brook, NJ; Frank E. Trette, and David Lee Wessell, both from Phonic Ear, Mill Valley, CA.

Run Volunteer Committee

This year's Run steering committee includes Al Bruce, chairman, Starkey Labs; Jim Anderson, Qualitone; Jane Hixson, Dahlberg; Glenn Kennedy, Hearing Services; Bud Raas, Earmold Design; Bob Tischbein, Starkey; and Mary Weber, Activair.

"We're urging everyone to pledge their special support to this year's campaign so BHI will continue to run strong," said Run committee chairman Al Bruce. "Tax-deductible contributions will reach far beyond the 26 miles, 385 yards that our 33 runners will tackle this year."

Hearing Instruments magazine, Duluth, MN, will continue to provide a vital role in promoting and coordinating the Duluth Run activities, and the Hearing Journal, Ayer, MA, will extend its special support at the Boston Marathon.



Last year's "Run for Better Hearing" finishers in the Duluth marathon included (top l-r): Wayne Whitney, hearing aid specialist; Duncan Clifton, hearing industry supplier; George Hicks, M.D., otolaryngologist; Mead Killion, Ph.D., industry researcher; (bottom l-r): Barb Friedman, audiologist; Joe Rizzo, BHI executive director; and Ross Roeser, Ph.D., BHI board member.

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☐ You bet I'm supporting the 1985 "Twin Run for Better Hearing" team.
Here's my check payable to Better Hearing Institute:

☐ \$13.00 (\$1.50/mile) ☐ \$19.50 (\$1.75/mile)

☐ \$39.00 (\$1.50/mile) ☐ Other

☐ Yes, please send me more information on BHI.



Oral Communication Possible for Many Deaf

Oral communication is an option that is open to many deaf people. This communication mode requires the deaf person to use spoken language directly with another speaker of the same language, whether hearing impaired or not.

The means of receiving and understanding spoken language for the oral deaf person is a combination of lipreading (more accurately termed speechreading) and amplified hearing. Most deaf people (90-95%), even those profoundly deaf, have a small amount of hearing that may respond to amplification. In many cases, the amplification reaches the decibel levels of some speech sounds, the vowels in par-

ticular; short of this, amplification can provide information about intonation patterns.

A person born with a severe or profound hearing loss, or who becomes deaf before the age of about two, does not have the benefit of normal language development, which is a complex process requiring massive amounts of exposure to language and a patient (though unconscious) trial-and-error campaign on the part of the young child in terms of expression and reception.

No child is too young for a hearing test or too young for the parents to begin observing his or her responses to sound. For ex-

ample, most children from birth to about three months are startled by loud sounds and soothed by their mothers' voices. During the next three-month period, they turn their eyes and head to try and locate sounds, and they enjoy playing with noise-making toys. From about six months to 10 months, children respond to their own names and can understand common expressions such as bye-bye and no. From 10 to 15 months, they can usually point to or look at familiar objects or people when asked, and they can mimic simple words and sounds. Finally, by the time a child is 1½ years old, he or she will be able to follow simple spoken directions and have a sizeable vocabulary of single words.

Any parents or professional in contact with a baby who seems to have a hearing problem should arrange for the baby to be seen by a physician or speech and hearing clinic as soon as possible. It is never too early, and it never makes more sense to "wait and see."

The Alexander Graham Bell Association for the Deaf, which promotes oral communication, can supply information regarding the nearest available audiologic speech training services for locations throughout the United States and many parts of the world. The Association's address is 3417 Volta Pl., N.W., Washington, D.C. 20007.

Soundville

By: Marshall Chasin, M.S.

Editor's note: The following is an interesting story by Marshall Chasin that he uses as a primer to his earmold acoustics class.

Soundville was a happy place. No starvation, no unemployment, and no fluctuating currency. The citizens were known as sounds. Sociologists tell us that Soundville had two groups of citizens; the low ones and the high ones. The low ones were big, rather dumb, but very friendly. The high ones tended to be small, nervous, very intelligent and almost painfully claustrophobic. Together they lived peacefully and prosperously.

Perhaps the most interesting aspect of Soundville was the architecture of the homes. The low ones lived in big houses, but they didn't have any doors. They could go right through the walls! The high ones had beautiful log houses for everyone to see. The doorway was so large that it generally took up an entire side of the house. I guess that since the high ones were so claustrophobic, they needed such big doors. They hated to be closed in.

The low ones had some distant cousins who they generally didn't like to talk about since the neo-killion wars ended. People knew them only as the mid ones — the evil ones. They tended to run around and make life harsher for everyone else. The evil minded ones needed a small door in their houses — that is how you knew them. Besides that, they were ugly.

The inhabitants of Soundville were famous for their parties. All of the parties

and gatherings were held at the homes of the high ones. After all, the high ones could not visit the low ones in their homes. They would be so claustrophobic that they really wouldn't enjoy the parties. If you ever got lucky enough to be invited to a party in Soundville, you would notice that there was rarely a time when the high ones were alone. Sometimes there were so many low ones around, that you didn't even know if a high one was at home! Occasionally, a mid one — an evil one, wandered in off the street, and ruined the party for everyone. Parties were so much more enjoyable if you blocked them out.

The high ones and the low ones got along famously. In fact, one could say that life in Soundville would be boring without the high ones, and unnatural without the low ones. The high ones were always telling information-packed stories to the low ones. But, sometimes the low ones were too friendly — they overstayed their welcome. Subsequently, the high ones rarely got a good night's sleep. It's understandable that many of them died young. Unfortunately, it was a vicious circle. As soon as some high ones died off, the low ones felt so guilty that they visited them even more. I guess they didn't want them to be alone in their time of grief. Because of this, the high ones only had a lifespan of 40-50 years.

In many ways, it wasn't fair. The low ones could go home and rest anytime they wanted and the high ones couldn't (or wouldn't) visit them. After all, it would be too claustrophobic without doors. Understandably, they had long healthy lives. They generally lived to be about 75-80 years of age.

Life in Soundville went on this way for many, many years, until one day the machines arrived! When they first arrived, people thought they were evil monsters who made life harder. In many ways, they acted like the evil mid ones. There were some who thought they were the evil ones, only in disguise! But as time went on, the people of Soundville came to be more friendly with the machines. They were invited to the parties and slowly they became accepted. The machines had one feature that was unique to Soundville. They could bring the high ones back to life! The new high ones were very weak, but as time went on, they grew stronger and stronger, telling more and more interesting stories.

Today, the people and machines of Soundville live happy and long lives. The evil mid ones rarely bother them anymore, although they are still around.

NHA Moves

The National Hearing Association recently relocated its national headquarters to Downers Grove, Illinois. "After seven years of residing at the same location in Oak Brook, Illinois, we found that we had outgrown the space where NHA first began and has since flourished," stated Christian Rosenbach, Executive Director for the national organization.

The new address and phone number for the National Hearing Association are:

1430 Branding Lane
Suite#122
Downers Grove, IL 60515
(312)810-0401 Voice or TDD

The Association invites anyone living in an area convenient to the new location to stop by for a personal visit.

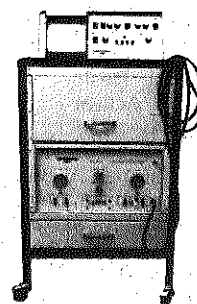
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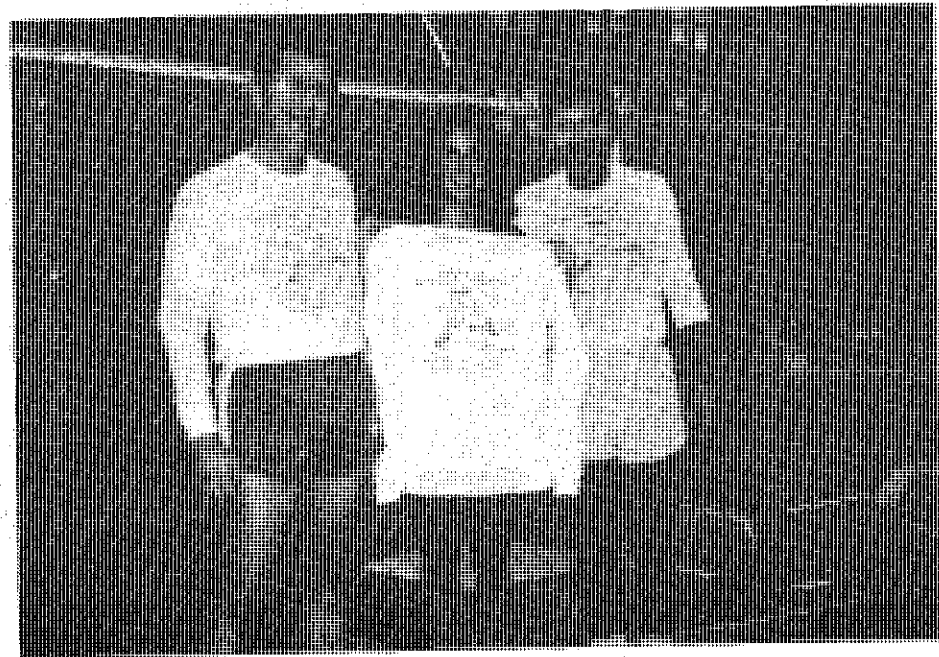
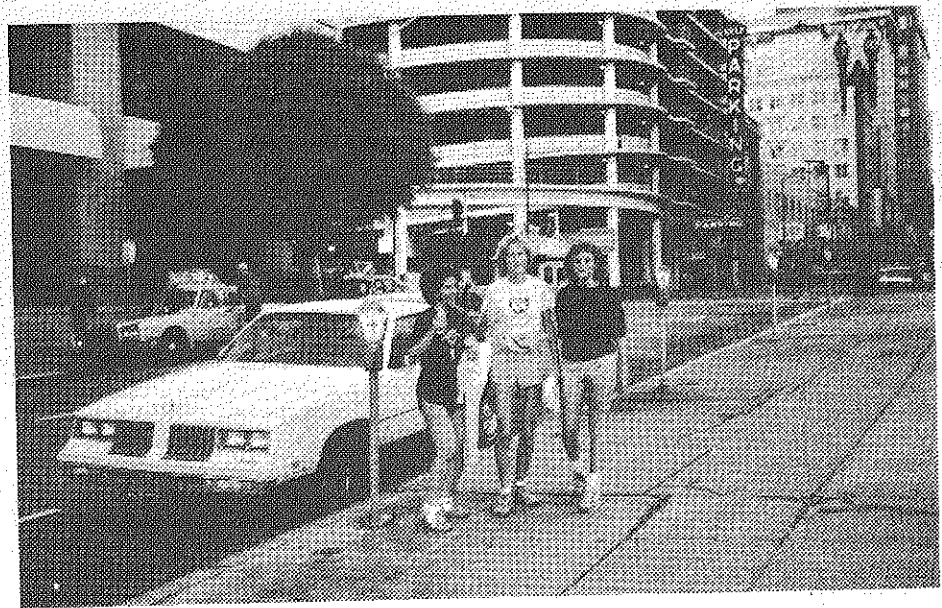
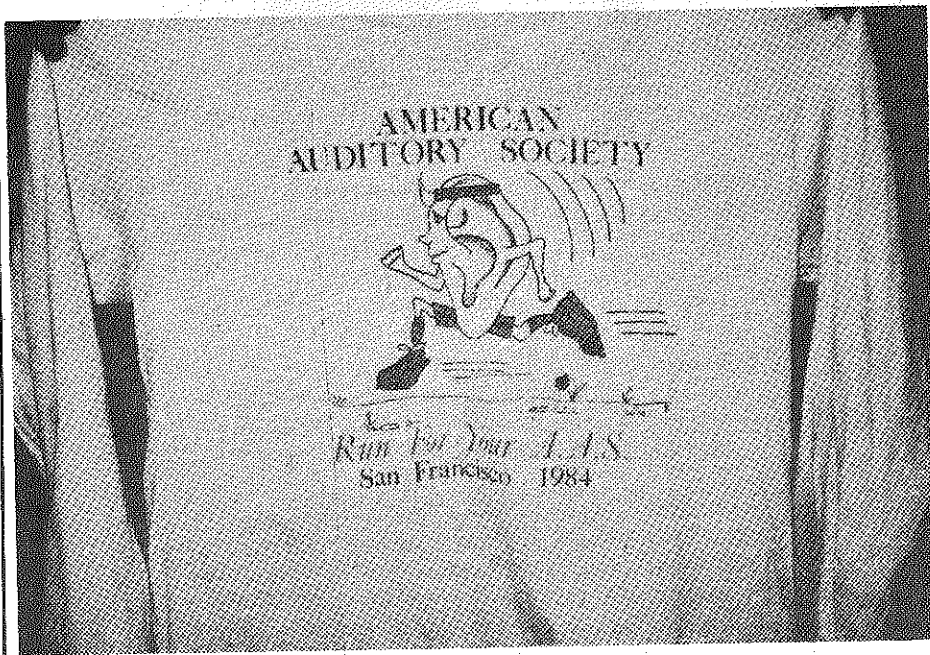
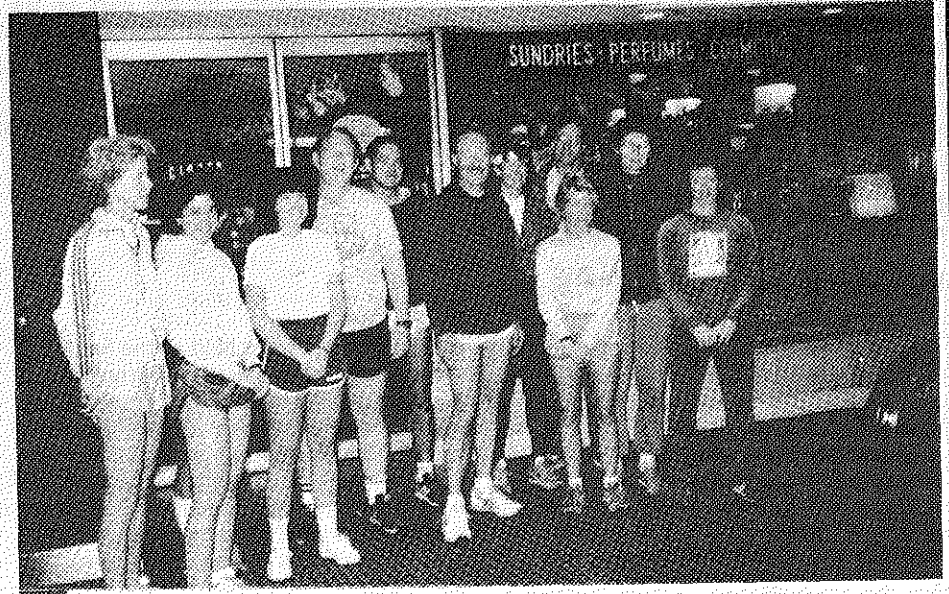
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Run for A.A.S. '84

The hills and valleys of beautiful San Francisco set the course for the 1984 American Auditory Society five mile fun run in association with the 1984 ASHA convention. The theme, "Run for Your A.A.S." was reflected on the commemorative tee shirts sported by the loyal members participating and observing. See you next year!



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AMERICAN AUDITORY SOCIETY ANNUAL MEETING

ATLANTA, GA — Hyatt Regency Hotel

October 21, 1985

(Registration form back page)



CORTI'S ORGAN

The Official House Organ of The American Auditory Society

VOLUME 10, NO. 2

SUMMER 1985

BHI to explore motivation of hearing impaired

WASHINGTON, D.C. September 1, 1985 — Better Hearing Institute will launch a series of focus group interviews in major U.S. cities next month to study factors motivating hard-of-hearing people to obtain available hearing help, according to Richard T. Burger, Institute president. Pilot sessions were held last month at Northwestern University in Evanston, IL. The regular sessions are scheduled to begin in October and will be conducted in Chicago, Boston, and Los Angeles.

Results are expected to help the Institute to further refine its public information projects and to design future messages for maximum effectiveness.

BHI commissioned NFO Research Inc., Chicago, to conduct sessions with two separate groups, one involving only hard-of-hearing people, another with adult relatives living in the same household. Rationale is that relatives of the hearing impaired may persuade loved ones to obtain hearing help after exposure to public information messages. In the hearing impaired groups, half of the members will have already sought professional help, with the

other half not yet doing so.

In the Northwestern University pilot, one focus group consisted of people with hearing problems, and their spouses were interviewed in separate session. Both groups reviewed several current BHI television public service messages. They then were encouraged to discuss their reactions and their own personal experiences regarding: (1) factors leading them or their spouses to seek professional help, (2) factors tending to prevent them or their spouses from going for such help, and (3) what messages they believe would motivate people with uncorrected hearing problems to obtain available help.

The pilot was made possible by the generosity of Knowles Electronics and its marketing staff, which is assisting BHI in the focus group series.

"We especially appreciate the tireless efforts of Reg Garratt with this project," said Burger, who previously appointed Garrett to chair a board market research subcommittee. Garratt, BHI secretary, is vice president of marketing for Knowles Electronics.

SHHH is people

Deaf people make themselves heard — few hear about hard of hearing people. To counteract this situation and help such people help themselves, a national organization was formed in late 1979. SHHH (Self Help for Hard of Hearing People, Inc.) serves the needs of those who suffer hearing loss, with emphasis on those who are partially deafened. SHHH teaches them about hearing loss and how they can deal with this problem, as well as continue personal growth and development. SHHH places its emphasis on the person, not the problem.

SHHH actively seeks out those who suffer from hearing loss. It involves them in local chapter meetings and community activities in the belief that education and service are the keys to improvement of the person.

SHHH was founded by Howard E. "Rocky" Stone, who lost his hearing during World War II. Nevertheless, he had a very successful career with the CIA. He is

proud of the fact that he rose to senior officer status, not as an analyst dealing with problems on paper, but in operations where the emphasis was on people and effective communication. Although audiologically deaf, Stone is functionally hard of hearing.

SHHH was founded on the conviction that little progress can be made in helping the hearing impaired until both those who hear well and those who do not, better understand the nature, cause, complications and possible remedies of hearing loss.

SHHH is concerned also with education of hearing people. They are encouraged to join in the fight against America's most pervasive physical handicap. The services of SHHH include: a Journal about hearing loss (six times a year); a periodic SHHH Newsletter; a Chapter Manual; remedial aid discounts; referrals and advisory services; information and resource center; advocacy and representation; a national constituency and conventions.

Etymotic research, alive and well after two years

July, 1985 marks the completion of the second year for Etymotic Research. Mead Killion began the company in 1983 to develop a line of products that were needed for hearing testing and hearing aid modification.

Shortly after the company was founded, Ed DeVilbiss joined Mead as a partner and business manager. As the business expanded, they were joined by Don Wilson and Jon Stewart in engineering, Connie Miezio as secretary, and Thann Killion as assembler.

To date, three products have been introduced. The fastest growing product line is a series of insert earphones. One is an alternative for conventional TDH-39 headphones to be used by otologists as well as audiologists. In addition, this line includes two higher frequency (50 Hz to 16K Hz) in-

sert earphones which have been popular with those doing auditory research.

A second product, the open-canal, reverse slope, K-BASS hearing aid has proved an effective fitting for a rare type of loss. Work in this area has led to a series of earhooks which will be available later this year and which will solve several difficult fitting problems.

The final product is a highly accurate probe microphone custom built for research. This has led to the development of a low noise microphone, also for research, to measure cochlear emissions.

Killion indicates that the increasing sales of these products has been most satisfying, since it should ultimately permit him to devote more time to his primary interest which is new product research and development.

SEI now certifying hearing protectors

A third-party certification program for hearing protection devices has been initiated by the Safety Equipment Institute (SEI) with the authorization of the U.S. Environmental Protection Agency (EPA).

The SEI program parallels an EPA program mandating uniform testing of hearing protectors and assigning them a noise attenuation value called the Noise Reduction Rating (NRR). Under the EPA program, which has been unfunded for years, the NRR was indicated on a label affixed to packaging of hearing protection devices.

"The EPA and SEI have signed a Memorandum of Understanding that authorizes the use of the SEI Mark on the NRR Label and recognizes the SEI Program," said SEI Chairman of the Board, George E. Smith. "This means that for the first time in several years an active program exists for the testing of hearing protection products."

The testing and certification program applies to ear plugs, circumaural devices, cap-mounted devices and supra-aural devices.

Testing will be conducted by Dr. Paul L. Michael and Associates, Inc., in conjunction with ANSI S12.6-1984, "Method for the

Measurement of the Real-Ear Protection of Hearing Protectors."

"All EPA data from tests conducted since 1980 will remain valid under a 'grandfather' clause," Smith explained. "Thereafter testing will be required every five years so that at no time will test data be older than five years."

SEI certification of hearing protection devices goes beyond the requirements of the original NRR program established by EPA. Like other SEI certification programs, it includes Quality Assurance Audits of manufacturing facilities. These are conducted periodically by an independent auditor, W.A. Golonski and Associates, to assure that the manufacturer is capable of maintaining consistent quality control in producing hearing protection devices.

Only when both the testing and quality assurance audits are passed will the SEI certification be granted.

The SEI, headquartered in Arlington, Va., is a non-profit operation that exists solely to certify a broad range of safety equipment. Products currently certified by SEI include protective helmets, faceshields, protective eyewear, emergency eyewashes and safety showers.

From the Editor

Dear Fellow AAS Member,

As the editor of *Corti's Organ*, our companion publication to *Ear and Hearing* in the American Auditory Society, I am asking for your personal help. Over the years, I have seen a gradual decline in original material submitted to *Corti's* for publication. This is despite the dramatic rise seen in AAS membership.

I would appreciate your taking a short time on a regular basis to correspond with me regarding clinical or research developments, applications and other activities in your area, of interest to our membership. The format for publication in *Corti's* is more relaxed than typically submitted to other journals. Accompanying pictures or graphs are welcome. As usual, we will be happy to announce future events in *Corti's Calendar*.

Thank you in advance for your time and assistance. I look forward to hearing from you soon.

Sincerely,

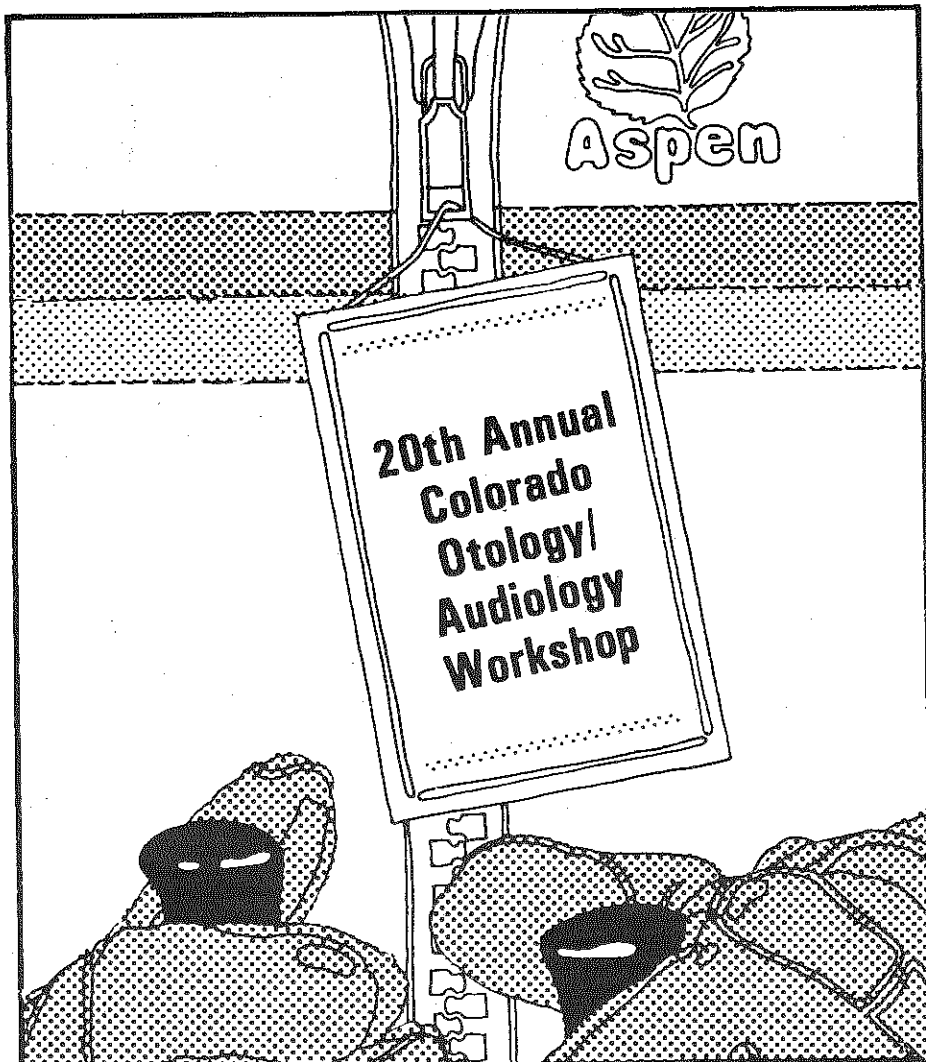
Suzanne G. Brown

Suzanne G. Brown
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Attention:

Please send ALL changes of address for AAS publication (*Ear and Hearing* and *Corti's Organ*) to:

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March 9-15, 1986, Aspen, Colorado

For More Information Contact
The Colorado Hearing Foundation
Box B210, 4200 East 9th Ave.
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Corti's Calendar

October 18-20, 1985

Audiological Resource Association, Williamsburg, Virginia. Topic: Marketing and Third Party Payments. Contact: Penny Richardson, c/o Audiological Resource Association, 1915 State Street, Nashville, TX 37203.

October 21, 1985

American Auditory Society Annual Convention. Atlanta Georgia. Hyatt Regency Hotel. For information and registration contact Ross Roeser, 1966 Inwood Rd., Dallas, TX 75235.

January 10-12, 1986

The Triological Society, Western Section Meeting. The San Francisco Hilton, San Francisco, CA. For information: J. DiBartolomeo, M.D., 2420 Castillo St., Santa Barbara, CA 93105.

March 9-15, 1986

The 20th Colorado Otology-Audiology Workshop will be held March 9-15, 1986 at the Continental Inn and Aspen Conference Center in Aspen, Colorado. For further information contact: Jerry Northern, Ph.D., Colorado Hearing Foundation, Box B210, 4200 E. 9th Avenue, Denver, CO 80262.

July 26-31, 1987

VII British Academic Conference in Otolaryngology. Glasgow, July 26-31, 1987. For information: J. DiBartolomeo, M.D., 2420 Castillo St., Santa Barbara, CA 93105.

3M offers training seminar for cochlear implant teams

Training seminars for otologists, audiologists and other clinicians who wish to become involved in cochlear implant practice are being offered by the 3M Otologic Products Program.

The seminars will focus on the 3M Cochlear Implant System/House Design, the only FDA approved cochlear implant. Hearing health professionals who intend to become involved with cochlear implantation programs are urged to enroll in the seminar, which will provide information on: medical evaluation of implant candidates; audiological aspects of patient selection; pre-operative counseling; surgical technique; fitting and adjusting the

device; and post-operative training and rehabilitation.

The seminar will be conducted by 3M with the support and participation of experienced clinicians and audiologists from the House Ear Institute, Los Angeles, and other leading cochlear implant teams from across the United States.

The three-day seminars are scheduled for Nov. 6-9, 1985; Feb. 26-March 1, 1986; June 4-7, 1986; Aug. 6-9, 1986, and Oct. 15-18, 1986.

For a brochure and complete seminar information, write Otologic Products/3M, Department HS85-5, 225-5S-01, 3M Center, St. Paul, MN 55144-1000.

Publication Notice

The *Hearing Aid Handbook* has been reprinted to meet numerous requests for the handbook after the original printing was depleted.

This is a professional and serious layman's guide to understanding, using, maintaining hearing aids and related amplification devices. Contents include: general description of hearing aids, hearing aid components and their functions,

electroacoustic performance of hearing aids, acoustic coupling, hearing aid service and maintenance, special amplification devices and modification, and a special section on understanding the decibel. This text has been considered a "must" for everyone involved in hearing health care, including audiologists, hearing aid specialists and consultants, libraries, students, otologists, hearing and speech centers, universities, colleges, hospitals, governmental agencies, schools for the deaf and hearing impaired, interested parties in hearing aids, and public libraries. The book is 336 pages and includes 224 illustrations.

It can be ordered from:

Wayne J. Staab
512 E. Canterbury Lane
Phoenix, AZ 85022

Microcomputer

Software Directory

The first microcomputer software directory to appear in *Ear and Hearing* was in the November-December 1984 issue. Another such directory, listing software likely to interest AAS members, is planned. Producers of software are invited to send descriptions of their products to

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1985 AAS

Program Abstracts

HUMAN THREE DIMENSIONAL AUDITORY BRAIN STEM RESPONSE

Yvonne S. Sininger
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The auditory brain stem response (ABR) has been recorded from three orthogonal electrode pairs in the horizontal, vertical and anterior-posterior planes. These three channels are then used to create a three-dimensional (channel) Lissajous trajectory of the ABR, termed the 3-CLT. ABR 3-CLTs have been recorded from 10 normal hearing subjects in response to monaural, 70 dB nHL clicks. ABRs from a standard vertex to earlobe montage were recorded simultaneously.

Data analysis included single channel waveform descriptions, analysis of planar segments formed by the 3-CLT, and three-channel amplitude measurements termed "vector amplitude" plots. The X channel, recorded from the nasion to theinion (anterior-posterior) contains low amplitude, early activity with latencies of less than 4 ms. The Y channel, recorded from left earlobe to right earlobe, (horizontal channel) demonstrates large positive peaks with latencies which correspond to waves I and III in the standard configuration. The Z channel, recorded from the vertex to the seventh cervical vertebra (vertical channel) contains activity very much like the standard vertex to mastoid ABR with the exception of early (wave I) activity which is smaller in the vertical channel.

Segments of the 3-CLT have been shown to lie in spatial planes using analysis techniques modeled after vector cardiography. Human ABR 3-CLTs contain 10 planes which overlap in time. The clinical significance of such planes is being investigated.

It is also possible to plot in two dimensions, a representation of 3 dimensional ABR amplitude known as vector amplitude. These plots are created by plotting the voltage length of the vector from the origin to each point along the 3-CLT by time. There are, in general, 7 to 8 peaks in this rectified plot occurring during the first 9 ms (as opposed to the 5-6 peaks of the standard ABR).

Potential clinical and research applications of the 3-D technique will be discussed including a method for determining optimal electrode placement for recording various aspects of the ABR.

ABR RESULTS: RELATIONSHIP TO THE PURE-TONE AUDIOGRAM

Christopher D. Bauch and Wayne O. Olsen
In clinical audiology, ABR tests are used extensively to help differentiate cochlear vs. retrocochlear disorders. However, a variety of contaminating variables must be considered if ABR test results are to be interpreted appropriately. For example, severity and/or slope of peripheral hearing loss can yield abnormal ABR results even though the disorder is not due to retrocochlear pathology.

Because the accuracy of ABR is important in the neuro-otologic evaluation, we have attempted to establish criteria for interpreting ABR test results for various slopes and degrees of hearing loss.

The purpose of this study was two-fold: 1) to examine the influence of audiometric thresholds at 2000, 3000, and 4000 Hz on ABR results; and, 2) to examine the occurrence of abnormal ABR results when various correction factors for wave V latency were used.

Subjects for this study were over 500 adult patients who were referred for ABR evaluations over the past 5 years because of suspected retrocochlear pathology. Of these, 458 (916 ears) were patients found to have no retrocochlear pathology based on medical, audiologic, and/or radiologic evidence. In addition, we evaluated over 40 surgically-confirmed tumor patients. All patients were evaluated by conventional ABR procedures using a three-electrode montage (vertex, ipsi- and contralateral mastoid). Stimuli were 85 or 90 dB nHL clicks (100 microsecond) present at 30/sec.

In general, the chances of observing abnormal ABR results were greater when threshold sensitivity at 3000 Hz was elevated than when 4000 Hz was elevated to a similar degree. Also, the sensitivity at 2000 Hz is important. As 2000 Hz thresholds approached the 65-70 dB range and 3000 and 4000 Hz thresholds were in the 50-70 dB range simultaneously, the percentage of abnormal ABR results increased markedly.

The application of these data to the establishment of correction factors for wave V latency will be presented.

CLINICAL APPLICATIONS OF THE FSP: A NEW TECHNIQUE FOR ON-LINE EVALUATION OF ABR SIGNAL/NOISE RATIO.

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Recording of the auditory brain stem response (ABR) involves signal averaging to distinguish the small, time-locked auditory response from random background noise. Clinically, a fixed number of responses are averaged to obtain the ABR based on assumptions about the relative magnitudes of the signal and the background noise. Estimates of signal quality are then made based on replicability of two average responses, usually obtained with the same number of sweeps. However, there is no assurance with this method, that the level of background noise was the same for the two averages.

Recently, Eberling and Don (1984) and Don et al. (1984) have described a method of estimating the relative magnitude of the averaged ABR and the level of background noise which occurred during averaging. They generate an F ratio based on the variance in the averaged response (estimate of signal plus noise) and the variance of a fixed point in each individual sweep (estimate of the background noise). This ratio, termed the FSP, is calculated on-line about every 250 sweeps. Using such a ratio, a probability of the presence of a response can be calculated (for threshold determinations), or the response quality can be quantified.

The current study compared ABRs averaged to specified FSP values with those obtained with fixed numbers of sweeps. The FSP method was found to be clearly superior. In quiet subjects adequate recordings can often be obtained

with fewer sweeps using the FSP and in very noisy subjects, although more averaging is necessary, the averages obtained with the FSP method are consistently cleaner than those obtained with a fixed number of sweeps.

An adaptation of the FSP technique creates a "weighted average" in which blocks of 250 sweeps are weighted according to the level of background noise within the block (Eberling & Wahlgreen, in press). The present study compares this technique to standard artifact rejection schemes. In general, the weighted average was found to be a more efficient method of reducing unwanted noise than conventional artifact rejection.

AUTOMATION IN EVOKED POTENTIAL RECORDING

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Evoked response audiometry is, paradoxically, both a labor-intensive as well as a high-tech medical service. Although technologic development has decreased the size and cost of commercial evoked potential systems, the quality of a test result still rests critically with the knowledge and skill of the operator. Interpretation relies heavily on the visual inspection of simple waveform displays and a few arithmetic calculations. Despite the fact that the operator and space overhead are the primary factors in test costs, there has been very little attention to optimizing the equipment for increasing patient throughput or reducing the training level of the operator. To date the human engineering aspects of evoked potential system design are poorly developed. There is insufficient consideration given to how the systems are used in routine service, and the sources of human error in operation are not yet well understood, particularly as they relate to either hardware or software design.

Based on our experience with over 4500 patients seen for auditory evoked response evaluation in an ENT setting, we will identify some of the principal components which determine the basic cost and accuracy of data acquisition and interpretation. We will suggest simple technical improvements which can lower cost and increase effectiveness, particularly for inexperienced clinicians, and identify areas of critical need for future technologic development. The potential for automation will be illustrated by describing the development of a battery-operated, fully-automated, ABR hearing screener which acquires and interprets data without operator control or intervention. It demonstrates that a sophisticated but inexpensive system can be capable of taking over operator functions at low cost without compromising performance. Field testing results for approximately 160 babies will be presented, and both strengths and limitations of automated systems such as this will be discussed.

DIGITAL FILTRATION OF THE AUDITORY BRAINSTEM RESPONSE

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Filtration of the Auditory Brainstem Response (ABR) is necessary to attenuate the energy of unwanted noise yielding the best response with the least number of averages. Analog filters, however, introduce distortion of the response by causing a non-linear phase shift based on the spectra of the individual response components. An alternative is to use digital filtration, and it is the purpose of this presentation to show data representing the effects of distortion in a comparison of filter types.

A digital filtration Fortran program capable of simulating a Butterworth type filter was written and used to evaluate the latencies, amplitudes and morphology of the ABR. The program allowed data analysis with various filter slopes (12, 24 dB/oct.), standard or zero-phase shifting, and 5 Hz step bandpass settings (HP of 0.2-150 Hz, LP of 100-5kHz).

The ABRs of 10 normal adult listeners were elicited to unfiltered click stimuli at 70 dBnHL and recorded with an open filter (BP of 0.2-3kHz) on a Nicolet Pathfinder II system. A vertex to ipsilateral mastoid with contra-lateral ground electrode placement (impedance 3k) was used with the subject resting in a darkened IAC suite. The responses were stored on diskette for later off-line digital analysis.

The results indicate significant differences in the ABR waveform including measured latencies and amplitudes with various BP settings, filter slopes, and phase shift filtering. Phase non-linearity was seen as a major cause of waveform distortion.

Presentation of the results of this study will also include a discussion of distortion as a possible explanation for inter-laboratory differences and the disadvantages, in terms of equipment and time, of digital filtration analysis of evoked potentials.

DIGITAL FILTERING OF AUDITORY BRAINSTEM RESPONSES: A SKEPTICAL APPRAISAL

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Numerous proposals have been put forth for the use of digital filtering in auditory brainstem response (ABR) recording. It is not clear, however, that any of these is superior to analog filtering, and certain algorithms have serious flaws. I will briefly review the general principles of digital filtering, and its relative merits in ABR testing, then address the limitations of specific approaches that have appeared in the literature. Illustrative examples will be presented, of ABR data which I have subjected to the various transformations.

The arguments for digital filtering methods are that they avoid phase shifting of response components and that they permit great flexibility in filter design, including post-hoc modifications and filter shapes that are not realizable in analog filters. I argue that attempts to apply narrow-band filters of any kind can alter the waveform and that the phase distortion that digital filters can introduce. In particular, digital filters can introduce spurious "waves" that precede the ABR component that elicits them. Other disadvantages of digital filters relate to their computational overhead. Even the readily implemented convolution techniques do involve substantially more computation than does simple averaging, so that the average cannot be updated frequently during data acquisition. More fundamental defects appear in many instances in which the fast Fourier transform is applied without regard to underlying assumptions, with the result of serious distortion.

In the absence of proven merits and abuses, I suggest that digital filtering be used only with caution in research and be avoided in clinical applications.

TRANSDUCER EFFECTS ON THE AUDITORY BRAINSTEM RESPONSE

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In routine ABR testing the brief duration rectangular wave electric pulse is transduced through some type of standard electrodynamic audiometric earphone (e.g. TDH-39; TDH-49) housed either in circumaural or supraaural cushions. Since these electrodynamic earphones have low input-load impedance they often impart stray electromagnetic fields which are passed through the recording electrodes often resulting in contamination of the early portion of the ABR. When this electromagnetic artifact is coupled with the "ringing" often associated with insufficient damping of the earphone response, it minimizes the ability to visualize wave I or has a compromising effect on wave I morphology. The importance here, of course, is that wave I serves as the electrophysiologic bench mark of the distal portion of the VIII nerve and is critical to neuro-audiologic diagnosis.

Recently, two new types of air conduction transducers have been introduced to help alleviate the problems of electromagnetic artifact to enhance greatly the amplitude of wave I. The first is a piezoelectric earphone transducer having electrostatic shielding and the second is a new insert earphone designed by Killian, which is thought to produce a roughly rectangular pressure pulse at the eardrum without excessive ringing. The former is excellent for use in the clinical electrophysiological laboratory whereas the implications for the insert transducer are greatest for intra-operative monitoring of the ABR.

We wish to report our experiences with these two types of air conduction transducers as compared to standard electrodynamic audiometric earphones both in terms of electrodiagnostic and intra-operative recording of the auditory brainstem response.

Results will be discussed relative to normative data for latency, amplitude and waveform morphology across transducers. Normative findings will be compared to a series of patients with surgically confirmed lesions in the posterior fossa.

COCHLEAR NUCLEUS IMPLANTATION: CLINICAL RESULTS

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Electrical stimulation of the ventral cochlear nucleus in the brainstem has been documented in a female adult deafened by bilateral acoustic neuromas. The electrode was surgically placed at the time of the second tumor removal. She has now been receiving direct electrical stimulation via an analog processor and percutaneous coupling for over 4 years. In the past year, two more adults have received cochlear nucleus (CN) implants following removal of the second tumor. For these two subjects, the percutaneous connection has been coupled with the standard signal processor currently being used with scala tympani (ST) cochlear implant patients - the 3M/House 16kHz amplitude modulated processing scheme. A clinical program has been established for patient testing, device fitting and rehabilitation

using an engineering/audiology team.

Clinical data being collected for the CN implant project includes both electrical and sound field measures. Electrical measurements include thresholds, uncomfortable loudness levels (ULL), and tone decay testing at frequencies 250, 500, 1000, 2000, 4000, and 16000 Hz. Measurements are recorded according to current, impedance, and voltage levels. Soundfield measurements include warble tone thresholds across the frequency range of 250-4000 Hz, speech detection thresholds, ULL for speech, the Monosyllable-Trochee-Spondee Test, Environmental Sounds Test, and the Speech Pattern Contrast Test.

Test results collected on the three implanted subjects indicate fluctuations in electrical measurements over time, particularly in the first months following surgery. Tone decay testing indicates an ability to sustain tone perception for one minute at all frequencies tested. Auditory soundfield thresholds measured through the signal processor tend to be poorer than what is typically seen for ST implant users. Auditory discrimination scores on closed-set tasks indicate an ability to encode suprasegmental information, comparable to what is seen for ST implant users. The CN implant subjects use their devices on a consistent daily basis, and report benefit similar to what is reported by ST implant users.

Cochlear nucleus implantation is proving to be a viable alternative for totally deaf individuals who cannot benefit from ST cochlear implants. Immediate goals for this project include: 1) setting up clinical trials under FDA guidelines, and 2) determining feasibility for transcutaneous transmission of signals using different processing schemes.

EXPLANATION AND REIMPLANTATION OF A MULTIELECTRODE ARRAY IN THE SAME EAR

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Major controversy surrounds the issue of cochlea damage due to implantation of electrodes for the restoration of hearing sensation. However, successful explantation and reimplantation of a free-fit, 20-banded multielectrode array has been demonstrated in three patients with no degradation in behavioral responses. For these cases, the original University of Melbourne multielectrode array was surgically implanted, then removed five to six years later when a Nucleus multielectrode array was reimplanted in the same ear. During both surgical procedures, no complications occurred in any case. Comparable current thresholds, effective dynamic ranges, place-pitch rankings and other psycho-physical measurements were obtained following the first and second surgeries. Speech discrimination testing revealed that patient's performance continued to improve with time, following the second surgery, and psycho-physical measurements remained stable. These findings demonstrate the feasibility of explantation and reimplantation of this free-fit, banded multielectrode array.

METHODOLOGY TO FIT OUR TECHNOLOGY: THE DEVELOPMENT OF AN AUDITORY THERAPEUTIC PROGRAM FOR YOUNG PROFOUNDLY HEARING IMPAIRED CHILDREN.

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For at least the last one hundred years there have been sporadic efforts to develop therapeutic methodologies for persons

with severe hearing losses which would utilize acoustic signals presented to the ears. Although each of these efforts met with some success their limitations are easily measured by their lack of general acceptance. For most profoundly hearing impaired people the development of these methods had little or no impact. In the last two decades of the twentieth century, however, practitioners of the hearing sciences find themselves in a position to apply newly developed technological aids with newly developed methodology. For example, the development of extremely powerful, very small head worn hearing aids with relatively broad frequency response and good fidelity now makes it possible for us to fit very young children with true binaural aids and achieve conditioned responses to sound. Lagging behind have been the therapeutic programs to shape these responses into meaningful communicative behaviors.

This paper reports on the development of one such therapeutic programs and its results over a five-year period of operation. The subjects of this investigation were young profoundly hearing impaired children enrolled in special classes before age three, fitted with high gain amplification and trained in the use of the acoustic output of their hearing aids as their primary source of information. This paper will report on the gradual evolution of a therapeutic regimen and its results. Comparisons will be drawn between the functioning of children in various phases of the program's development and between the subjects as a group and other children in more traditional oral and non-oral environments.

A WEARABLE MULTI-CHANNEL ELECTROTACTILE SENSORY AID FOR THE DEAF

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There have been numerous attempts to develop tactile sensory aids beginning with Gault in 1926. This paper will focus on the use of electrocutaneous stimulation to deliver information to the tactile system. Tactile sensations are produced by directly stimulating the nerve endings in the skin with brief pulses of electricity, yielding a vibratory sensation which is reliable and painfree. Electrotactile sensory aids present acoustic information to the skin via a belt of stimulators worn around the abdomen. Each stimulator responds to a specific pitch; low frequency sounds are represented on one end of the belt, and high frequencies are represented on the other end. A siren sound, rising and falling in pitch, is perceived as a sensation moving left and right around the abdomen. Speech sounds are perceived as dynamic, moving patterns, corresponding to the sound frequencies present in the utterance.

The "Teletactor" developed by Dr. Frank Saunders and his associates (1974) is a 32-channel non-portable electrotactile aid which displays sound ranging from 80 - 8000 Hz on a belt worn on the abdomen. The first field evaluation of the "Teletactor" was conducted during Spring 1978 (Saunders, F., et al., 1981). The belt was tested for comfort, reliability, and speech recognition with six children with profound sensorineural hearing loss, 5-8 years of age. Following a period of training, all children demonstrated the ability to discriminate number of syllables, duration and intensity patterns of utterances, pitch changes, and voiced/voiceless fricatives. A specific speech training program was implemented with the "Teletactor" from 1979-81 with three profoundly deaf children (Franklin, B. and Saunders, F., 1981). There was an increase in speech intelligibility for each child. A pilot study was conducted in 1979 to investigate the effect of the "Teletactor" on the speech of

four deaf-blind children in the California School for the Blind. The children demonstrated increased vocalization as well as improved voice quality and speech rhythm.

A wearable 16-channel electrotactile sensory aid designed to supplement information obtained through lip-reading and/or residual hearing is currently being evaluated on six profoundly deaf children, 3-7 years of age, from the Jackson Hearing Center in Palo Alto, California. The device consists of a lightweight belt worn under the clothing against the skin of the abdomen, connected to an electronic enclosure approximately the size of a Sony Walkman stereo, which in turn receives audio input from a microphone and power from a small battery pack. This paper will discuss the development of the device, the test battery used to assess communication skills of the project children, the training program designed to teach them how to interpret the tactile information, and the effect of the tactile aid on their receptive and expressive communication skills. Plans for field testing the device on deaf/blind children will be presented. A wearable electrotactile sensory aid should enhance the development of communication skills and auditory awareness by providing the child with continuous feedback of his/her own speech, the speech of others, as well as sounds in the environment. This research is currently being supported by an NIH Small Business Innovation Research Grant.

DEVELOPMENT OF INSTRUMENTATION AND PROCEDURES FOR DETECTION OF PERILYMPH FISTULAS

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Lucae (1881) probably was the first to describe conjugate deviation of the eyes, objective nystagmus, loss of balance, spatial disorientation and nausea for a patient when air pressure in his middle ear was made higher or lower than ambient. When this pneumatic test is positive, the results usually are reported as a "positive fistula sign." In our experience, perilymph fistula also is an important cause of sensorineural hearing loss. Unfortunately, over the last 100 years, there has not been a simple, non-invasive test for diagnosis of perilymph fistulas.

In this presentation we shall describe the development of instrumentation and a test procedure for quantification of the fistula test. We also shall describe our clinical findings with this procedure. Our approach is based upon vestibulospinal responses to variation in air pressure within the external auditory meatus (EAM). More specifically, during the test, a patient stands on a moving-platform system (Nashner, 1977). With this system we can remove systematically his visual and support-surface references (Fig. 1). This leaves the patient with only vestibular control for his orientation in space (Fig. 2). A commercial aural acoustic-immittance system is used to change air pressure in the patient's EAM. To date, all patients with surgically confirmed perilymph fistulas have demonstrated a reproducible phase-locked sway in response to sinusoidal air-pressure changes (Fig. 3).

This paper will focus upon a progression of instrumentation approaches for quantification of the fistula test. The first (Phase I) approach involves a simple personal-computer peripheral to monitor the patient's sway. The second (Phase II) approach requires a force platform to

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monitor the patient's torque and center of pressure in addition to sway. The third (Phase II) approach utilizes the moving-platform system described above. These three approaches will be evaluated in light of fistula-test results from 150 patients.

ABR RESULTS IN PATIENTS WITH POSTERIOR FOSSA TUMORS AND NORMAL PURE TONE HEARING

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It is commonly acknowledged that tumors in the posterior fossa result in pure tone hearing deficits. Though it is rare, there are exceptions to this trend. We have collected 16 patients with normal pure tone hearing and space occupying lesions of the eighth nerve, cerebellopontine angle (CPA), or brainstem region.

The auditory brainstem response (ABR) was conducted on all patients. The ABR was done in a conventional manner using high intensity click stimuli (80 dB n HL, 15/sec). All waveforms were replicated to ensure consistency and validity.

ABR data was analyzed with regard to absolute and interwave latencies, as well as interaural latency difference (ILD) and presence or absence of waves I, III, and V. Other information such as primary symptomatology, tumor size and site, and additional audiological information was also analyzed.

The results indicated some interesting trends. In some instances, posterior fossa lesions — many of them large — may not affect pure tone hearing sensitivity. Our 16 patients with normal pure tone sensitivity were obtained from a pool of 68 patients with posterior fossa tumors. These patients' primary symptoms encompassed a broad and varied spectrum of type and severity, the most common being hearing difficulty despite normal auditory sensitivity. Of the various latency measures, the ILD and the absolute indices were the most valuable indicators of a disorder. The interwave measures were highly accurate for detecting abnormality but could not be computed for many subjects due to the absence of waves. For example, the I-V interwave interval could be measured in only 7 of the 16 subjects.

One ABR from this group was normal for all measures considered, while in two cases, no auditory brainstem response could be obtained. Interestingly, these two cases represented the two smallest tumors.

Detailed statistical information on the above results and case profiles will be presented.

AUDITORY BRAINSTEM RESPONSE SPECTRAL CONTENT IN SEVERELY HEAD-INJURED PATIENTS

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There is a modest literature on the spectral, or frequency, composition of the auditory brainstem response (ABR) in persons with normal hearing and normal central nervous system (CNS) status. To our knowledge, there are no published reports describing the ABR spectral content of patients with CNS pathology. The purpose of the present study was to compare the patterns of ABR spectral content

for normal subjects vs. patients with severe head injury, in an attempt to assess the potential clinical value of ABR spectral analysis.

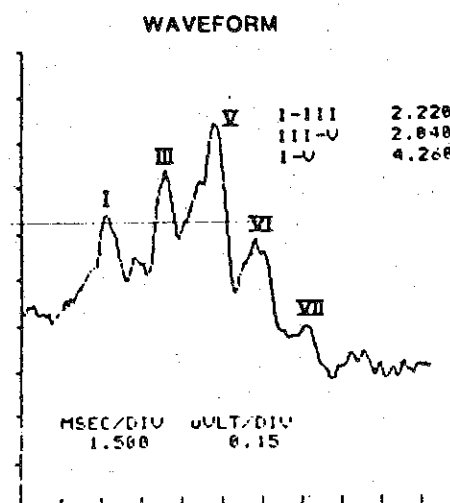
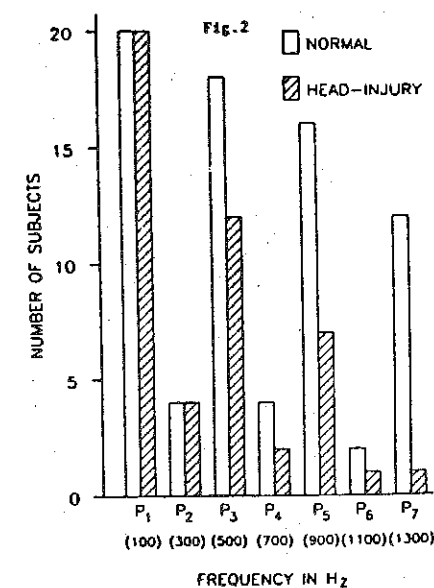
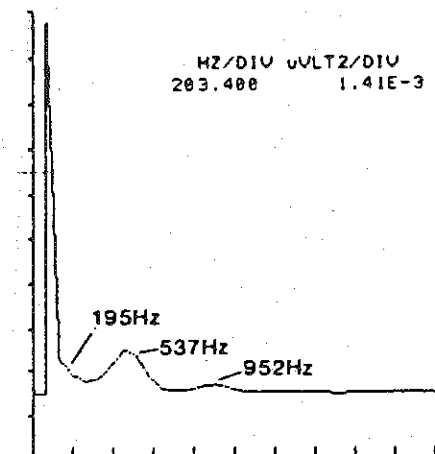


Fig. 1 SPECTRAL CONTENT



METHOD

There were twenty normal subjects (Group I) and four groups of acute, severely head-injured subjects (20 subjects per group). Head injury groups were as follows: normal ABR latency values, alive at 2 weeks post injury (Group 2); normal ABR latency values, dead at 2 weeks post injury (Group 3); abnormal (greater than 4.6) msec ABR wave I-V value (Group 4); only a wave care unit with commercially available equipment, according to standard clinical protocol, spectral analysis was carried out with Nicolet Pathfinder II software.

RESULTS

A representative normal ABR waveform and its power spectrum is illustrated in Figure 1. Three main frequency components are evident. Low frequency (300 Hz and below) energy predominates, but there are also distinct spectral energy bands in the 500 to 600 Hz and 900 to 1000 Hz regions. As displayed in Figure 2, this was

the typical normal frequency composition pattern. Often there was an additional peak of minimal power in the 1200 to 1400 Hz region. In contrast, comatose head-injured patients usually showed little or no high-frequency (above 500 to 600 Hz) energy, even those patients with ABR absolute and interwave latency values well within normal limits. Indeed, for many of these patients, spectral energy was limited to the lowest frequency (300 Hz and below) region. Patients with a wave I component only invariably did not have evidence of high frequency ABR energy.

CONCLUSIONS

Spectral analysis of the ABR in normal subjects and persons with CNS pathology is clinically feasible with commercially available equipment. Spectral information appears to supplement traditional ABR analysis parameters, such as wave component latency and amplitude measures. A group of 40 severely head-injured patients with a normal ABR by latency measures had markedly different ABR power spectrums, in comparison to an age and sex matched control group. Guidelines for clinical application of ABR spectral analysis will be outlined.

COCHLEAR OTOSCLEROSIS: PATIENT PROFILES AND AUDIOLOGIC FINDINGS IN 150 CASES

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Examining the patient histories and audiological findings of cochlear otosclerosis patients over the past five years, we have been impressed by the heterogeneity of the group. This paper reviews the patient histories and audiological profiles of 150 patients who were diagnosed as having cochlear otosclerosis by polytomography.

The dimensions of patient history which were examined were: 1) Age 2) Sex 3) Duration of hearing loss 4) Family history of hearing loss or otosclerosis 5) Was the patient ever dizzy? 6) Was the loss progressive? 7) Did the patients have tinnitus? Audiologic findings which were assessed included: 1) Impedance results 2) Magnitude of hearing loss 3) Magnitude of air-bone gap 4) Speech discrimination 5) Slope of audiogram 6) Electronystagmographic findings 7) Auditory brainstem response findings.

Results of this study indicated that it is common for patients with cochlear otosclerosis to have mild to moderate sensorineural hearing losses with excellent speech discrimination. Age and slope of audiogram were two dimensions which we have expected to be predictable and were not. Acoustic reflex findings and auditory brainstem response findings are reviewed in some detail. Of the 282 ears tested in this study with reflex audiometry, 215 (76%) had reflex findings suggestive of minimal stapes fixation.

EFFECTS OF OTOTOXIC DRUGS AND AUDITORY EVOKED POTENTIALS IN MONKEYS

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Although it is well known that certain drugs and drug classes such as acetylsalicylic acid, aminoglycoside antibiotics and loop diuretics are toxic to the auditory and vestibular system, basic pharmaceutical research has not routinely involved testing for ototoxicity. The primary rationale has been that the condi-

tioning techniques available for animals were expensive and time consuming with little means of validation. However, with the advent of microcomputer-based systems for measuring auditory evoked potentials, screening for ototoxicity is now economically feasible, objective and far more accurate than previous techniques.

The use of marijuana and cocaine is pervasive in today's society. The social, economic and psychological ramifications have been well documented. However, a paucity of information exists with regard to the effects of cocaine and delta-nine tetrahydrocannabinol (THC), the active compound in marijuana, on the auditory system (Caldwell et al., 1969 a and b; Liedgren et al., 1974, 1976; Thaler et al., 1973). Research has been confined for the most part to behavioral protocol with limited electrophysiological evidence. With this in mind, the purpose of this paper is to discuss the effects of THC and cocaine on the auditory mechanism in monkeys as measured by the auditory brainstem responses (ABR).

METHODOLOGY

Fourteen stump-tailed macaque monkeys (*M. acrotydes*) with an average weight of about 11 kg. were used in this experiment. Monkeys were selected due to their availability at the University Primate Center and their relationship to man on they phylogenetic scale. Initially, human subjects were considered, however, due to ethical and moral questions raised by the University's ethic committee, humans were precluded from participation.

Marijuana and cocaine were obtained through grants from the National Institute on Drug Abuse. Preliminary preparation was identical to that described in our companion paper. Briefly, monkeys were anesthetized with Katamine HCl (IM) with supplemental administration of diazepam (IM). Electrodes were attached to the vertex, and earlobes bilaterally. During testing, each monkey was administered a 1.0 mg/kg IV dose of THC dissolved in 0.5 ml of absolute ethanol followed immediately by ABR testing. In a second testing series, monkeys were injected IV with a 1.0 mg/kg dose of cocaine HCl in sterile distilled water. ABR tracings were recorded and after a return to baseline, a second injected IV with 3.0 mg/kg cocaine HCl was given followed by ABR.

ABRs were recorded with a Bio-logic Computer. Monaural click stimuli were presented to the right ear of each monkey at a rate of 11/sec. A bandpass setting of 100 to 1500 Hz was used and a 10 msec analysis window. Intensity was maintained at 80 dB nHL (re: humans) for all testing sessions.

Upon administering of THC, body temperature decreased to 34 C. Because a reduction in temperature will compromise the ABR, a warming blanket was placed beneath each monkey to maintain normal body temperature. Cocaine did not alter temperature. The results of IV injected THC and Cocaine prolonged the absolute and relative latency patterns of the ABR tracings. Abnormally prolonged responses were seen for both peripheral and central measures. This degradation implies that the neural generators of the compound cochlear action potential and caudal region of the brainstem were affected by induced toxic effects of marijuana and cocaine. A rationale is built for further electrophysiological study of these drugs and in the general area of neurotoxicology. Further, the implications of drug administration under acute and subchronic conditions and their relative clinical applications are discussed.

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PRELIMINARY FINDINGS ON THE EFFECTS OF TENSOR TYMPANIC TENOTOMY ON ACOUSTIC REFLEX LATENCY AND AMPLITUDE

Robert E. Moore and Michael Stuss

Traditionally, acoustic reflex threshold, and/or decay have been used in the diagnosis of audiological, otological, and neurological disorders. Recently, more subtle measurements, including reflex latency and amplitudes, have been developed in an attempt to enhance these diagnostic capabilities. Since reflex latency and amplitude are dependent on the integrity of the entire reflex system, it is conceivable that lesions involving the tensor tympanic muscle and/or the trigeminal nerve could alter the results of these movements. The purpose of this study was to investigate the effects of complete tensor tympanic tenotomy on acoustic reflex latency and amplitude.

Twelve adult, mixed-breed dogs were utilized in the study. The dogs were divided into two groups. Six dogs were subjected to surgical transections of the tensor tympanic tendon, and 6 dogs were used as Sham-operated controls. Pre- and post-surgical measurements of contralateral and ipsilateral acoustic reflex and latency and amplitude were made on each dog using a stimulus frequency 1 KHz and 2 KHz. Stimulus intensity ranged from 70-110 db KHz for ipsilateral reflexes and 120 db KHz for contralateral reflexes. Tympanometry and static compliance measurements were made prior to each recording session to insure that no changes in the middle ear system had resulted from the surgical procedure.

Post-tenotomy measurements showed no significant change ($P > 0.05$) in latency or amplitude for either contralateral or ipsilateral reflex at 1 KHz or 2 KHz. From these results it appears that the tensor tympanic reflex system has no significant role in acoustic reflex latency and amplitude and that lesions to that system are not reflected as changes in these two reflex parameters.

NEW NOISE SUPPRESSION TECHNIQUES USING REAL-TIME DIGITAL FILTERS

James A. Nunley and Wayne J. Staab

The use of digital signal processing in audio is fairly widely accepted. There was some controversy for a time about the quality of sound produced by this technique. The use of laser discs and other techniques have put the problem of quality to rest. We can therefore expect digital processed audio to be of high fidelity. The obvious reason to consider digital signal processing is for signal enhancement. The main problem hearing impaired have with present audio signals is noise interference. To eliminate the noise and retain the signal, is the goal. The signal, in most cases for the hearing impaired, is speech. Speech occurs in real-time, i.e., the word is spoken and the listener receives the sounds almost instantly. The goal then is to analyze the signal, determine what is needed and what is to be discarded. There are presently available microprocessors that are fast enough to perform this real-time processing. The significant feature is to instruct the microprocessor what to do. Various mathematical instructions can be written to direct the microprocessor how to manipulate the signal. These mathematical instructions are called algorithms. The algorithms that seem to hold the most promise are ones that look at the signal and make real-time adjustments or adaptive filtering. We are presently looking at several different approaches to real-time adaptive filtering.

One approach is to sense the overall signal level, measure the low-frequency content, and adjust the amplifier compression ratios in various frequency bands. A second approach is to analyze the overall signal level, measure the various spectrum components, and adapt the compression ratios to various bands.

A third approach, and one that shows much promise, is the near field, far field approach. This method teaches the microprocessor to control on the near signal, i.e., the speaker, and reject the far field, i.e., the noise.

The presentation will demonstrate these various techniques through tape recorded messages.

VIRTUAL INSTRUMENT METAPHORS FOR CLINICAL HEARING SCIENCE

David J. Lilly

Good Samaritan Hospital and Medical Center

and

Jonathan D. Birch
Virtual Corporation
Portland, OR

Formal training and professional experience have produced generations of audiologists, otolaryngologists and hearing-aid specialists who are familiar with the front panel layout and control of analog instruments. These same individuals, however, have been reticent to adopt personal computers for clinical applications. Much of this reluctance can be traced to inappropriate interfaces between the human operator and the computer. Command-driven software, menu-driven software and keyboards simply are not efficient for most clinical tasks.

In this presentation we shall describe an extension of the virtual device interface concept to requirements in clinical hearing science. More specifically, we have developed hardware and software solutions that simulate the control panel and the graphic output of an analog instrument on the video display of a personal computer. Initiation of a desired test or procedure is accomplished by pointing to a "virtual control" with a "mouse" or a "track ball" and then selecting (clicking on) that function. Interruption of a test, termination of a procedure, plotting of results, changing scales and outputting "hard copy" all can be accomplished by displaying the appropriate icon on the display. Most tests can be completed without the keyboard.

We are using the term VIRTUAL INSTRUMENT METAPHOR (VIM) to describe this stimulation of an analog instrument. Initial development of this approach has been implemented on a Macintosh computer. Thus, it represents an extension of the "virtual desktop metaphor" provided with that machine.

That attached (supplemental) figures provide a graphic overview of our VIM interface for computers in the clinic. The example is for an aural, acoustic-immittance system. When the program is run, the first display (Fig. 1) resembles the front panel of an analog instrument. The "virtual needles" on the "virtual analog meters" indicate the approximate quantities and trends while the actual values appear below each meter. The user simply moves the pointer to the desired "virtual control button" and selects it. Figure 2 depicts a tympanometry and Fig. 3 shows the resulting display. These examples will be expanded with clinical results during the presentation.

USING PHYSIOLOGICAL PROCESSES TO SUPPLEMENT HEARING PROTECTORS

David M. Lipscomb

University of Tennessee, Knoxville

Hearing protectors have historically been found to offer better protection in

continued on page 7

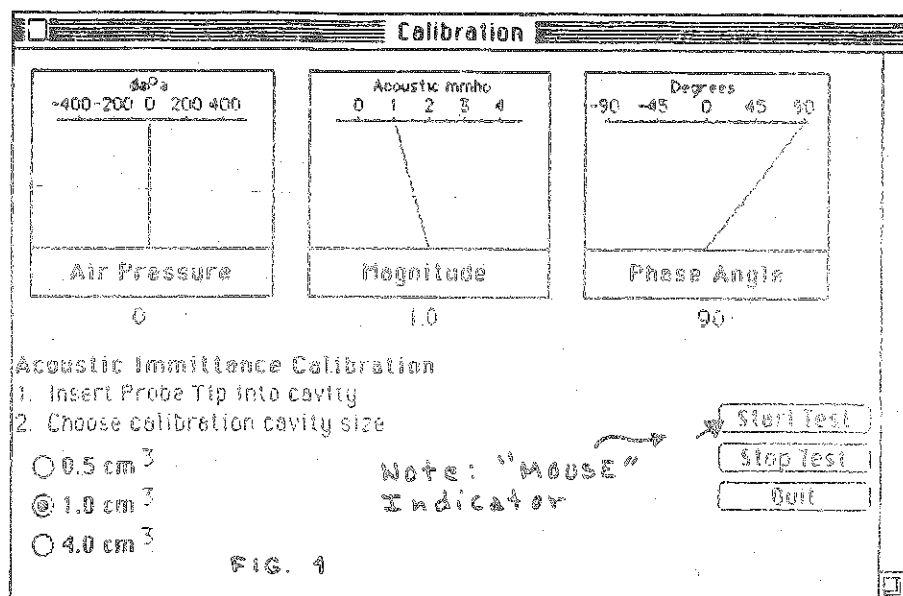


FIG. 1

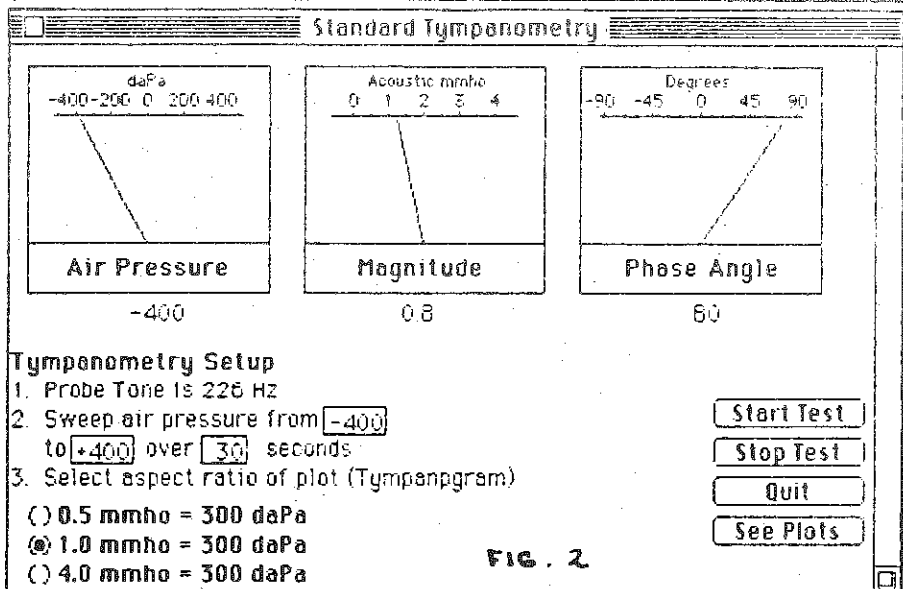


FIG. 2

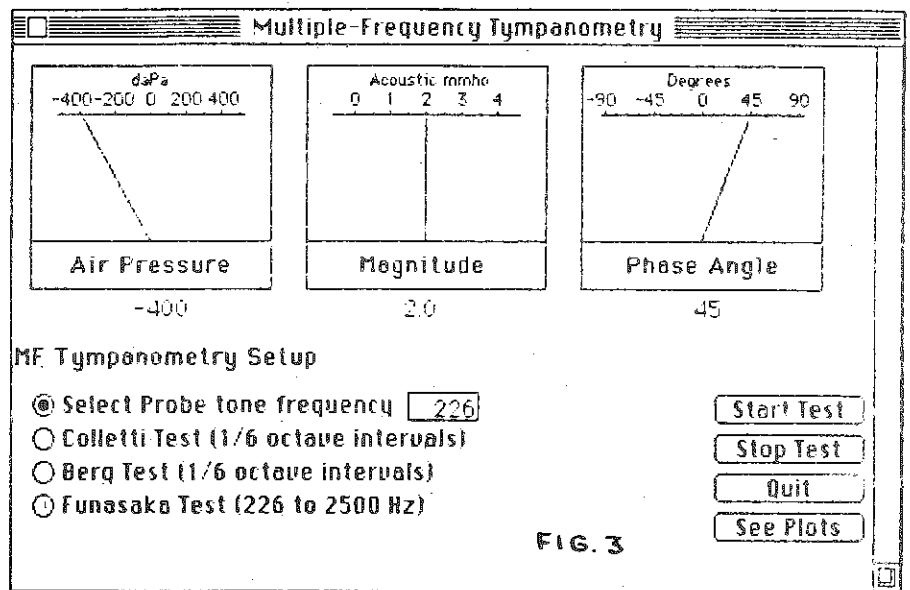
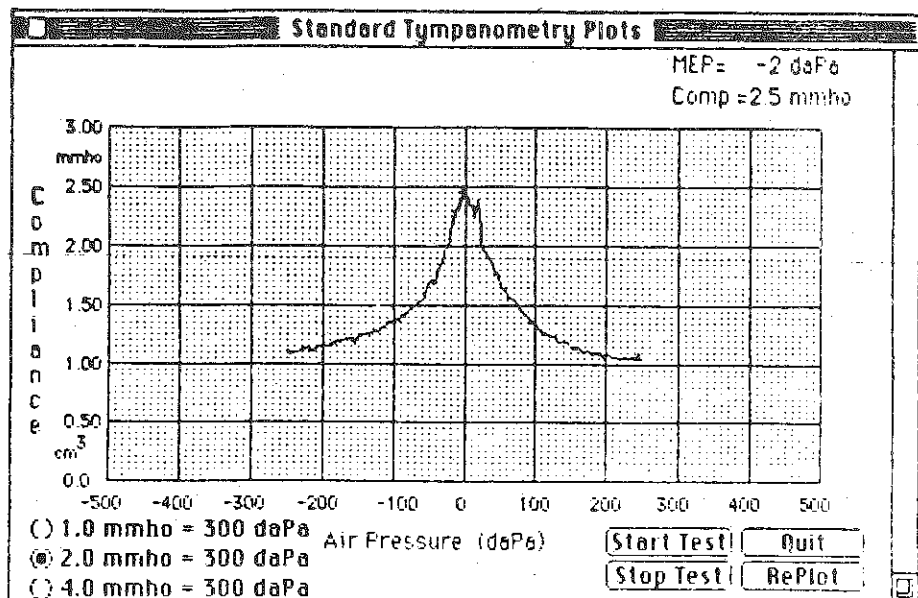


FIG. 3

continued from page 6

laboratory measurements than in the field. It is therefore desirable to supplement or complement hearing protector use and attenuation ability if possible. A series of experiments using Carbogen (95% O₂ & 5% CO₂) or compressed air with 5% CO₂ added have indicated in human and animal subjects that inhalation of either gas before, during or after noise exposure that residual effects are reduced. Because logistical problems would be caused by the attempted use of large "oxygen tanks" and requisite valves, a more direct method of introducing CO₂ to the breath stream in controlled doses has been developed. This paper discusses that system and proposes a research protocol to evaluate this "physiological hearing protection" process in the field as a potential means of augmenting the use of hearing protective devices where conventional protectors have been found to be inadequate or to provide a degree of protection in cases of accidental exposure. The value of this approach is that it uses normal physiological means to decrease individual susceptibility to NIPTS rather than to rely on the introduction into the body of a pharmacological agent with possible side effects. Other applications to hearing conservation such as increasing the rate of recovery from TTS, and use in reducing TTS contamination of industrial hearing test results will be reviewed.

SIMULTANEOUS MULTIFREQUENCY TYMPANOMETRY USING FOURIER TRANSFORMS OF BROAD-BAND NOISE

Vernon D. Larson

Audiology and Speech Pathology

VA Medical Center

Augusta, GA

Daniel M. Schwartz

Department of Otorhinolaryngology and

Human Communication

University of Pennsylvania School of

Medicine

Philadelphia, PA

Richard Talbot

Department of Audiology and Speech

University of Georgia

Athens, GA

and

Christopher Ahlstrom

Audiology and Speech Pathology

VA Medical Center

Augusta, GA

Conventional tympanometry using low frequency probe-tones has proven to be relatively insensitive to pathologies involving the ossicular chain. Current understanding of the physical characteristics of the middle ear and the measurement of acoustic impedance at the lateral plane of the tympanic membrane suggests that the diagnostic sensitivity of tympanometry would be improved through the use of higher frequency probe signals.

The purpose of this paper is to describe a new method of multi-frequency tympanometry and to provide a normative data.

A broad band noise was delivered to ears using a standard admittance probe assembly under dc pressure conditions from -400 to +200 dPa. The noise was monitored using a miniature microphone in the probe assembly and was passed to analysis equipment which performed the Fast Fourier transform. The result of the transform and subsequent statistical manipulations produced a family of 300 tympanograms in the frequency range from 200 to 4000 Hz for each ear.

Results on normal patients were analyzed and plotted in a three-dimensional array, (frequency-by-dc pressure-by-impedance). When viewed in this way

significant differences between normal male and female subjects were apparent. Results also show distinct morphological changes as a function of frequency. Comparison of these normative data to ears with ossicular disorder will also be presented.

Work supported by the Veterans Administration.

PRESSURE IN THE TRAVELING WAVE AND THE ELECTROMODEL

George C. Offutt

Gold Center of Sensory Processes

Shepherdstown, WV

Stimuli were presented simultaneously to the chinchilla cochlea through the external meatus and the scala tympani so that displacements of the basilar membrane were controlled by dual pressure waves. Changes in the phase relationships of these pressure waves influenced the CM amplitude but often had little influence on the compound action potential. The N amplitude was apparently a function of the summed energy in the two stimulus inputs and was often independent of the phase difference between the two pressure waves. Thus, the mechanical displacements of the basilar membrane may not be the only source of energy for hair cell transduction in the cochlea.

The possible sensitivity of the cochlea to the pressure component of the traveling wave requires a rethinking of the entire field of auditory research. It is possible that interpretations of all auditory research have been based upon a false assumption. It may be that the inner hair cells (IHC) are not mechanoreceptors but are primarily sensitive to electrical potentials. The tectorial membrane may be piezoelectric and perform the initial transduction of energy in the pressure wave into electrical potentials that are detected by the IHC. There is biological basis for proposing each of the transduction steps. The concept of electrosensitivity by the IHC provides the basis for a new view of the auditory system as presented in a recently published book *The Electromodel of the Auditory System*.

THE ELECTROMODEL OF THE AUDITORY SYSTEM

George C. Offutt

Gold Center for Sensory Processes

Shepherdstown, WV

It is obviously a desirable goal to be able to relate all experimental observations of cochlear function to each other within one unified theoretical framework. The electromodel is a holistic model that is the basis of a unified view of how the cochlea and other organs of hearing function. The preponderance of evidence may appear to support the assumption that all cochlear HC are sensitive to mechanical stimuli - this assumption will be questioned.

The basis of the electromodel of cochlear function is a dual-transduction of acoustic stimuli. Thus, in addition to the mechanical stimulation of the outer hair cells (OHC), the pressure in the traveling wave is apparently transduced by a piezoelectric tissue (i.e. tectorial membrane) into electrical potentials. The inner hair cells (IHC) may then detect the electrical potentials present at their cuticular surfaces. This proposal negates the problems of submolecular transduction of mechanical stimuli near threshold and the origin of the tuning observed in the primary neurons. Evidence will be presented to show that the cochlear pressure wave may be an effective source of energy.

Possible explanations for several cochlear phenomena will be presented that are based on the electromodel and its proposition that the IHC are electroreceptors.

Tinnitus: The electrosensitive IHC are apparently responding to brain potentials after suppression is decreased due to the loss

of OHC.

Hearing Loss: The first 30 to 40 dB of permanent hearing loss may be due to a repositioning or pull-up of the tectorial membrane that would result in a decreased amplitude of effective stimuli to the IHC near threshold.

Cochlear Prosthesis: After a severe hearing loss, remaining IHC would be more effectively stimulated by placing the electrodes of the prosthesis in the scala media. This will probably result in an improved frequency discrimination.

"Distortion Products": The cochlear microphonics (CM) from the OHC are sensed by the IHC at relatively high stimulus intensities. When CM are evoked by more than one frequency of stimulation, the resulting combination potentials are sensed by the IHC at a new frequency.

Is it possible that the entire field of auditory research is built upon a false assumption? I propose that we consider the inner hair cells (IHC) not primarily mechanoreceptors but electroreceptors. Although, the outer hair cells (OHC) are undoubtedly stimulated mechanically, there is no proof that IHC are also sensitive to mechanical stimuli. Thus, I question the assumed IHC response to mechanical stimuli.

Conditions may be similar to those in the story by Robert Louis Stevenson. Everyone knew Dr. Jekyll and all were quite surprised when the personality of Mr. Hyde surfaced. The one character had two dispositions and each surfaced at different times. You may be similarly surprised when I discuss the dual capabilities of cochlear hair cells. Suga (1967) showed that certain lateral line hair cells (HC) were capable of detecting both electrical and mechanical stimuli. Although each type of HC was sensitive to both modalities, certain HC were more sensitive to electrical potentials than to mechanical stimulation. It may be that the IHC are primarily electroreceptors that are sensitive to mechanical stimuli only at high stimulus intensities.

There is increasing evidence that the cochlear hair cells interact in some way. Such a relationship is necessary to explain certain of the nonlinearities, reactions to multiple tones and sensitivities. Most proposals employ some mechanical interaction such as a cochlear amplifier, waves in the tectorial membrane or movements by the hair cells. However, a few investigators have proposed some form of secondary electrical communication in addition to the fundamental mechanical sensitivity of the hair cells.

Today I want you to consider how the field of auditory research looks after the assumption is made that the IHC are primarily sensitive to electrical potentials. The recently published book *The Electromodel of the Auditory System* is that view of the auditory system after the assumption of electrosensitivity by the IHC was made. The electromodel has three principal parts. None of these parts is especially unique and all have been suggested at some time to have a role in sound detection. However, these three concepts have never been juxtaposed in one model.

First, let's assume that the IHC are electroreceptors. There is no negative evidence to controvert this assumption and certain HC do possess this property. In the lateral lines of fish there are HC that are sensitive to potentials as low as 1-10 uV. Many experiments have shown that cochlea are responsive to electrical potentials, but it has always been assumed that the potentials generate a movement that is then sensed (i.e. electrophonics). I am proposing that such an electromechanical transduction is not always necessary.

Second, if the IHC are electroreceptors, what is the source of their stimuli? That is, where do the potentials come from? In

crystal microphones, piezoelectric materials provide potentials that follow the characteristics of the sound stimulus. In fish, the ear stones of otoliths have been shown to be highly piezoelectric; and I have proposed that the otoliths may provide potentials that function in sound detection (Offutt, 1974). In the cochlea the tectorial membrane is analogous to the otoliths and may supply piezoelectric potentials to the IHC. All biological tissues are piezoelectric; thus, the question to consider concerns the level of piezoelectricity that the tectorial membrane may possess. This unique acellular tissue has been studied extensively but I know of no reports as to its piezoelectric properties.

Third, the pressure component of the traveling wave stimulates the piezoelectric tectorial membrane to generate the potentials that are detected by the IHC. It is widely assumed that the cochlear pressure is not an effective stimulus. However, this assumption has never been properly tested. Wever and Lawrence (1950) came closest to a test when they presented dual stimuli to the cochlea through the external meatus and the round window (RW). However, they only measured the cochlear microphonics (CM) and then showed that the pressure component of the stimulus did not influence the CM and therefore had no influence on hearing. The assumptions have been questioned that the CM is a receptor potential or is a component in the sequence of events leading to the detection of sound. If the CM is not an indicator that sound detection is occurring, then the experiments of Wever and Lawrence (1950) are not conclusive relative to the importance of pressure in the cochlea.

Preliminary evidence based upon compound action potentials (CAP) indicates that the pressure wave in the cochlea is the effective stimulus for stimuli that are close to threshold. Dual stimuli were presented to the cochlea of chinchillas through the external meatus and the scala tympani. The phase of these dual stimuli could be adjusted to null and the CM recorded at the RW by an average of 17dB. This is due to the variation of the displacement of the basilar membrane (BM) as the phase between the pressure waves in the two scalae was changed. When the stimuli were in phase, there was little or no movement of the BM and a minimum of CM were evoked. Also, when the stimuli were out of phase there was a maximal amplitude of CM. These results are similar to those of Wever and Lawrence (1950).

However, the phase between the stimuli in the two scalae had no effect on the amplitude of the CAP. This was true both when the CM were nulled or were double in amplitude relative to a single channel of input. Thus, the pressure in the stimulus seemed to be the principal component involved in the activation of the primary neurons.

In summary, I am proposing that the pressure component of the traveling wave activates the tectorial membrane to generate piezoelectric potentials that are sensed by the inner hair cells. This may be the primary mechanism leading to sound detection near threshold while at higher stimulus levels other processes become more important.

There are several aspects of this model that are especially interesting and potentially valuable. With the electromodel, there is no need to propose a threshold stimulation by a subatomic movement of the basilar membrane upon which the hair cells reside. Interactions between hair cells (e.g. "distortion products" and suppression) become a fundamental aspect of the electroreception by the inner hair cells. The secondary mechanical events

continued on page 8

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continued from page 7

(e.g. acoustic emissions) that are often observed may be explained on the basis of electromechanical transduction in the piezoelectric tectorial membrane.

In the clinic, several distinct levels of deafness may be defined and treated. Initial deafness may be due to the pull-up or repositioning of the tectorial membrane that would result in a decreased amplitude

of the potentials available to the IHC. Tinnitus may be due to the hypersensitivity of the IHC after the loss of OHC suppression. Thus, tinnitus may be thought of as the subject listening to himself think. That is, tinnitus may be when the IHC are responding to potentials from the brain. It is possible that the use of cochlear prostheses may be improved by placing stimulating electrodes in the scala media where a more effective stimulation of the IHC will be achieved.

Assistive devices catalog ready

Sound Resources, Inc., a firm specializing in amplifying, alerting and convenience devices for the hearing impaired, has published the second edition of its comprehensive mail order catalog. This informative, fully illustrated catalog offers over 75 different assistive devices and ideas from more than 30 manufacturers. It contains everything from telephone, television and doorbell amplifiers to total

alarm and alerting systems. This unique catalog offers the consumer easy comparison of a variety of products and the convenience of ordering by mail or phone.

Sound Resources, Inc. backs all products offered in the catalog with a 30-day money-back guarantee of satisfaction. For a FREE catalog write: Sound Resources Catalog, 201 East Ogden, Hinsdale, Illinois 60521.

BHI reprints available

WASHINGTON, D.C., September 1, 1985 — A new edition of Better Hearing Institute's *We Overcame Hearing Loss* booklet — adding new personalities who have joined the Institute's public information program — has been made possible by a grant from the Delta Zeta Founders Memorial Foundation.

The new edition will feature the personal success stories of many of the personalities in BHI's award-winning television PSA series, including Art Carney,

Norm Crosby, Phyllis Diller, Nanette Fabray, Lou Ferrigno, Jeff Float, Lorne Greene, Florence Henderson, Bob Hope, Kiel Martin, Frankie Valli, George Wallace and Keenan Wynnne.

A fourth reprinting of Better Hearing Institute's *Tinnitus, or Head Noises* booklet has been made possible by the Hearing Aid Battery Division of Ray-O-Vac Corporation. The pamphlet, which explores the causes of tinnitus and its treatment, is authored by Norman Lee Barr, Jr., M.D., a member of the Institute's advisory board.

A sixth reprinting of Better Hearing Institute's *Nerve Deafness and You* booklet, has been funded by Activair, a division of Duracell Inc. The booklet by Gale Gardner, M.D., has become a classic on sensorineural hearing loss, the most prevalent form of hearing impairment. It shatters common myths and emphasizes that most people with nerve deafness can be helped to hear better with a properly selected and fitted hearing aid.

If you would like a free copy of any of the above booklets write to: Angela Hayden, 5021 B. Backlick Road, Annandale, VA 22003.

POSITION AVAILABLE

Howard Payne University in Brownwood, Texas, announces a vacancy for a clinical audiologist beginning in August.

The minimum requirements include a master's degree in audiology and a CCC-A. Teaching load includes nine hours per semester. The person is also required to maintain an audiological clinic which services a wide range of population. A new clinical audiometer has just been obtained.

Salary is negotiable depending on experience. Summer teaching is also available.

If interested please send vita or contact one of the following people:

Dr. J.W. Cady, Vice President
of Academic Affairs
915-646-2502 ext. 302

or
Martha Taylor Graves, M.A.CCCSp
Clinical Supervisor
915-646-2502 ext. 411

1985 AAS CONVENTION REGISTRATION

Registration is open to all who wish to attend on the following schedule:

	Registration for Meeting Only		Registration for Meeting and Dinner	
	Before Oct. 1	After Oct. 1	Before Oct. 1	After Oct. 1
AAS Member	25.00	30.00	55.00	65.00
Non-Member	35.00	45.00	55.00	80.00
Resident/Student	10.00	15.00	40.00	50.00
Accompanying Spouse	10.00	15.00	40.00	50.00

NAME (Print) _____ DATE _____

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CITY _____ STATE _____ ZIP _____

Meeting \$ _____

Meeting & Dinner \$ _____

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Total Amount \$ _____

AAS MEMBER

Yes ☐ No ☐

Send To: 1985 Program
American Auditory Society
1966 Inwood Road
Dallas, TX 75235

MAKE CHECK PAYABLE TO AAS

(Registration is Non-refundable after Oct. 10, 1985. A \$5.00 fee will be charged to those requesting a refund to to cover administration costs.)

Membership Directory

See pages 9-30

CORTI'S ORGAN

The Official House Organ of The American Auditory Society

Volume 11, No. 4

Spring 1987

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Laszlo Stein (left) David Hill (right).

AAS Convenes In Chicago

The 14th Annual Meeting of the American Auditory Society will be held Monday, September 21, 1987, in Chicago. The site of the meeting is the Inn of Chicago, Ohio Street off Michigan Avenue.

This year the AAS Meeting is being held in conjunction with the annual meeting of the American Academy of Otolaryngology-Head and Neck Surgery (OHNS). The OHNS meetings and exhibits will be located at two hotels: the Hyatt Regency Chicago and the Marriott Chicago. The Inn of Chicago, located in the heart of Chicago's magnificent mile, is just a half block from Michigan Avenue and the Marriott, and one block from the Hyatt. It is one of the designated satellite hotels of the OHNS meeting. AAS members are urged to make their hotel reservations early. The Inn of Chicago, with 350 rooms, is a Best Western

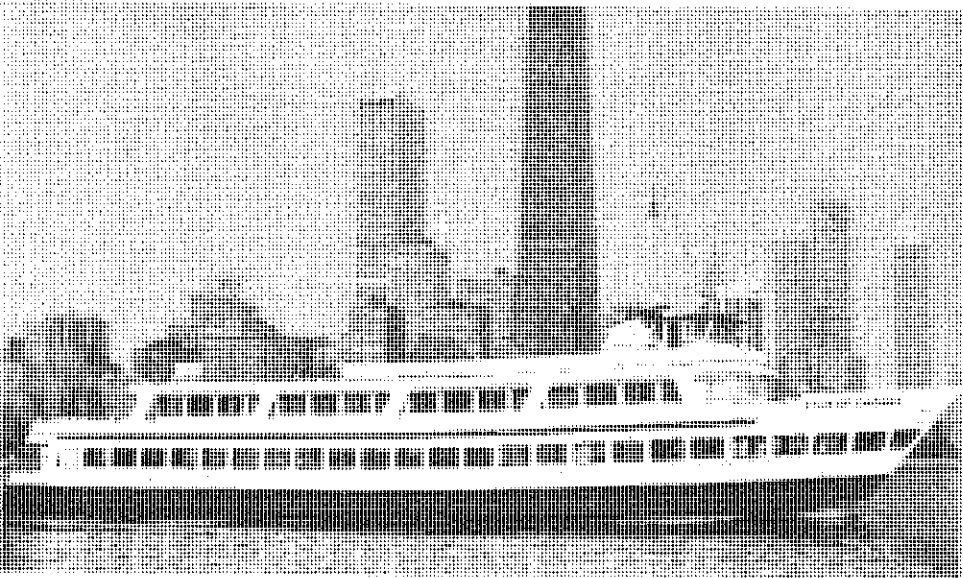
hotel and has recently been extensively remodeled and refurbished. Rates are \$72.00 single, and \$82.00 double.

Planned for this year's meeting is a tutorial session, "An Update on New Developments in Hearing Aid Technology." The format of this session will emphasize reports on what technological innovations manufacturers are about to introduce in the market place.

The Carhart Memorial Lecture will be delivered by Peter Dallos, Ph.D.

David Hill, Chairman of Local Arrangements, has made tentative plans for an evening aboard the Star of Chicago, a luxury cruise boat that affords magnificent views of the Chicago skyline, as well as drinks, and dancing.

Mark your calendars now!



1987 AAS Meeting
Monday, Sept. 21st, 1987
Chicago, Ill.

Aural Rehabilitation Forum

Editor's Note: The following article continues the series of papers which "kicked off" this Forum. In particular, the article prepared by Thayne Smedley, discussing promotion techniques in hearing health care, spirited this issue's segment of the Aural Rehabilitation Forum. Let's keep this relaxed interchange of philosophies going. Send in your contribution!!

Marketing Hearing Healthcare Services to a Minority Population

By Ronald C. Jones & Joann Richardson-Jones

Private practice audiologist **Ronald C. Jones**, PhD heads *The Listening Ear*, a Richmond Virginia "Hearing Health Care Service." He received his PhD in Communication Disorders at the University of Cincinnati. **Joann Richardson-Jones**, MS received her MS degree in Community Health Education at Old Dominion University and serves as community health education consultant for *The Listening Ear*. Their article is based on their presentation at the 1986 annual meeting of the Speech and Hearing Association of Virginia. Correspondence: 10501 Duryea Drive, Richmond, VA 23235.

Most people would agree that the primary responsibility of advertising is to create interest and to attract new prospects to buy the products or services being offered. This is certainly true in the hearing aid industry, where it has been estimated that over 16 million Americans have hearing loss significant enough to warrant the use of a hearing aid.¹ With such a large potential market, it is no wonder that hearing aid advertisements are seen in magazines, newspapers, direct mailings, and, increasingly, on television. Beyond serving their primary purpose, those ads also do much to inform potential users of the problems associated with hearing loss.

What is peculiar about today's hearing aid advertisements, though, is that they appear to be directed to one segment of the potential market: the white middle-class elderly population. Rarely, if ever, does one see an ethnic minority represented in these ads. This omission, intentional or not, promotes the notion that minority populations are not part of the hearing aid market — that they do not experience hearing impairment and, therefore, do not need or use hearing aids. Viewed more critically by a minority hearing-impaired person or his family member, for example, the resulting impression is, "This product isn't for me or mine." Years ago, most companies that sold soap or personal beauty products openly refused to use minorities in their advertisements for fear of offending the majority of their market and scaring off sales. However, considering that today many consumer-goods marketers readily employ minorities in their advertisements to take advantage of a burgeoning market, it would be to the hearing aid industry's advantage to do likewise.

A possible explanation of why the hearing aid industry does not use ethnic minorities in its ads is that minority groups do not appear to represent a significant portion of the hearing aid buying population. Thus when considering advertising budgets, manufacturers and distributors adhere to the adage, "It's better to put your money where it will do the most good." In this case, the white middle-class elderly fit (and can pay) the bill. If that reasoning is to be applied, however, it should be based on logic and on accurate statistical data — not on cas-

ual observations, which from our perspective, appears to be the case.

Minority Market Potential

Although exact figures as to the number of minority persons with hearing problems in the U.S. are difficult to acquire, we can draw estimates from the 1980 U.S. census reports.² Conservatively, we estimate the proportion of the U.S. population with significant communication (hearing and speech) problems at more than 10%. When applied to the 1980 minority population within the U.S. of 40 million, this equates to over 4 million people. Those 4 million, then, would serve as the potential minority market base for the distribution of various communication aids, including hearing aids.

The number of hearing aids actually sold to minority individuals — specifically, to black persons — is also an elusive figure, simply because the industry as a whole does not keep records of such transactions, at least not on the basis of race. A reasonable indicator, however, would be the number of earmolds and/or in-the-ear hearing aids tinted to a dark tone, assuming, of course, that these would be worn by persons with skin tones to match. Most hearing aid and earmold manufacturers do keep records of this type of color modification for the purpose of stocking and reordering dyes and mixtures.

Early in 1986 we conducted a telephone survey of several hearing aid and earmold manufacturers, asking what percentage of their products were tinted. Their replies suggested that tinted earmolds and hearing aids accounted for 1% of the total number of hearing aids sold in the U.S. during calendar-year 1985 was 1,102,887.³ The estimated one percent of that figure translates to a little over 11,000 hearing aids sold, presumably, to individuals of dark complexion.

Minority Market Survey

With those figures in mind, we set out to discover why, with such a relatively large minority market base for hearing aids, there was not a larger percentage of minority purchases of hearing aids? What factors are involved in minority members' decisions to seek or not to

Continued on p. 6

From The Editor

Well, once again I must include an uplifting message to our readers. Believe it or not, developing a creative and entertaining "message" for each issue is becoming more and more difficult.

Rather than burden you in this issue with pleas for articles, etc., I'd like to take this opportunity to thank those who have responded to my previous requests. Although patience has never been a virtue of mine, the support of some new writers and some very special friends has taught the skill of "waiting." I realize that over a year has passed since I began my begging for new and innovative columns, and, with this issue, it has paid off. Some exciting new

segments are included in this copy of *Corti's Organ*. Thank you, Matt, for two GREAT columns. "Name That Lesion" and "Audiology Trivia" should really get our readers thinking (we hope)! We'll keep our fingers crossed that these first editions of the columns will generate more. (Moral to our readers: You too can be creative; send material to Matt! Don't just sit back and let the other guy have all the fun. If you want columns like these to continue, pitch in!)

Thanks also to the recent contributors to the Aural Rehabilitation Forum. After a series of three articles, edited by Ron Schow, we finally received another paper. As can be seen from this issue's column, this segment is exactly what it claims to be — A FORUM. Thank you to those who have allowed the tradition to continue. (Moral to our readers: Let's not let the tradition end here. I'm confident that you have a personal platform hidden somewhere in your career.)

And a final thank you to Susanne Kos, Ross Roeser and Frank Brister. Without their support and encouragement, my impatience would have overwhelmed me. Their confidence kept me going even when my Editor's Mailbox was empty. Thanks for being such good friends.

In closing, let me remind you of other new additions to *Corti's* that are hopefully in its future. We need to hear from you for the "What Bugs You" column and for "Letters to the Editor." Also, don't forget that one of our next issues will be dedicated to a nostalgic look at "Ten Years of *Corti's Organ*." Send in your old pictures, old commentaries, etc. We need your ARCHIVES!! AND — one last reminder — Matt needs trivia and lesions, and the AR Forum needs your views.

— Virginia Berry

Reagan Declares May as Better Hearing And Speech Month

All Americans can be encouraged by advances in the help available for the more than 24 million Americans who have hearing, speech and language impairments. These problems, of course, can cause great difficulties for those who have them, so it is wonderful to know that improvements in medical and surgical treatment, hearing and speech rehabilitation and hearing aids are helping many people significantly.

Better Hearing and Speech Month is an excellent time for all of us to take advantage of educational programs to increase our awareness about hearing and speech problems, to improve our understanding of our fellow citizens who suffer from them and to learn about current research. We must realize, for instance, that because the percentage of older people in our population is rising and will continue to do so, the incidence of hearing impairments is growing. That is because more than one in three over age 75, have a hearing disorder.

Help and hope will continue to reach Americans with impairments in hearing and speech as long as all of our citizens take part in efforts like those of Better Hearing and Speech Month. I'm happy to urge every American to participate in this observance — in every way possible. God bless you.

Ronald Reagan

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The President's Corner

Years ago while I was a resident I noticed that parents seemed to suspect hearing loss when their babies were 9 to 10 months of age. In nearly every instance the pediatrician made a delayed diagnosis or referral at about 20 months (based on 100 children ultimately found to have profound hearing loss).¹ Recently in Ann Landers' column a letter, written by an angry mother, recounted the failure of her pediatrician to make a referral. She finally got a consultation on her own, which confirmed the presence of a severe hearing loss.

I realize as I write this diatribe, that I am addressing the "Christians" not the "atheists". What I am attempting to do is make evangelists of the Christians and propose a study of this phenomenon, using investigators from several institutions. My concept is that we should pit the parents against the pediatricians to see who identifies the deaf child earlier. It should be acknowledged that each group has advantages: the parents are with their infants every day, and the pediatricians only see them at intervals. However, the pediatricians have had access to numerous journal articles, including an entire issue of *Pediatric Annals*, which have dealt with childhood and infantile deafness, the importance of early identification, and habilitation. Where does all this educational material go? Does it end up in a corner of

the brain where useless information is put through the cerebral shredder?

My plan is this: experimental and control groups for both parents and pediatricians with double blinding of their scores. Control group will include parents whose children have normal hearing, but who are thought to be neurotic parents because their pediatrician told them. Pediatricians will be randomly assigned to control or hearing-impaired groups without knowing which is which. The children and their parents will see their own pediatrician. All parents will have a coded postcard to mail to their principal investigator which will indicate whether the pediatrician either sought consultation or made the diagnosis himself, based on subsequent consultation elsewhere. I blew it. The individual pediatrician will not know he is in the study or that there is even a study being done. This will leave him free to conduct himself as he always does.

No doubt I will be assassinated shortly after this article is printed, but if good comes of it will be worth it.

— LaVonne Bergstrom

¹Reference: Bergstrom, L., Hemenway, W.G., Downs, M.P.: A high risk registry to find congenital deafness, *Otol. Clin. N. Amer.* 4:399, June, 1971, P. 370.

Audiology Trivia

Edited By
Matthew W. F. Smith

A remarkable phenomenon of the 1980's has been the tremendous interest in trivia of all types. It became apparent to us that the field of Audiology, which has its roots in multiple disciplines, is a virtual cornucopia of trivial material. We are pleased to present our first harvest of Audiology Trivia, which was compiled by the editor. We invite your participation in this new American tradition. Please send your interesting Audiology Trivia along with a reference source to:

AUDIOLOGY TRIVIA
605 Burma Drive, NE
Albuquerque, NM 87123

We will acknowledge your contribution in this column. Now let's play **AUDIOLOGY TRIVIA:**

ERRATA

Susan Jerger's name was erroneously substituted for Deborah Hayes' name on the list of Executive Committee members in the Winter, 1987 issue of *Corti's Organ*. Susan Jerger did, however, take over Deborah's duties on the Editorial Board of *Ear and Hearing*. The editors sincerely apologize for this mistake.

TRIVIA QUESTIONS:

- Q1:** What now famous student of Zwislack spent evenings and weekends in search of still warm cadavers for middle ear physiology studies?
- Q2:** Who first described the cochlea as the primary organ of hearing?
- Q3:** Who was the author of Weber's Law?
- Q4:** What was Raymond Carhart's favorite mode of transportation?
- Q5:** Which audiometer was used to evaluate hearing of the Mercury astronauts?
- Q6:** What psychophysical method is synonymous with method of reproduction?
- Q7:** What unit is used to express noisiness?
- Q8:** What psychophysical method is synonymous with method of serial exploration?
- Q9:** How thick is Reisner's membrane?
- Q10:** Which internationally famous audiologist has a daughter who is a television motion picture critic?
- Q11:** Which audiologist's business card bore the cartoon character Noisius Racket (The Noise Bug)?

Trivia Answers — see page

1986 AAS MEETING AVAILABLE ON VIDEOTAPE

The 1986 meeting of the American Auditory Society is now available on videotape.

The videotape is approximately 6 hours in duration. It includes the Carhart Memorial Lecture by Joseph E. Hawkins entitled

"TRACES OF AGE IN THE EAR AND THE EYE"

The videotape is available in VHS format only. To order, send the specified amount after checking one of the below:

- _____ I am sending a T-120 blank videotape. Please duplicate the 1986 convention tapes and return it to me. Cost = \$25.00
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Make check payable to the American Auditory Society.

Send order to: Michael F. Seidemann, Ph.D.
Jo Achim Eye, Ear, Nose and Throat Hospital
145 Elk Place
New Orleans, LA 70112

The videotape should be mailed to:

Please allow 4-6 weeks for delivery.



Mr. James Keyes, President
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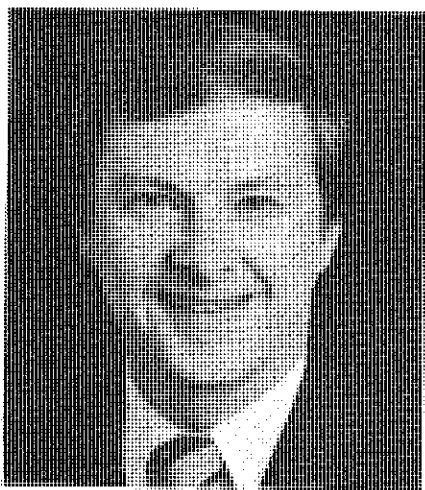
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MEET THE EXECUTIVE

AUDIOLOGISTS



Frank E. Musiek, Ph.D., Director of Audiology and Professor of Otolaryngology and Neurology, Dartmouth-Hitchcock Medical Center, Hanover, NH. Ph.D., Case Western Reserve University, 1975. M.A., Kent State University, 1971. B.S., Edinboro University, 1969.

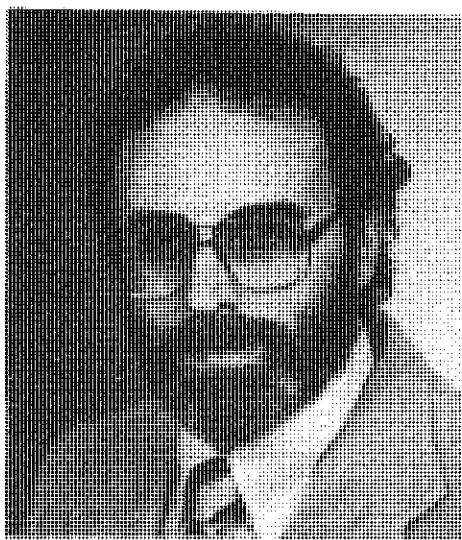
The American Auditory Society has enjoyed considerable membership growth during the past decade. This growth has as its basis several important factors that are the essence of this society. The membership is diverse and represents the major facets of the hearing health care system. The excellent leadership of the AAS has fostered communication both within the membership as well as with the associated medical societies. It has an ever improving journal which has gained recognition for its high quality and relevance to the hearing professional. All of the aforementioned have become increasingly important at a time when the profession is facing new and ever changing challenges. The issues of professional independence and respect, private practice, integration of technological advances, and appropriate training of future professionals and the opportunity for broad based and updated continuing education require discussion, direction and resolution at the national level.

I believe the AAS can play a major role in the mediation of these issues. However, this may necessitate more active political involvement on the part of AAS to represent its constituency and their concerns, both at a state and national level. In addition, continued dialogue between the associated health care professions is of utmost importance. It is through these activities that AAS can continue to meet the goals of the society and the concerns of the hearing professional.



Deborah Hayes, Ph.D., Director, Audiology and Speech Pathology, The Children's Hospital, Denver. Ph.D., Baylor College of Medicine, 1979. M.A., 1973. B.S., Northwestern University, 1971.

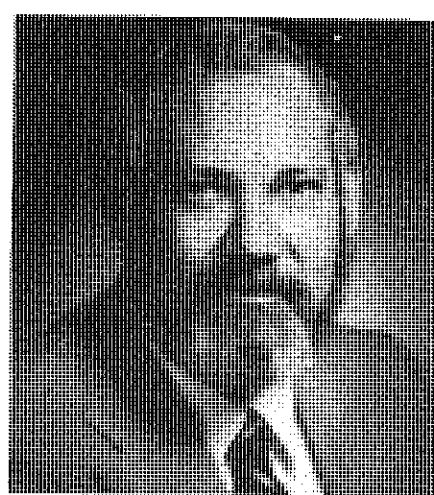
My affiliation with the American Auditory Society has been a very rewarding professional experience. In the past four years, the Society has grown in membership, stature and contribution to the professional community. The unique interdisciplinary nature of the Society provides a forum for exchange of ideas, debate of controversy and increase in knowledge for all of its members. Our journal, *Ear and Hearing*, is now considered one of the finest in audiology; our annual meeting continues to grow in attendance and visibility. I have been proud of my association with the Society, and would enjoy the opportunity to continue this association on the Executive Committee. I would like to see the Society continue its steady growth, attracting new membership from all professions dedicated to prevention, identification and habilitation of hearing loss. I would encourage the continued excellence of our journals and meetings, and strive to make these activities important, valuable and attractive to our members. Finally, I would encourage the society to develop a presence within the national and international arena which would recognize the unique and important role of the American Auditory Society to the professional community.



John T. Jacobson, Ph.D., Director of Audiology, Geisinger Medical Center, Danville, PA. Ph.D., Special Education, San Francisco State College. M.S., Audiology, Oregon College of Education. Ph.D., University of Utah.

To date, the AAS has provided an open forum for the hearing health community. The common denominator has been, simply, a sincere interest in audition. Through the publication format and convention meetings, AAS offers one of the few vehicles available for interdisciplinary interaction in communicative disorders and diseases. This primary function of the organization must be strongly advocated and continually supported.

To many, however, AAS is more than just an association with a collegiate atmosphere. To those, it personifies the aspirations and voice of the future. AAS is the only organizational body that has the capability to truly represent its membership and the capacity to act on their behalf. The Society has reached a point in its development that it must re-evaluate its goals and directions. A key question that cannot be dismissed is whether AAS should remain a relatively neutral, apolitical body, or, as an organization, begin to address controversial issues that currently face the profession and possibly, its very thread of existence. I envision the AAS expanding its role with other professional groups, advocating standards where none exist, and increasing its profile at the national level.

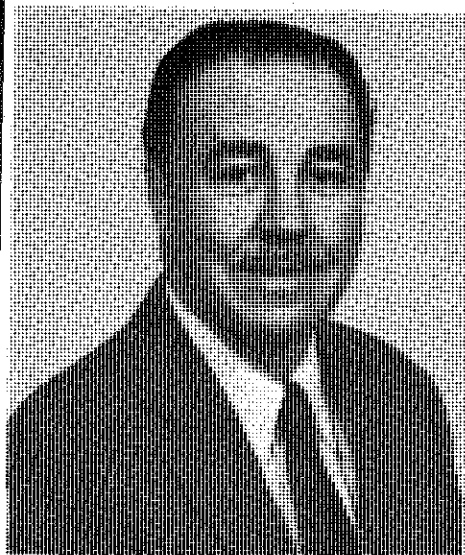


Michael F. Seidemann, Ph.D., Director of hearing and Speech, Eye, Ear, Nose and Throat Hospital. Ph.D., Audiology, Florida State University, 1973. M.S., Audiology, Old Dominion University, 1969. B.S., Psychology, Old Dominion University, 1968.

During the course of its brief existence, American Auditory Society has been able to achieve a position of esteem and leadership in the hearing health care community. It has a distinction of being one of the very few truly interdisciplinary organizations providing forums for the exchange of information between audiologists, otolaryngologists, hearing specialists and hearing instrument manufacturers. Our journal now seems to enjoy the position of being the outstanding publication in audiology. The annual convention has consistently been excellent.

Since we're so wonderful, where do we go from here? There are two areas in which I feel we should focus our attention. While our society is interdisciplinary, our membership is very small in representation of all disciplines except audiology. I therefore feel that we should more actively recruit new members from those other professions. Such input should serve to broaden our perspectives. The second area of focus which I feel we must come to grips is the scheduling of our annual convention. It has become increasingly difficult for us to cover the necessary exchange of information in the one-day format of our annual convention. We should therefore study and determine whether or not a change in format is warranted at this time.

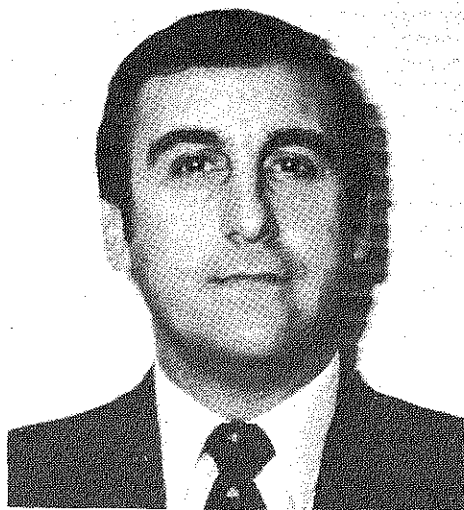
OTOLARYNGOLOGISTS



B. Hill Britton, M.D., Associate Professor, Section of Otolaryngology, The Bowman Gray School of Medicine, Winston-Salem, NC. Otolaryngology Fellowship, The Otolaryngology Medical Group, 1966. Otolaryngology, residency, USC, 1963-67. M.D., University of Oklahoma, 1960. B.A., University of Oklahoma, 1956.

I am deeply honored by the Nominating Committee's asking me to be a candidate for

the Executive Committee of the American Auditory Society. It is my opinion that the purpose of the American Auditory Society is well stated in Article II of the Society bylaws. The stated aims are to increase knowledge and understanding of the auditory process, to promote conservation of hearing and to foster habilitation and rehabilitation of persons with hearing impairment. It is also stated that the Society shall coordinate the exchange and dissemination of information concerning these aims. Regarding future directions of the Society, it is my feeling there is no status quo. Either a society continues to advance or it becomes stagnant and ineffective. In the current climate of cost containment pressures, all hearing health care professionals must continue to be the advocate of patients with hearing disorder. All effort must be made to work effectively as a team for the patient's benefit. Any problem encountered in providing optimal care for our patients by any member of this team, should become a concern of the entire membership. A concerted effort by all hearing health care providers should address pertinent problems and see solutions. This Society should function as a forum, addressing these issues and problems, and seeking the advice and wisdom of the members. Ongoing communications between society members, as well as with other allied health fields, should continue to be stressed. The Society has a unique opportunity in the future to further contribute to the well-being of all of our patients.



Serge A. Martinez, M.D., Professor of Surgery and Director of the Division of Otolaryngology, School of Medicine, University of Louisville, Louisville, KY. M.D., University of Miami, 1969.

The American Auditory Society is an organization on the leading edge of advances in ear and hearing. A review of the organizational leadership and membership discloses individuals interested in all aspects of audition, basic

research and communicative disorders. The Society meetings have become known for the quality presentations and discussions, and the tendency to foster production of new ideas. Awareness of the Society goals by students in audiology training programs, as well as by residents in Otolaryngology, increases yearly.

Many of the organizations in medicine and health sciences tend to evolve into social organizations which serve only a handful of members who rotate organizational leadership among themselves. Such a group takes on a predictable aura which tends to discourage new thought or energetic membership. The American Auditory Society has not done this, and, if it continues on its present progressive course, it can be the vehicle for the presentation and promotion of major advances in hearing. The development of new and sophisticated devices to assist hearing has brought about great public awareness and appreciation of hearing loss. A quality organization devoted to greater understanding and newer treatments of this affliction will be strongly supported in various ways, not the least of which are political and financial.

I think all of us who are members of the Society are so because of the association we have had with other members of the Society, and because of an appreciation of the ideal and interests of Society as a whole. It is evident that the advances in the understanding and rehabilitation of audiovestibular disorders have been made by individuals who are among the Society's membership.

COMMITTEE CANDIDATES

—HEARING SCIENTISTS—

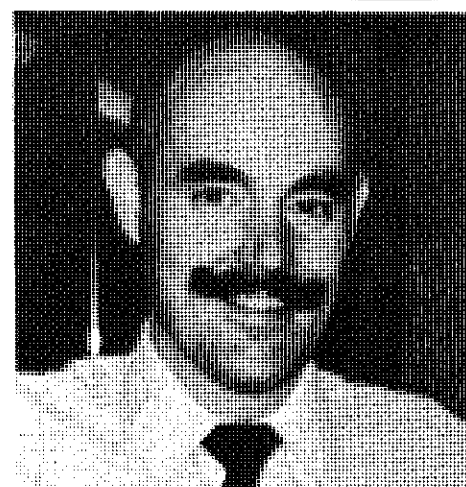
After receiving a ballot by mail, each member should select two otolaryngologists, one hearing scientist, and two industry representatives for Executive Committee membership beginning in 1988.



Josef M. Miller, Ph.D., Professor and Director, Kresge Hearing Research Institute, Ann Arbor, MI. Department of Otolaryngology, University of Michigan. Ph.D., University of Wash-

ington, 1965. B.A., University of California, Berkeley, 1961.

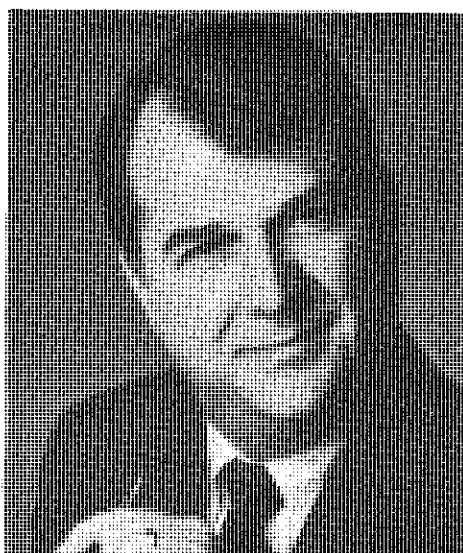
I believe that our field will only grow by the collaborative and coordinated efforts of its various constituents. Whether it be by our efforts to recruit support for fundamental research, by our efforts to prevent occupational hearing loss, or by our clinical efforts to detect and treat hearing disorders, we must increase the effectiveness of collaborations among the professionals of our field. The American Auditory Society, more than any other group, includes among its membership individuals who represent perhaps the most varied constituency of any society in our field. It encourages communication among audiologists, basic researchers, industrialists, government administrators, and physicians. Its organization, development and interests reflect less the special interests of a particular group than any other society. This is a strength. This we should exploit for the further growth and development of our field. Through special symposia at our meetings, special invitees and increased liaison with the officers and councils of our other professional societies, the American Auditory Society may be in a special position to foster the development of our field.



Mead C. Killion, Ph.D., President, Ety-motic Research, Elk Grove Village, IL, Adjunct Professor of Audiology, Northwestern University. Ph.D., Audiology, Northwestern University, 1979. M.S., Mathematics, Illinois Institute of Technology, 1970. A.B., Mathematics, Wabash College, 1961.

The American Auditory Society continues to serve a vital function as an antidote to the "turf" protecting tendency of professional organizations in the field of hearing assessment and hearing aid dispensing. Its combination of personal informality and highest-standard publication activity in its journal *Ear and Hearing* have made it a vital force in our field.

—INDUSTRY REPRESENTATIVES—



J. Gail Neely, M.D., F.A.C.S., Professor and Head, Department of Otorhinolaryngology, College of Medicine, University of Oklahoma. Otolaryngology Fellowship, Otolaryngologic Medical Group, 1972-73. Otolaryngology residency, Baylor College of Medicine, 1969-72. M.D., University of Oklahoma, 1965. B.S., Biology and Chemistry, Central State University, Edmond, OK.

The American Auditory Society is a unique organization composed of audiologists, auditory system scientists and otolaryngologists who personally and collectively demonstrate a focus to patient care and academic productivity directed toward the hearing impaired patient. This organization exemplifies my particular philosophical bias of the imperative of teamwork between professionals devoted to the care of hearing impaired patients. I would see the purpose and the future direction of the society to be one of example and continued educational dissemination of this philosophy toward the objective of improved patient care and scientific advancement.



Toni Gittles, M.A., Vice President of Professional Services, Electone, Inc., Winter Park, FL. M.A., Audiology, Northwestern University, 1973. B.A., Education, University of Florida, 1971.

The American Auditory Society is unique in its appreciation, recognition and encouragement of membership from all sectors comprising the hearing health care profession. This includes audiologists, hearing aid dispensers, physicians and representatives from industry. I am fortunate to have been involved in some manner of education and/or experience in all these areas. It is quite clear that all individuals, with their differing backgrounds, have their own perspective on the various issues that affect our profession. AAS has set the example that each perspective is important, and it provides the vehicle for sharing and disseminating all viewpoints. The openness and willingness to communicate, absolutely essential at this time of so much transition, is a noteworthy accomplishment of the organization and should be beneficial to the recruitment of new members.

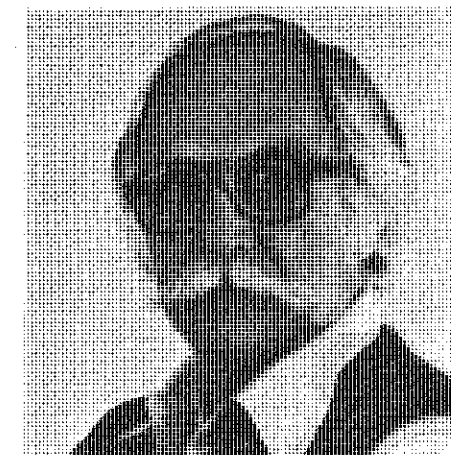
The precedent already set for education through the yearly meetings, *Corti's Organ* and *Ear and Hearing* represents a high standard of excellence which should be supported.



James R. Curran, M.S., Research Audiologist and Professional Accounts Manager, Starkey Laboratories, Minneapolis. M.S., Communicative Disorders, University of Wisconsin, 1962. B.S., Speech Pathology, University of Minnesota, 1961.

I have been pleased to observe the extraordinary success of our journal, *Ear and Hearing*, as the years have passed. It is in the top rank of professional journals concerned with hearing and hearing impairment. I feel that no stone should be left unturned in continuing to maintain and improve its editorial excellence.

I have been a member of the Society since the very beginning, and it has been gratifying, in addition, to see one of the original aims of the organization fulfilled: to create an environment of mutual understanding and fellowship between members of the medical, audiological and hearing health industry communities. This can be a difficult task at times, because individuals and groups may seek to enlist the Society as an ally on one side or another of controversial issues. We should stand aloof from such attempts, if at all possible, and continue to act in an even-handed manner towards all, always remembering that this Society was founded primarily to increase our understanding of the auditory process, to promote hearing conservation, and to foster hearing habilitation and rehabilitation. This charter leaves precious little room for internecine bickering and political maneuvering.



William F. Carver, Ph.D., President, AUDITEC of St. Louis. Ph.D., Audiology, USC, 1960. M.A., Speech Pathology and Audiology, 1955. B.A., Psychology, USC, 1951.

Through dedicated leadership, the American Auditory Society has not only grown in numbers, but more importantly, in scientific professional stature. The principle of encouraging membership of anyone whose interest and professional experience lies in the ear and hearing is one of the hallmarks of this organization and has been a key to its success. We now have a mature journal which publishes learned articles of original research. We have well-attended, interesting and provocative meetings. We have an organization which exists without the politics which pervade and weaken the aims of many professional organizations. (And we know how to have fun as well!)

The goals of the AAS should be: 1) to persist in our growth towards becoming a major influence in the field of audition, 2) to encourage the extension of the body of knowledge of auditory processes, 3) to provide an unbiased forum for discussion and learning, and, 4) to continue to disseminate information to the membership and to society as well. It may seem trite, but through these philosophies and goals, the ultimate beneficiaries will be the hearing handicapped. I can think of no loftier goal for the Executive Committee than to continue supporting the philosophies of this organization, to augment the promulgation of knowledge, and to carry on with the development of new members who are as interested as we are in these goals.

Aural Rehabilitation Forum

Continued from p. 1

seek hearing health care, and was there a minority market for hearing healthcare services in our area?

In an effort to answer those questions, we conducted a market survey during a series of hearing-health screenings held at community centers and churches throughout the central-city area of Richmond, Virginia.

The results reported here reflect the responses to parts of that survey of 230 black adult and/or senior citizens, some of whom, we found, were hearing impaired and were familiar with the problems associated with hearing loss. (None of the respondents, however, wore hearing aids at the time they were surveyed.) The respondents ranged in age from 24 to 96 years, with an average age of 67.3. Sixty-two percent were women, 38% men. Of the 230 respondents, 75, or 33%, failed the hearing screening.

For purposes of comparison, the responses to several of our survey questions are presented with responses from the general population to several other market surveys reported in the literature.

Why Not Get a Hearing Aid?

We first asked respondents to review a list of potential reasons for not obtaining a hearing aid and to cite the reason(s) most applicable to them. As shown in Table 1, while the vast majority of general-population survey respondents cited the fact that a hearing aid "probably wouldn't help" them, an even larger majority of the minority population we surveyed cited cost as the principal deterrent to a hearing aid purchase.

Table 1. Comparison of percentage of minority- and general-population respondents citing various reasons why one might not obtain a hearing aid. (General-population responses taken from data reported by Skafte in 1985.)

Reasons One Might Not Obtain Aid	Minority Respondents	General Population
Probably wouldn't help	6%	61%
Don't want others/know	4%	8%
Would be inconvenient	1%	6%
Costs too much	82%	3%
Looks unattractive	2%	3%
Only for old people	5%	16%

Hearing Health Low Priority

We then asked certain respondents, "During the year following your suspicion of having a hearing problem, did you have a hearing examination?" As seen in Table 2, slightly more than half of those in the general population answered affirmatively,³ compared to only 4% of minority respondents to our survey (2 out of 45 respondents, in the case of this question).

In a related question, we asked all respondents to offer a forced-choice "yes" or "no" opinion of several reasons why members of the minority population might not seek help for their hearing problems. The reasons drawing the greatest percentages of "yes" answers were: (1) unavailability of services, 88%; (2) cost, 86%; (3) low health priority, 73%; and (4) lack of understanding, 27%.

That hearing health is a relatively low healthcare priority among our respondents was especially — but not surprisingly — evi-

Table 2. Minority- and general-population responses to the question, "During the year following your suspicion of having a hearing problem, did you have a hearing examination?" (General-population responses taken from data reported by Broenen in 1983.)

Hearing Examination	Minority Respondents	General Population
YES	4%	56%
NO	96%	44%

dent in their answers to another set of questions. Asked to rate the urgency of and need for attention to two sets of health problems, 100% of the respondents agreed that heart conditions, stroke and high blood pressure, arthritis, and broken bones and sore joints are more urgent and require more attention than hearing loss. Asked then to rank the importance of the latter three conditions, 86% of the respondents cited vision loss as the most serious; 11% cited hearing loss; and 3%, dental problems.

Cost Perceptions

Already having cited cost as a major deterrent to hearing aid use, respondents provided further detail on their perceptions of hearing aid costs in their answers to two other questions.

Asked, "From what you have heard, what do modern hearing aids cost?" 51% of the respondents answered, "Between \$500 and \$750." Another 46% said \$250 to \$500. Only 3% replied \$750 to \$1000, while no respondent believed hearing aids cost between \$100 and \$250.

We then asked, "If you feel the cost of hearing aids is too high, what would you be willing to pay for one?" In this case, the vast majority — 74% — said they would pay \$250. Of the remainder, 18% indicated that they would pay \$500 for an aid, while none said they would pay \$1000. Similarly, not one respondent replied, "I don't feel their cost is too high."

Finally, the survey explored the hearing health or medical professionals that minority consumers were most likely to consult about a hearing problem.

Asked, "If a hearing problem develops, who would you go to see about it?" a total of 89% reported that they would visit a family doctor or an ear doctor — a percentage comparable to that of the general population who said they would do likewise.¹ Hearing aid dispensing audiologist and "hearing aid dealers" did not fare nearly as well, cited respectively by 9% and 2% of minority respondents as the first-review professional. Table 3 details minority and general-population responses to this question.

Table 3. Minority- and general-population responses to the question, "If a hearing problem develops, who would you go to see about it?" (General-population responses taken from data reported by Hearing Industries Association in 1986.)

Hearing of Medical Professional	Minority Respondents	General Population*
Hearing Aid Dispensing Audiologist	9%	32%
Hearing Aid Dealer	2%	10%
Ear Doctor	45%	42%
Family Doctor	44%	42%

*HIA question allowed respondents to indicate more than one professional.

Discussion

The results of our survey identify several factors that might explain why the U.S. minority hearing-impaired population fails to avail itself of the benefits of hearing aids. One is a general lack of awareness on the part of the minority consumer of the potential benefits of using hearing aids. This might be due in part to the poor promotional image projected in advertisements by the hearing aid manufacturers and dispensers, regarding minority use of their products and services. The paucity of minority-owned hearing aid dealerships or the lack of exposure of minority hearing health professionals to the community at large could also be contributing factors.

Another factor that affects minority purchases of hearing aids is price. The relatively high cost of hearing aids — e.g., \$450 to \$600

Continued on p. 8

A Sail of Two Cities

The Southern Audiological Society's 15th annual convention cruise aboard the "Mardi Gras" originally sailing from Ft. Lauderdale on Thursday, September 10 has been changed.

Departure will now be from Miami for Nassau on Friday, September 11 aboard the sister ship "Carnivale," returning on Monday, September 14, 1987.

These changes have resulted in some special benefits. All SAS group passenger cabins will be upgraded a minimum of two categories. Each passenger will now receive a \$15 bar credit and there will be a complimentary bottle of champagne in each cabin!

For more information please contact:

Robert Harrison, Ph.D.
Audiology-Speech Pathology (R56)
University of Miami School of Medicine
P.O. Box 016960, Miami, FL 33101
(305) 549-6451.

Trivia Answers

Continued from p. 2

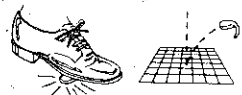
- A1: Alan Feldmann
A2: Willis, in 1672.
A3: Why. Fechner, of course.
A4: His Honda minitrail motorbike.
A5: An Allison Labs Model 21B.
A6: Method of adjustment.
A7: The noy.
A8: Method of limits.
A9: About three microns.
A10: Marion Downs (Her daughter is Sarah Voorhees of KOB-TV in Albuquerque).
A11: David Lipscomb.

Meeting on Outdoor Sound Propagation

A one-day meeting of the Institute of Acoustics on outdoor sound propagation will be held at The Open University, Milton Keynes, on September 5, 1987. Many aspects of the topic will be covered, and the focus will be on recent research findings. Of particular interest will be a discussion of work on the influence of ground and meteorological factors and assimilation of this knowledge into practical prediction schemes.

For more information, contact the meeting organizer Dr. Keith Attenborough, FI, Faculty of Technology, The Open University, Milton Keynes, MK7 6AA, UK.

Accidental Damage



Loss or Mysterious Disappearance



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The International Society of Audiology will hold its 19th INTERNATIONAL CONGRESS OF AUDIOLOGY in Jerusalem, Israel, June 5-9, 1988. Topics of the Round Tables are: Hearing Dysfunction Associated with Systemic Diseases, Methods for Evaluation of Benefits of Hearing Aids, and Auditory Deprivation from Middle Ear Disease (in children). Free paper sessions on a variety of topics in audiology will be held throughout the four-day congress. For further information please contact: 19th International Congress of Audiology, P.O. Box 50006, Tel-Aviv 61500, Israel.

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Name That Lesion

A Forum for Case Studies
Edited by
Matthew W. F. Smith

As practicing audiologists, we encounter many interesting and unusual cases regularly. You know, that one really interesting case out of a hundred mundane encounters which piques your interest and makes the routine stuff endurable. While most of these unusual cases would not be considered deathless prose suitable for juried journals, they usually teach us something and may be helpful to our colleagues. As practicing clinicians, we have hundreds of thousands of wo/man-hours of clinical experience among us. With that in mind, the editors of *Corti's Organ* have created this forum for case presentations. This is **YOUR** clinical forum. Without your input it will perish. Let's hear from you today. Please send your clinical case experiences to:

NAME THAT LESION
605 BURMA DRIVE, NE
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The first case is presented here by the editor from his private experience. Future case presentations will be from your clinical experiences.

CASE NAME:

The Case of the Dizzy Nose

PRESENTERS(S):

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This is the story of our patient, R.A., a 42 year old male who was an amateur basketball player with a deviated nasal septum.

R.A. was being seen by his otolaryngologist for a routine history and physical on the evening before his scheduled nasal surgery. He reported a history of severe nasal meningitis some twenty years previously with apparently complete recovery except for unusual ocular movement which his doctors had reportedly attributed to the meningitis.

R.A. denied having trouble hearing people but did experience occasional difficulty using the phone with his left ear. When questioned about dizziness or tinnitus he denied having tinnitus, but thought he had experienced a little dizziness now and then when turning rapidly to make a hook shot while playing basketball.

His otolaryngologist referred him to us for a precautionary hearing examination. The first thing we noticed about this patient was his unusual ocular motor activity. So we spent a few minutes observing his eyes. There was an asymmetric eyeblink with the left eyelid trailing the right. Also, the left eye blink seemed to be weaker than the right. There was a right-beating gaze nystagmus. There was also a definite internuclear ophthalmoplegia, a time lag between the two eyes on smooth pursuit tracking.

In the sound room, he did notice a very mild ringing tinnitus on the left side. On closer

questioning, he recalled episodes of light-headedness and described some numbness around the left ear and ear canal.

Pure tone audiometry (figure 1) revealed essentially normal hearing sensitivity on both sides with no significant asymmetry present, although the left ear thresholds were slightly elevated. Speech audiometric thresholds were asymmetric by just 10 dB, worse on the left. There was a significant difference in word intelligibility scores obtained at a 40 dB sensation level, with the left ear score some 56 percent worse than the right.

Special tests of auditory function yielded mixed results. There was no threshold tone decay seen using the modified Carhart method. The Simultaneous Binaural Median Plane Localization test (SBMPL) showed him to be unable to fuse a binaural signal into a mid-plane image.

Electro-acoustic impedance audiometry (figure 2A and 2B) yielded essentially normal looking tympanograms with a mild negative pressure seen on both sides (-50mm on the right and -140mm on the left).

Acoustic reflexes (figure 2C) were present on both sides at slightly elevated levels with contralateral stimulation. Reflexes were seen at normal levels on both sides with ipsilateral stimulation. Reflex decay (figure 3) was normal measured on the right with stimulation to the left (now suspect) ear. Reflex decay results were very abnormal measured on the left with stimulation to the right (by now considered the normal) ear. The reflex seemed to decay completely then restart with a two second periodicity.

Because of the symptoms and audiological data, an Auditory Brainstem Response test was performed. All five waves were seen on the right side at 90 dB HL (100 dB PeSPL) with normal absolute and interpeak latencies for waves I through IV at a stimulus rate of 11.1 Hz. Wave V was late at a stimulus rate of 11.1 Hz, and could not be seen when the stimulus rate was increased to 44.4 Hz. (See figure 4A)

The left ABR (figure 4B) was grossly abnormal with only waves I and V discernable at 90 dB HL (100 dB PeSPL) at a stimulus rate of 11.1 Hz. The absolute latency of Wave V was abnormally long as was the I-V interpeak latency. A comparison of the I-V latencies from left to right showed a difference of only 0.11 milliseconds.

Auditory Brainstem Responses on both sides were poorly replicable.

This ABR was interpreted as indicating a diffuse brainstem lesion affecting both sides of the brainstem.

We recommended to the otolaryngologist that R.A. be referred for neurological evaluation as well as diagnostic imaging. The nasal surgery was postponed and the patient received an immediate CT Scan. NOTE: this case occurred before the availability of Magnetic Resonance Imaging.

CAN YOU NAME THAT LESION?

For result, interpretation, and diagnosis, see page 31.

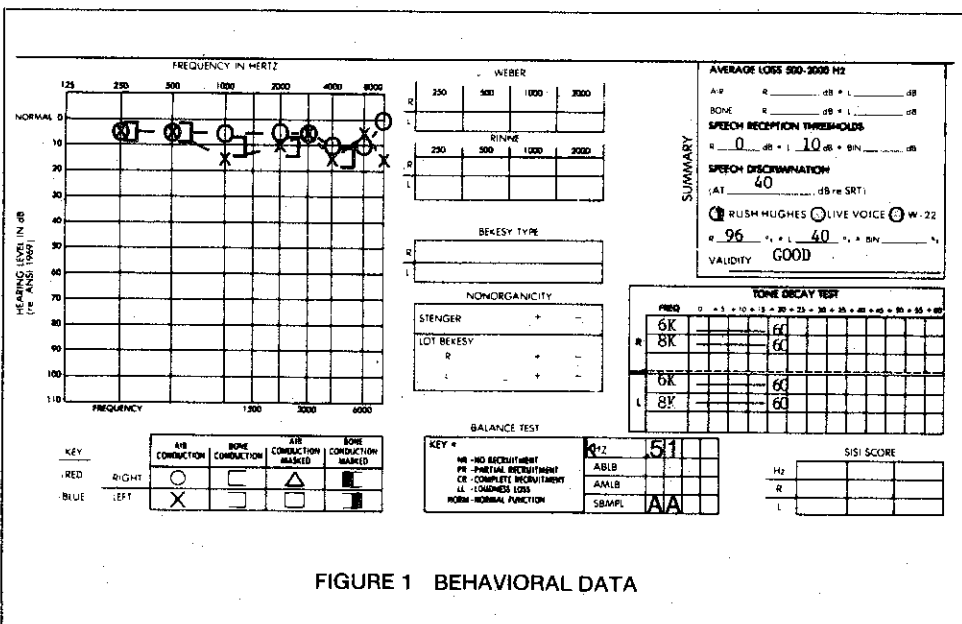


FIGURE 1 BEHAVIORAL DATA

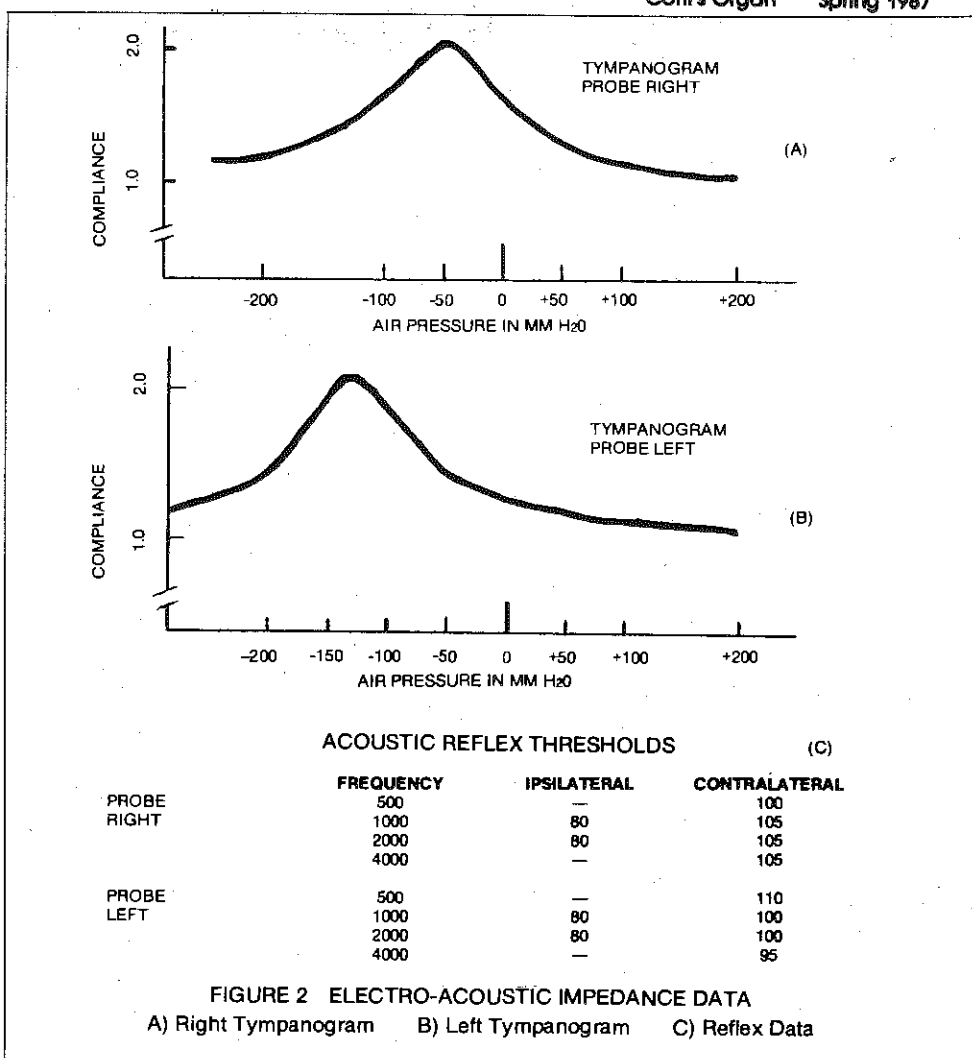


FIGURE 2 ELECTRO-ACOUSTIC IMPEDANCE DATA
A) Right Tympanogram B) Left Tympanogram C) Reflex Data

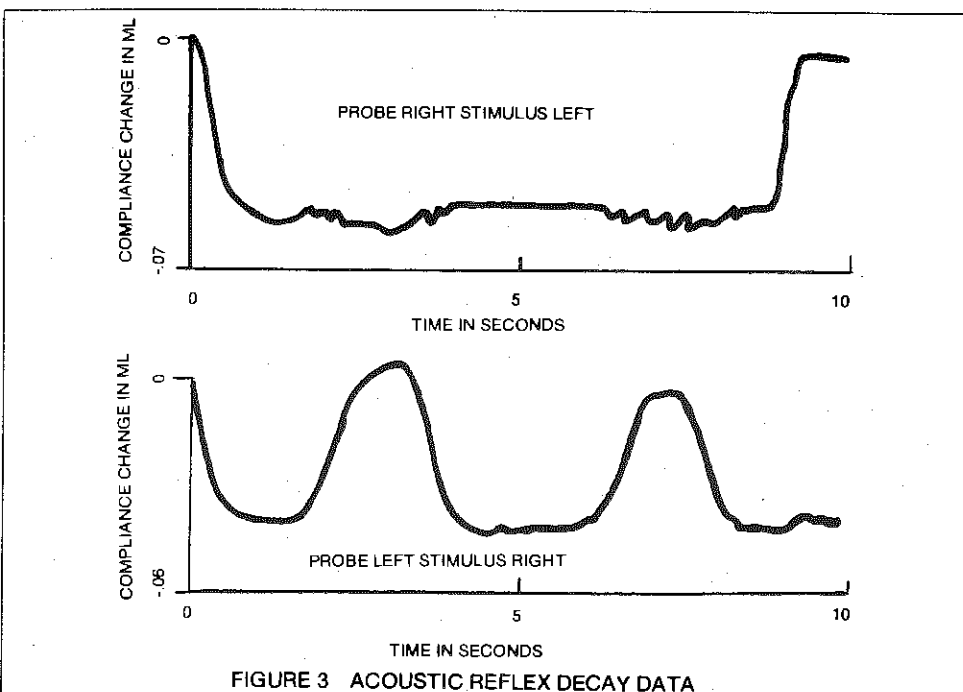


FIGURE 3 ACOUSTIC REFLEX DECAY DATA

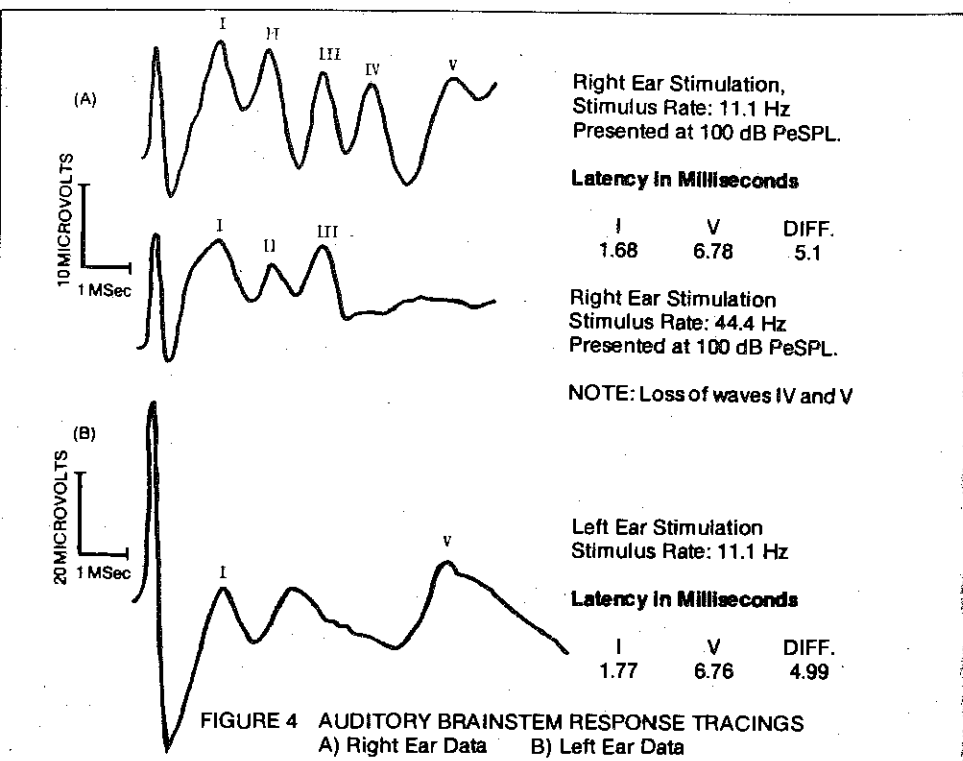


FIGURE 4 AUDITORY BRAINSTEM RESPONSE TRACINGS
A) Right Ear Data B) Left Ear Data

Aural Rehabilitation Forum

Continued from p. 6

—is a deterrent to those minority individuals who may need hearing help, but who are also economically depressed or living on fixed incomes. Also evident is the fact that hearing health is a lower-priority item than other healthcare concerns.

An area not addressed directly in our market survey was attitude toward communication problems. Implied or alluded to by many of the respondents during their hearing screenings was the belief that hearing loss and hearing problems are simply an expected by-product of old age. This point requires further observation and examination, particularly if more effective approaches at marketing to minority populations are to occur. In any event, the provision of hearing healthcare services that accommodate the expressed needs of this population — identified by way of surveys or other methods — appears to be a step in the right direction.

Marketing Strategies

As a result of this market survey, our firm has made aggressive efforts to better address the communication needs of this minority population. We have developed specific marketing strategies that are showing positive results. The following is an outline of these strategies, shared in hope that other hearing health professionals can glean something that would be of benefit to the minority populations they may be willing to serve.

Tailor Goals to the Market

The first element of our overall marketing strategy was to establish goals that reflect the attitudes and needs of the target population.

The results of our survey suggested that hearing loss, although important, is not a high-priority concern among the minority members of this particular community. They have other, relatively more serious health concerns that must be addressed first.

Our objective, then, is to provide, in addition

to hearing healthcare information, information on general healthcare concerns (e.g., hypertension, low-salt diets, stress management, preventive healthcare) that will assist our customers in maintaining their general health. One of our new goals is to serve as a referral source within the minority community for healthcare services in general, with hearing health care our primary service offering.

Establish a Relevant Image

The second major aspect of our strategy was to establish a market "image" to which the members of the community can relate. The elements of that image include:

1. The products/services being offered;
2. The prices attached to products and services;
3. The location of the business; and
4. The promotional or advertising strategies used.

Execution

In implementing that overall strategy, we have incorporated in our practice the following approaches to marketing hearing services specifically to minority populations:

Product

Our products and services are displayed in a way that enables the target population to relate to their use. Any photos or illustrations that we use depict minority persons either wearing hearing aids or being serviced by a minority professional. This approach has increased the number of inquiries about and requests for our services.

Price Structure

In establishing a price structure for our products and services, we considered two contrasting pricing philosophies:

The price/quality or cost/benefit approach. This approach is thought to communicate a high level of professionalism and product quality but has proven to be a deterrent to the lower- and fixed-income individuals with whom we

regularly do business, many of whom do not readily recognize the implied price/quality relationship, but in fact have tended to view the typical retail price of hearing aids to be exorbitant.

The bargain pricing approach. Many believe this to be the weaker of the two pricing philosophies, because it tends to communicate to the consumer a less expensive — and thus inferior — product or service. However, for cost-conscious consumers like ours, bargain pricing has a definite appeal. Since adopting this approach, we have been able to maintain the quality of our products and services, largely, we believe, through a conscientious and personalized approach to our service delivery.

Location

In launching our business, we considered two general location options: either a business-district location or a home-based operation.

We recognized that a business-district location would be convenient only to those clients who resided in the vicinity of the office. Transportation to such a central location would be a major problem for many of our potential customers. We also realized, however, the need for a central location for stocking our inventory, as well as for a centrally located service/repair center. Although the idea was "old fashioned," we decided to use a home-based operation, in which we could make home visits for sales and service delivery. This arrangement is convenient for the consumer and it allows us to provide our service in the consumer's principal communication setting: his or her home. Our stock and servicing are provided in a separate office maintained for those purposes.

Promotion

We use advertising to generate attention and to provide information about products and services. Given the broad market base of an urban setting like Richmond, Virginia, there are numerous avenues available to advertise and pro-

mote hearing healthcare products and services. We have found that advertisements that go directly to the consumer — and in the case of this population, radio ads, direct mailings, and personal promotions — tend to be the most effective. One approach that we are finding productive is to provide periodic hearing hearing screenings at community centers and churches throughout the community, an activity that generates customers and at the same time provides the community with a needed service.

Conclusion

The decision to establish a hearing healthcare business within a minority community was fraught with anxiety — primarily because the industry, by and large, does not address the particular needs of the minority dispenser serving this segment of the population. This remains particularly true with regard to manufacturing promotional materials, which are devoid of identifiable ethnic representations. As a result, we undertook a different approach, which incorporated new and better advertisements and promotions. Our practice now has a foothold within the ethnic minority community of a major U.S. city, and our growing success is in part to marketing strategies tailored to the population we serve.

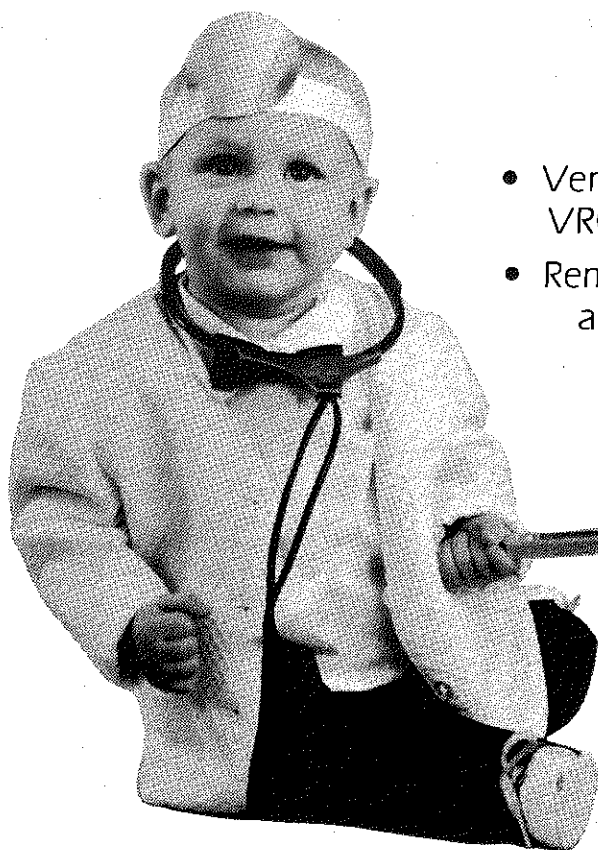
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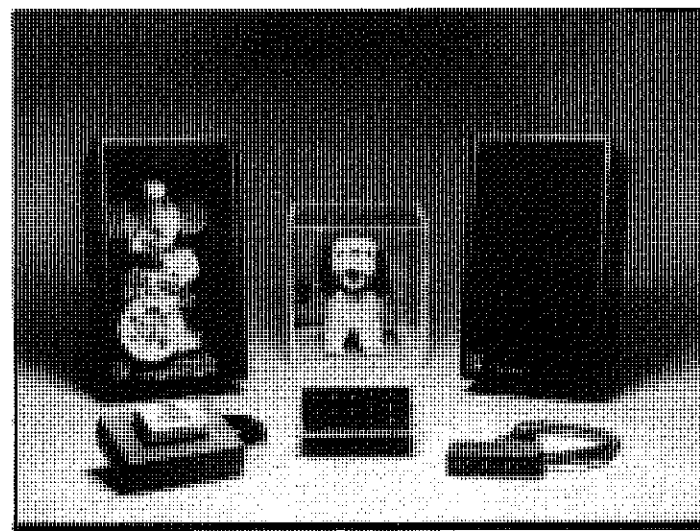
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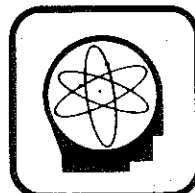


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please notify:

Susanne Kos,
Assistant Secretary
AAS
1966 Inwood Rd.
Dallas, TX 75235

1986 Financial Audit

Statement of Revenue Collected, Expenses Paid and Changes in Fund Balance
Arising from Cash Transactions For the Year Ending December 31

Revenues collected (Note 1)	1986	1985
Membership dues (Note 2)	\$72,633.25	\$64,111.00
Mailing list	290.00	65.00
Interest income	3,041.80	3,179.62
Advertising-Corti's Organ	1,050.00	0.00
Convention income	12,540.00	9,113.50
Editorial allowance	5,500.00	5,000.00
Videotapes	1,055.00	363.00
Contributions	0.00	5,200.00
Total revenues	96,110.05	87,032.12
Expenses paid (Note 1)		
Office supplies	3,260.93	1,831.89
Office equipment (Note 3)	1,241.28	2,630.94
Office postage	1,804.82	1,376.81
Corti's Organ postage	312.80	440.83
Printing and duplicating	824.33	725.63
Telephone	928.23	1,126.94
Local travel	132.91	80.00
Corti's Organ costs	4,337.43	3,884.30
Accounting	414.62	410.00
Office contract services	4,389.29	3,145.41
Corti's contract services	249.75	567.50
Convention expenses	8,435.27	8,250.97
Supplies and equipment	31.51	317.49
Sec/treasurer allowance	1,800.00	1,800.00
Ear and Hearing costs	50,367.12	44,077.00
UTD indirect costs	81.37	152.34
Bank service charges	62.49	12.35
Depreciation	1,639.18	895.24
Credentials committee	372.79	46.53
Promotional committee	1,434.56	4,574.04
Administrative travel	1,054.21	1,347.41
Total expenses	83,174.89	77,693.62
Excess of revenue over expenses	\$12,935.16	\$9,338.50
Assets		
	1986	1985
Cash in bank	\$11,994.32	\$5,664.33
Cash in savings	60,613.11	57,678.31
Equipment (Note 3)	9,572.53	4,262.98
Accumulated depreciation	(4,653.00)	(3,013.82)
Total assets	\$77,526.96	\$64,591.80
Fund Balance		
Beginning fund balance	\$64,591.80	\$55,253.30
Current year surplus	12,935.16	9,338.50
Unappropriated fund balance	\$77,526.96	\$64,591.80

Conference on Current Perspectives in Clinical Audiology

For information contact:

Robert Fifer, Ph.D., CCC-A
Director of Audiology
Carle Clinic Association
602 University Ave.
Urbana, IL 61801

ARO Celebrates Tenth Anniversary at its Midwinter Meeting

The Association for Research in Otolaryngology (ARO) held its tenth annual Midwinter Meeting in Clearwater Beach, Florida, from February 1 to 5, 1987. Over 575 scientists attended the meeting at which 330 papers and posters were presented on a wide range of scientific topics. The science meeting was highlighted by a special symposium on Noise-Induced Hearing Loss and by workshops on New Techniques for Otolaryngology, Otosclerosis, and Biological Models in Otolaryngology Research. These activities were organized by Dr. Donald W. Nielsen, President of the ARO. The meeting was partially supported by grants from the National Institute of Neurological and Communication Disease and Stroke (NINCDS), the U.S. Army, and the Committee on Hearing, Bioacoustics, and Biomechanics (CHABA) of the National Research Council.

Dr. Nielsen presided over the meeting which included a celebration of the tenth anniversary of the ARO Midwinter Meeting. Drs. David Lim, Harold Schuknecht and Jurgen Tonndorf presented a brief history of the ARO at a banquet attended by 260. The ARO presented its annual Award of Merit to Dr. Jerzy Rose of the University of Wisconsin for his many valuable contributions to auditory physiology and anatomy. The award was presented at a banquet held to honor Dr. Rose and to celebrate the tenth anniversary of the ARO Midwinter Meeting. Dr. Joseph Zwislowski, Dr. John Brugge and Dr. Joe Hind reviewed the scientific and personal history of Dr. Rose's brilliant career. A certificate and a gold tie clasp modeled after the inner ear were presented to Dr. Hanna Sobkowitz who accepted the award for her husband, Dr. Rose. The Award of Merit recognized

Dr. Rose's many contributions to the study of the anatomy and physiology of the auditory system. Dr. Rose has made many valuable contributions to our understanding of the structure and function of many parts of the brain, especially those areas that serve hearing. He introduced many new techniques, especially the digital computer, for the physiological study of hearing. His many discoveries form the basis for some of the known fundamental facts and theories of auditory processing. Although retired from full time teaching and research, Dr. Rose continues to work with his wife on research involving the development of the auditory system.

The association voted in 95 new members, bringing the membership to almost 900 members. A slate of new officers was also approved

by the membership: Dr. George Gates, President; Dr. William Yost, President Elect; Dr. Allen Ryan, Secretary/Treasurer; Dr. David Lim, Editor/Historian; and Dr. Charles Parkins, Council Member. They join Drs. Donald Nielsen, Ilsa Schwartz and William Clark on the ARO Council. The 1988 ARO Midwinter Meeting will be held at the Surfside Holiday Inn in Clearwater Beach, Florida, from January 31 to February 4. The theme of the special science sessions, planned by Dr. George Gates (President of the ARO in 1988), will be Mechanisms of Disease.

Additional information may be obtained from: Dr. Allen F. Ryan, ARO Secretary-Treasurer, Div. of Head & Neck Surgery, V-112C, Univ. of California at San Diego, La Jolla, CA 92093; phone (619) 453-7500, ext. 3375.

Name That Lesion Results and Interpretation

(Continued from page 7)

The CT Scan of the posterior fossa was obtained with and without contrast. The radiologist's conclusion was: (a) "Large ill-defined low density lesion in the left cerebellar hemisphere adjacent to the cerebellopontine angle. There was associated effacement and displacement of the fourth ventricle to the right..."

A second CT Scan was obtained two days later using a different contrast material (metrizamide). The conclusion was the same: "findings consistent with an intra-axial mass involving the left side of the cerebellum and brainstem."

The patient underwent a left posterior fossa craniotomy the next day. A tumor was encountered approximately two centimeters deep within the left cerebellar hemisphere. A frozen section showed it to be a low grade (I-II) astrocytoma. Because the tumor extended toward the pons, further dissection was not done.

DISCUSSION

This case illustrates a number of important clinical points.

- 1) It is an example of a good working relationship between audiology and otolaryngology. The otolaryngologist made an appropriate referral to the audiology center and received a windfall of information back.
- 2) "Screening" audiograms done in some otolaryngology practices would have missed this lesion as the pure tone audiogram was normal. This would have exposed the patient to risk from surgery to his nose, as the surgeon would not have anticipated any anaesthesia problems, and/or future metastasis of the tumor. It would also have exposed the audiologist and the otolaryngologist to the risk of malpractice litigation.
- 3) Speech audiometry continues to be an extremely sensitive indicator of retro-cochlear lesions. Were we able to do this case over again, we would have made more extensive use of speech tests (PI/PB functions and SSI tests as a minimum).
- 4) Traditional low level tone decay tests continue to have poor yield in retrocochlear lesions. Again, were we able to do it over, we would have used a high level test like the S.T.A.T.
- 5) We think that the flagging acoustic reflex on the left side was probably a motor phenomenon related to the left cerebellar lesion.
- 6) The ABR is an extremely sensitive tool in identifying retrocochlear lesions. It even showed us the effects on the right side of brainstem displacement from the left-sided tumor mass.
- 7) Even when we're working under time pressure we should take a careful history. This patient volunteered nothing to us or to his otolaryngologist. We had to drag every diagnostic bit of information out of him.
- 8) Finally, it is important to LOOK CAREFULLY at the patient and not become too focused on hearing. As audiologists we should be as knowledgeable about the observable motor and sensory activity of the Central Nervous System as we are about the ear. In this case his diagnosis was clearly written in his eyes although his primary complaint was about his nose.

9th Annual Run...

Hearing Help Awareness Goal of 26-Mile Run by Health Care Providers

A 1987 "Run for Better Hearing" team of ear doctors, audiologists, hearing aid specialists, manufacturers, suppliers and researchers will each run 26 miles to focus public attention on available hearing help. They have entered the ninth annual Run set for June 20 at Grandma's Marathon in Duluth, MN, and they personally the interdisciplinary support for cost-effective public information projects of the Better Hearing Institute.

The Run is a fund-raising effort to strengthen BHI hearing awareness projects which have generated the equivalent of more than \$140,000 in broadcast time and print media space since 1973. BHI's program has been spearheaded by famous Americans who overcame hearing loss. They include Art Carney, Norm Crosby, Phyllis Diller, Nanette Fabray, Lou Ferrigno, Lorne Greene, Florence Henderson, Bob Hope, Arnold Palmer, Richard Thomas, Charlene Tilton, and many others.

As a warmup, BHI executive director Joe Rizzo will run his 43rd marathon in London, England on May 10. Then on June 22 Joe will be joined in Grandma's Marathon by hearing help providers from across the U.S. and Canada, including: Duncan Clifton, hearing industry supplier, Burlington, ONT; Robert Hanrahan, dispenser, Wilmington, DE; John House, M.D., otolaryngologist, Los Angeles, CA; Dr. Mead Killion, industry researcher, Chicago, IL; Dr. William McFarland, audiologist, Los Angeles, CA; Nita Rizzo, Joe's "better half," Springfield, VA; Dr. Steve Rizzo, audiologist, Chillicothe, OH; Dr. Richard Tomlinson, industry supplier, Burlington, ONT; Wayne Whitney, dispenser, Eau Claire, WI; and Michael Winship, hearing aid manufacturer, Minneapolis, MN.

STEERING COMMITTEE

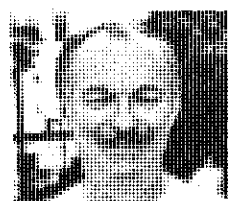
Organizing and coordinating this year's campaign is a steering committee that includes Al Bruce, chairman, Starkey; Robert Tischbein, co-chairman, Starkey; Jim Anderson, Qualitone; Pat Koepke, Dahlberg; Jerry Miland, Starkey; and Bud Raas, Earmold Design.

MAJOR CONTRIBUTORS

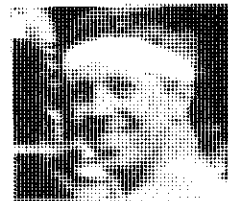
Key Run supporters to date include: Activair/Duracell, American Academy of Otolaryngology—Head and Neck Surgery, American Auditory Society, Argosy, Audio-Aid, Beltone, Bernafon, Best Labs/Fidelity of Florida, Dahlberg, Danavox, Emtech, Eveready, Fidelity Hearing Instruments, Finetone, Hearing Instruments magazine, Hearing Journal, Hearing Services Inc., Hearing Technology Inc., Knowles Electronics, Lang Hearing Instruments, Linear Technology Inc., Maico, National Hearing Aid Society, Omni Hearing Systems, Oticon, Phonic Ear, Qualitone, Ray-O-Vac, RCI, Starkey, Telex, U.S. Counseling Services, and Wilbrecht.



John House, M.D.
Otolaryngologist



Bill McFarland, Ph.D.
Audiologist



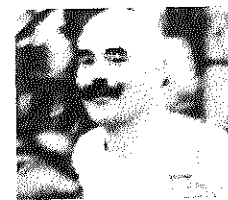
Mike Winship
Hearing Aid Manufacturer



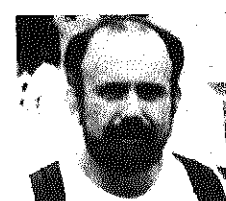
Wayne Whitney
Dispenser



Nita Rizzo
BHI Director's "better half"



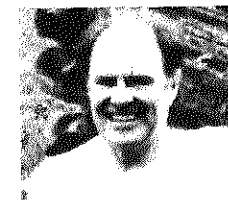
Mead Killion, Ph.D.
Hearing Industry Researcher



Steve Rizzo, Ph.D.
Audiologist



Duncan Clifton
Hearing Industry Supplier



Bob Hanrahan
Dispenser



Better Hearing Institute

Box 1840, Washington, D.C. 20013

Name: _____

Office Affiliation: _____

Address: _____

City: _____ State: _____ Zip: _____

☐ You bet I'm supporting the 1987 "Run for Better Hearing" team. Here's my check payable to Better Hearing Institute:

☐ \$13.00 (\$.50/mile) ☐ \$19.50 (\$.75/mile)

☐ \$39.00 (\$1.50/mile) ☐ Other

☐ Yes, please send me more information on BHI.



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members should send changes to:

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1966 Inwood Road
Dallas, Texas 75235

(NOT to Williams & Wilkins)

1987 AAS Meeting with Dinner Cruise Monday, Sept. 21st, 1987 • Chicago, IL

CORTI'S ORGAN

The Official House Organ of The American Auditory Society

Volume 11, No. 5

Summer 1987

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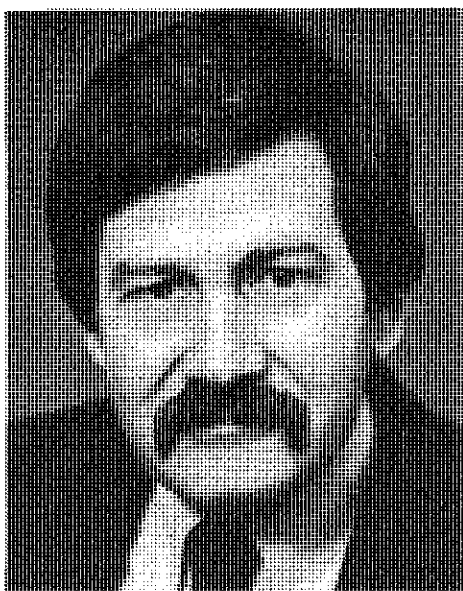
1987 AAS Convention to be in Chicago

For AAS members September 21st will be a day of exciting intellectual stimulation and a night of equally exciting entertainment.

This year the meeting will be held at the Inn of Chicago. Between President LaVonne Bergstrom's introductory remarks at 8:30 a.m. and the close of the sessions around 6:00 p.m. there will be numerous scientific papers of the usual high quality. Special highlights will include Dr. Peter Dallos' Carhart Memorial lecture entitled "Neurobiology of the Cochlea: Hair Cells as Receptors and Motors", and the presentation of the Beltone Distinguished Teacher of the Year Award.

The "business" of the evening will be to indulge one's hedonistic tendencies. This will be easy to do aboard the 'Star of Chicago', wherein members and guests will cruise Lake Michigan, dine like lords, visit, flirt, gossip, etc.

The host hotel, the Inn of Chicago, is located in the Windy City's Miracle Mile amid many of Chicago's best known attractions. Nearby are the Hyatt Regency and Marriott hotels, which will be hosting the AAO-HNS annual meeting



Peter Dallos, Professor of Speech and Audiology at Northwestern University in Evanston, Illinois.

between the dates of Monday, September 20th through Thursday, September 24th.

September 21st, 1987, deserves a check mark on everyone's calendar.

Aural Rehabilitation Forum

Editor's Note: The following segment of the AR Forum is taking a little bit of a different slant. This interview-style article was generated with the assistance of Ginny Fickel, President of the Acoustic Neuroma Association. As a former neuroma patient herself, Ms Fickel understands the needs of others with this disorder. The Acoustic Neuroma Association is a patient-headed, peer support group, which grew out of an interchange among patients who felt the need for a support and information network.

AAS and the staff of Corti's Organ would like to thank Ms Fickel for informing all of us about her Association.

1) When did the Acoustic Neuroma Association (ANA) begin?

It was incorporated in April, 1981. There were a few dozen of us acoustic tumor "alumni" at the time who had found each other.

2) What prompted its creation?

After my tumor was removed in November, 1977, I had total facial paralysis, dry eye, exposure keratitis, and other residual problems. I really wanted to talk with others who had been through this experience, but knew of no one. During the following two years I found a handful of others, and we benefited from sharing with each other. All felt that a broader-based mutual aid group would be worthwhile, so the Acoustic Neuroma Association was incorporated to serve those affected by acoustic neuroma. Membership in a group of those with similar experiences can be helpful to patients, as well as to family members and to interested medical personnel.

3) How has it grown — both in numbers and services offered?

Today we have a mailing list of 2700. There are sister organizations in Canada and Australia, and one now being formed in Germany. We have members in all states except Montana and Wyoming.

ANA has published 23 quarterly newsletters of professional quality featuring physician-authored articles and self-help information. We also sponsor an annual symposium with physician speakers, workshops for special concerns, and overflowing camaraderie; offer the opportunity to network with other "alumni" in one's own locality; and assist with setting up local meetings and groups. (Twenty "chapters" have formed in the past three years in all parts of the U.S.)

4) Are your goals still the same?

Yes, our goals still remain. They are:

- To provide support and information for patients who have experienced acoustic neuromas or other tumors affecting the cranial nerves.
- To furnish information on patient rehabilitation to physicians and health care personnel interested in the treatment of benign tumors and in the alleviation of post-surgical problems.
- To promote and support research on the cause, development, and treatment of acoustic neuromas and of other benign cranial tumors.
- To educate the public regarding symptoms suggestive of acoustic neuromas, thus promoting early diagnosis and consequent successful treatment.

5) What are group activities?

I have mentioned the annual symposium and local groups, which tailor the frequency of their meetings to their own desires. Most meet several times yearly, providing an opportunity to have "face to face" contact, and to hear informative lectures by physicians.

Our symposiums have been held in Hershey, Nashville, Ann Arbor, Los Angeles, Little Rock and, this year, Boston. All have been planned and arranged completely by volunteers. Physician speakers volunteer their time and expertise.

Symposiums have grown to two full day affairs and are attended by "alumni" from all parts of the U.S.

ANA grants financial help to 15-20 people to enable them to attend. This year about half of those receiving financial aid will be deaf because of bilateral tumors.

The Association has published a 12 page booklet, "Acoustic Neuroma", which is a comprehensive discussion of this disorder geared to the layperson. Many physicians give this booklet to their patients. ANA also publishes a quarterly newsletter, Notes, which provides professionally authored medical information, self-help aids, and relevant articles on a variety of subjects.

6) What is your organizational structure?

ANA is staffed entirely by volunteers. Our national office has six regular volunteers, and a dozen occasional others who help to prepare our quarterly newsletter mailing.

We have an Executive Board made up of four officers and several committee chairpersons; all except one has had an acoustic neuroma removed. We meet during the winter, and board members assume their own expenses. I can't say enough about volunteers and what can be accomplished by them.

7) What do you hope to achieve as an organization?

We would like to assist in alerting all ENT specialists, as well as audiologists and other primary care physicians, about the possibility that an acoustic tumor might cause a one-sided hearing loss.

Also, ANA is working on a system whereby potential members will be acquainted with the Association and its services.

8) Is presiding over this organization a full time job?

That and more. As is true of most commitments, the responsibility grows as the services and people served expand. We exhibit at ENT, neurosurgery, and some nursing meetings, and this, of course, is a part of the job which increases the time commitment.

Continued on page 2

Name That Lesion

A Forum for Case Studies

Edited by

Matthew W. F. Smith

As practicing audiologists, we encounter many interesting and unusual cases regularly. You know, that one really interesting case out of a hundred mundane encounters which piques your interest and makes the routine stuff endurable. While most of these unusual cases would not be considered deathless prose suitable for juried journals, they usually teach us something and may be helpful to our colleagues. As practicing clinicians, we have hundreds of thousands of wo/man-hours of clinical experience among us. With that in mind, the editors of *Corti's Organ* have created this forum for case presentations. This is YOUR clinical forum. Without your input it will perish. Let's hear from you today. Please send your clinical case experiences to:

NAME THAT LESION
c/o The Cybersmith
605 Burma Drive, NE
Albuquerque, NM 87123

This issue's case is AGAIN presented here by the editor from his private practice experience, which although extensive, is not infinite. Future case presentations will be from your clinical experiences. We need YOUR input!

CASE NAME:

The Case of the Silent Tinnitus

PRESENTER:

Matthew W. F. Smith, M.Sc., CCC-A

ADDRESS:

Hearing Evaluation Center
612 Encino Place, NE
Albuquerque, NM 87102

This is the sad tale of E.B., a 75-year-old female patient who had been recently diagnosed as having terminal cancer of the liver. Her life expectancy was very short.

Three weeks prior to her visit to us, she had undergone exploratory surgery which had confirmed that cancer was present and that it was advanced beyond surgical treatment. During the week following surgery, she experienced a sudden, severe loss of hearing on both sides.

She was referred by her internist to an otolaryngologist. His physical examination was unremarkable and she was referred to us for an audiological evaluation. His concerns were possible post-operative insult to the cochlea, or worse, new metastatic sites of the cancer.

We questioned the patient and her family about trauma, tinnitus, prescription medications and even chemotherapy. She denied

Continued on page 2



PLAN AHEAD

19th INTERNATIONAL CONGRESS
OF AUDIOLOGY
JERUSALEM, ISRAEL, JUNE 5-9, 1988

Name That Lesion

Continued from page 1

trauma or tinnitus; was taking no prescription medications; and was not on a chemotherapy regimen.

Pure tone audiometric test results showed her to have a fairly flat bilateral sensorineural hearing loss averaging 50 dB HTL. Speech thresholds were in approximate agreement with the pure tone results. Word intelligibility scores at MCL were good on both sides (See Figure 1).

Because of probe seal difficulties due to ear canal geometry, only screening tympanograms could be obtained. Tympanograms were of

Type A (normal) configuration on both sides.

This scant information prompted us to ask just one more clinical question which clarified the picture.

WHAT WAS THAT QUESTION, AND CAN YOU NAME THAT LESION?

RESULTS AND INTERPRETATION

It should be fairly obvious that advanced liver cancer and a post-operative wound are both very painful. What we failed to ask the patient during the first round of questioning and subsequently asked was, "What are you taking for the pain?"

This was the magic question. Her answer was: "Aspirin" and lots of it, too; four 500 milligram tablets, six times a day!

The etiology then seemed pretty clear to us. Salicylate poisoning. The only thing missing was the tinnitus, which is usually the hallmark of this condition. We'll speculate on that in a moment.

We recommended to E.B.'s physicians that the aspirin be discontinued immediately, and that an alternate analgesic be prescribed. We also recommended a follow-up evaluation in two weeks.

On follow-up, two weeks later, her hearing sensitivity and SRTs had returned to well within normal limits bilaterally. Her word intelligibility scores were excellent at 40 dB SL on both sides as well (See Figure 2).

She had completely recovered her hearing and was able to communicate effectively with her family until her death a few months later.

DISCUSSION

Well, what about the tinnitus, or lack thereof? I suspect that there probably was tinnitus present. However, I think that the patient's distressed state of mind over her cancer and imminent demise, the extreme pain she must have been in, as well as the frightening sudden loss of her ability to communicate, pushed noises in her ears way down on the scale of

AR Forum

Continued from page 1

9) Why are you doing this?

First of all, it's a privilege to be doing something which seems to be making a positive impact on people where formerly help was not available.

Secondly, seven months after my surgery my husband had a grand mal seizure, and a CT scan identified a cranial mass. It was a meningioma and was removed successfully. We really were the "unlucky/lucky" and felt that we should respond to the message which was being sent! My time, energy, and financial commitment to ANA has my husband's full support.

10) How would someone obtain more information about ANA?

Individuals may write or call:
Acoustic Neuroma Association
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Carlisle, PA 17013-0398
(717) 249-4783

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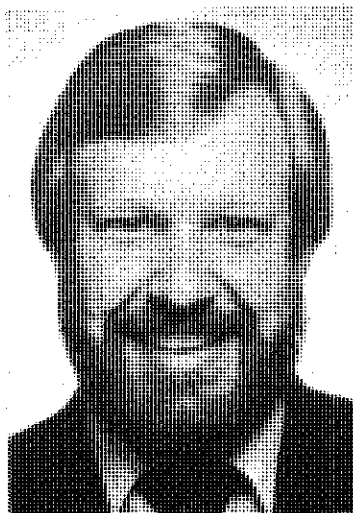
Dallas, TX

Susanne Kos, M.A.

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Private Practice

Arlington, TX



Matthew W.F. Smith

importance to her. So much so, that it didn't come out even in response to a direct question. What can we learn from this simple but interesting case?

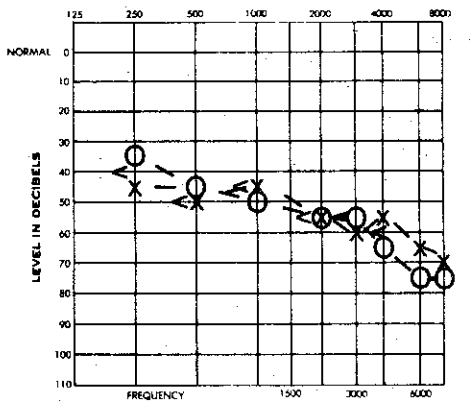
- 1) Aspirin poisoning is more common than most people think. The 500 milligram "Extra Strength" tablets are a contributing factor.
- 2) Hearing loss from aspirin toxicity is almost always reversible.
- 3) It frequently mimics presbycusis and is seen most often in the age range where presbycusis is expected. Watch out!
- 4) Questions about aspirin use should be a routine part of the hearing history for all patients, not just those complaining of tinnitus (it's part of ours now).
- 5) Be skeptical about answers to your history questions which don't make sense. Poke and prod until they do.
- 6) Don't assume that someone else in the referral chain will necessarily ask the important questions. It's your responsibility to gather data, history included, that make sense. In this case if the audiologist hadn't asked the "magic" question, very possibly an inappropriate and completely unnecessary hearing aid fitting may have been recommended.
- 7) Even though this patient's life span was to be very short, the quality of her last days of life was immeasurably improved because someone asked the right question. Let's be careful out there!

PATIENT: E.B. AGE 75

EXAMINER: M. Smith, M.Sc.

DATE: 08/11/86

AUDIOMETER: MA22



COMMENTS: SRT → R 45 dB SP. DISC → 92 %
L 45 dB 88 %

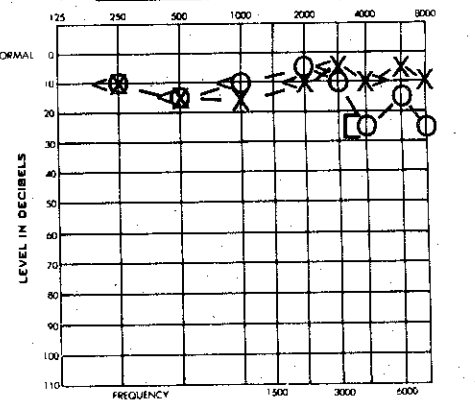
FIGURE 1. PRESENTING COMPLAINT

PATIENT: E.B. AGE 75

EXAMINER: M. Smith, M.Sc.

DATE: 08/25/86

AUDIOMETER: MA22



COMMENTS: SRT → R 10 dB SP. DISC → 100 %
L 10 dB 100 %

FIGURE 2. CONDITION RESOLVED

From the Editor...

I want to take this opportunity to thank all of you who took the time to express your feelings regarding the new segments we began with the last issue of *Corti's Organ*. When the editorial staff creates new columns, we are never sure what our readers' reactions will be. With both "Audiology Trivia" and "Name that Lesion", we seem to be faring pretty well. Thanks to all of you who responded so positively. Now, your next task can be to submit copy to these columns.

— Virginia Berry
Editor

Letter to the Editor...

Dear Ms Berry,

I want to commend you on the introduction of the new column entitled "Name that Lesion". It was a real cliff-hanger! It is true that we don't often come across cases involving good "detective work", and it is refreshing to see how others handle the situation. I learned a few pointers about observing eye movements and once again have had my faith renewed in the significance of our profession.

I hope to see more of the column in the future.

Sincerely yours,
Toni Gordon
Forest Hills, NY

Audiology Trivia

Edited By
Matthew W. F. Smith

A remarkable phenomenon of the 1980's has been the tremendous interest in trivia of all types. It became apparent to us that the field of Audiology, which has its roots in multiple disciplines, is a virtual cornucopia of trivial material. We are pleased to present *still more* Audiology Trivia. We invite your participation in this new American tradition. Please send your interesting Audiology Trivia along with a reference source to:

AUDIOLOGY TRIVIA

c/o The Cybersmith
605 Burma Drive, NE
Albuquerque, NM 87123

We will acknowledge your contribution in this column. Now let's play AUDIOLOGY TRIVIA:

TRIVIA QUESTIONS:

- Q1: What national audiology newsletter editor spent the night of May 15, 1987, with the Little Rock, Arkansas Vice Squad?
- Q2: In what country was Raymond Carhar born?
- Q3: Who first suggested what was to be known as the Valsalva maneuver and when?
- Q4: What phenomenon, described by Willis in the 1600's, bears his name?
- Q5: What psychophysical method is synonymous with method of right and wrong cases?
- Q6: What function does the aroma of cerumen serve?
- Q7: Where were the Mercury astronauts taken for hearing evaluations?
- Q8: Which earmold laboratory has a logo which depicts its involvement in the U.S. Space Program?
- Q9: What is the spectral slope of pink noise?
- Q10: What's another name for poststimulatory threshold shift?
- Q11: What structure is known as the vestibular gallery?
- Q12: Who is best known for his five 'bumps'?

See Answers on page 6

ERRATA

Gail Neely, M.D., an Executive Committee candidate was erroneously pictured under Industry Representatives instead of under Otolaryngology in the Spring 1987 issue of *Corti's Organ*. The editors sincerely apologize for any confusion that may have resulted from this printing error.

Meeting Abstracts

Application of Multiple-Frequency Tympanometry and an Audiometric Gelle' Test to the Differential Diagnosis of Middle Ear Disease

David J. Lilly, F. Owen Black,
and Robyn E. Holman
Good Samaritan Hospital & Medical
Center
Portland, Oregon

Clinical tympanometry usually is accomplished using a low-frequency probe tone. In our experience, these single-frequency (226 Hz) measurements yield diagnostic information that is quite adequate for about 85% of our patients who presently have middle ear disease. For the remaining 15%, however, a more sophisticated multiple-frequency tympanometric approach is required. This tympanometric data becomes even more useful, however, when we can measure the transmission characteristics of the ear, along with its input acoustic impedance, for the same range of air pressures.

In this presentation we shall describe the results of a pilot study that was designed to compare tympanometric data with psychophysical threshold data obtained using a modification of the Gelle' test. For this latter procedure we evaluated the effects of air pressure in the external auditory meatus on hearing by air conduction and by bone conduction. We used a 500 Hz test tone and the same range of air pressures that we planned to use ultimately for multiple-frequency tympanometry (+ 500 mm H₂O). Twenty subjects with normal hearing, 20 patients with surgically confirmed stapedial otosclerosis, and 10 patients with other middle ear problems were evaluated.

A review of our total pilot study suggests that: 1) The Gelle' test does not require complex instrumentation. It can be done easily with minor modification to existing clinical acoustic impedance systems. 2) Evaluation of Gelle' data and tympanometric data obtained at the same frequency can provide the information needed to develop dynamic models for normal and diseased middle ear systems. 3) Asymmetries in air conduction Gelle' patterns probably are reflected in tympanometric data generated at the same frequency; and 4) a diagnostic protocol that combines selected Gelle' data with multiple-frequency tympanometry has good potential for increasing the accuracy of diagnosis for patients with clinical otosclerosis and other diseases that affect the ossicular chain.

Diagnostic and Prognostic Value of Direct Promontory Bone Conduction in Patients with Otospongiosis

Mariola Sliwinska-Kowalska
and Bozydar Latkowski
Academy of Medicine
Lodz, Poland

Conventional bone conduction audiometry does not allow an objective assessment of hearing in patients with otospongiosis. We evaluated a novel method of direct bone conduction audiometry with the stimulator applied to the promontory intraoperatively. A comparison of conventional and direct bone conduction audiometry thresholds was made in 100 patients in various stages of otospongiosis before stapedectomy. A significant correlation between hearing thresholds obtained by both methods was observed for all frequencies tested, 500, 1000, 2000, and 4000 Hz ($p < 0.001$). The direct bone conduction method was at least 30 dB more sensitive for all frequencies. Interestingly, the average direct bone conduction threshold curve did not exhibit a Carhart notch at 2000 Hz as did curves generated by the conventional method. The actual "early" improvement of hearing thresholds following stapedectomy was demonstrated in 100 patients 2-3 weeks following the operation. The direct bone conduction technique was usually more predictive of hearing improvement following stapedectomy than was conventional bone conduction audiometry. We suggested that the direct bone conduction method for assessing hearing in patients with severe otospongiosis is superior to the conventional bone conduction technique, which often does not reflect actual cochlear reserve.

Determination of Ear Canal Length Using Acoustic Signals

C. Daniel Geisler and Joseph C.K. Chan
University of Wisconsin
and Project Phoenix, Inc.
Madison, Wisconsin

A direct optical method of measuring ear canal length was compared with an acoustical method. The optical method, adapted from Zemlenyi and associates, determined the distance from the posterior edge of the ear canal meatus to various points on the ear drum, such as its dorsal-most point and the attachment of the umbo of the malleus. The acoustic measurement system (using the Aurora™) used probe-tube measurements of sound pressure level (SPL) instead of frequency obtained at two different points in the ear canal. The difference between the two SPL measurements, which had in common the overall characteristics of the ear canal, showed in almost all cases a clearly defined anti-resonance (sometimes called the "quarter-wavelength" null) in the 6-10 kHz range. Using this anti-resonance, the distance from the ear canal entrance to the effective reflecting surface of the drum was inferred. Present data, on an initial sample of 10 people, indicate that effective ear canal length inferred from the acoustic measurements falls between the optically measured distance to the dorsal-most point of the drum and that measured to the attachment point of the umbo. Implications of the results concerning the accuracy with which ear drum SPL's can be inferred from measurements made at remote locations will be discussed.

Perilymph Fistulas in Children with Progressive Sensorineural Hearing Loss

F. Blair Simmons
Stanford, California

Perilymph fistulas (PLF's) sometimes occur in children with unexplained progressive unilateral or bilateral sensorineural hearing loss. Upon repair, occasional and sometimes dramatic hearing improvements have been documented. However, such outcomes are not universal; nor is it yet possible to know which child has a PLF without exploratory surgery — sometimes on an only hearing ear. This paper is an interim report on 24 consecutive explorations for PLF in children with progressive hearing losses (average progression, about 38 db, between 500 Hz and 2,000 Hz). One-half had a PLF, and some of these were bilateral. Hearing improved (+ 15 db at three contiguous frequencies) or the progression stopped (+ 5 db) in nine proved PLF's, but similar outcomes were found for nine negative explorations in which the oval and round windows were also grafted. Progression continued in two with PLF's and in four without PLF's. Furthermore, five ears were re-explored, whereupon two were found to have a PLF on the first operation but not on the second, and two were found to have a PLF on the second but not on the first surgery.

This small series needs longer follow-up, and the role of PLF's in contributing to progressive hearing loss is by no means clear. There are problems, including inadequate data on progressive hearing losses themselves, the uncertainty as to the incidence of PLF's in the absence of hearing loss in children, PLF intermittency (re: negative explorations), and our lack of technical ability to maintain a seal of the oval and round windows once a PLF has been demonstrated.

Narrow Band Digital Filtering of the Auditory Brain Stem Response

Roger R. Marsh
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania

Narrow band digital filters have been endorsed for reducing noise (and signal) outside the frequency band that defines the individual waves of the brain stem response. This approach had previously been criticized by the present author (without empirical evidence) as posing the risk of introducing distortion or extraneous waves in cases where the response deviates from the ideal.

Two digital filters were compared to determine their effects on normal adult responses. The first was a convolutional filter similar to Moller's. The second was an FFT implementation of 500-1000 Hz filter. This was similar to that of Fridman and associates, but with a more limited passband. Responses of five adults to clicks at 80, 60, 40 and 20 dB nHL (two 2000-sweep responses per intensity) were processed by the two filters. Latencies were measured for waves I, II, III and V at 80 dB, and for wave V only at the other intensities.

For the major waves — I, III, and V — the convolutional filter gave very good agreement with the measures on the unfiltered response; latencies differed by one bin (0.1 msec) or less for 56 or 60 possible comparisons. For wave II, however, the error was greater than this for four of eight possible comparisons; and the digital filter generated a spurious wave II where none was unduly influenced by the large adjacent waves. The FFT filter was similar to the convolutional filter, giving only six errors greater than 0.1 msec out of 60 comparisons for waves I, III, and V, but yielding four errors in latency and two spurious waves for Wave II. Both filters often rendered wave identification difficult at low stimulus intensities; in such cases wave numbers were assigned by reference to the unfiltered response.

It does appear that narrowband digital filters preserve latency information in the case of clearly defined responses, but that the potential for distortion and error remains in the case of small waves among large ones, or when there are adverse signal-to-noise ratios.

The Effect of Varying Frequency Response of an FIR Filter on the Slope of the Latency-Intensity Function

Kurt E. Hecox and Jennifer Patterson
Nicolet Audiodynamics
Madison, Wisconsin

For a number of years the slope of the wave V latency-intensity function of the brainstem auditory evoked response has been used to identify patients with inner ear disease. Unresolved is whether the slope changes are secondary to the high frequency slope of a hearing loss or secondary to other "unspecified" aspects of inner ear disease. To test this hypothesis, normal hearing listeners were evaluated with a filtered signal whose filter properties mimicked high frequency losses. In a second condition, a filter was designed to mirror the patient's audiogram and was interposed between patient and signal generation.

If audiometric contour were the primary determinant of abnormal slopes to the latency-intensity function, normal listeners with filters in place should produce abnormal slopes, and the hearing impaired with "corrective" filters in place should produce normal latency-intensity functions. Neither of those outcomes was observed in testing 10 normal hearing and 10 hearing impaired listeners. From these observations we conclude that the audiometric contour is not the sole or even the primary determinant of the slope of the latency-intensity function.

Continued on page 4

REGISTRATION FORM

1987 Annual Meeting

of the

American Auditory Society

September 21, 1987

Best Western Inn of Chicago

162 E. Ohio Street at Michigan Ave.

Chicago, IL 60611

	Registration for Meeting Only		Registration for Meeting and Dinner/Cruise*	
	Before Sept. 1st	After Sept. 1st	Before Sept. 1st	After Sept. 1st
AAS Member	\$25.00	\$30.00	\$60.00	\$70.00
Non-Member	35.00	45.00	75.00	85.00
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*The dinner will be held on board the Star of Chicago. The cost of the dinner is partially subsidized for AAS members.

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Registration is non-refundable after September 7, 1987. A \$5.00 fee to cover administrative costs will be charged to those requesting a refund.

This meeting has been approved for 6 credit hours of Category 1 continuing medical education. ASHA and NIH's continuing education credit is pending. Registration and collection of fees for continuing education will occur at the meeting.

Meeting Abstracts

Continued from page 3

Spectral Analysis of ABR's from Patients with Cochlear and Retrocochlear Hearing Loss

Lynn G. Spivak
New York University Medical Center
Bellevue Hospital Center
New York, New York
and
Rochelle L. Malinoff
New York Eye and Ear Infirmary
New York, New York

There has been speculation that the ABR may contain pertinent information about the auditory system which is not readily apparent when analysis is limited to measurement of peak latencies and amplitudes. A recent report by Hall suggests that the spectral content of ABR's of head trauma patients may be abnormal, in spite of the fact that peak latencies and amplitudes are normal. The purpose of the present study was to investigate the potential contribution of spectral analysis of the ABR to diagnosis of auditory pathology.

ABR's were recorded from 97 subjects using 60dB SL rarefaction clicks presented at 11/s. Spectral analyses were performed on the ABR's of subjects with normal hearing (n=40), subjects with cochlear hearing loss (n=43), and subjects with surgically confirmed acoustic tumors (n=14). ABR's from subjects with cochlear and retrocochlear hearing loss were judged to have fair to good morphology. Ninety-five percent confidence intervals were calculated for the three major energy peaks in the spectra of normal ABR's. The frequency of these peaks agreed well with published literature. The spectral content of ABR's from ears with cochlear and retrocochlear lesions was compared to the normative data.

Spectral abnormalities involving at least one peak were present in the ABR's of 86 percent of the acoustic tumor patients. The largest proportion of abnormalities involved P2. Spectral abnormalities were considerably less frequent in the ABR's from ears contralateral to the acoustic tumor and in ABR's from ears with pure cochlear lesions. The results suggest that spectral analysis of the ABR may contribute to the differential diagnosis of auditory pathology.

Effect of Hypothermia on Auditory Brainstem Response in Man vs. Rat

James W. Hall III, Joan M. Bull
and Leslie H. Cronau
University of Texas Medical School
Houston, Texas

The effect of low body temperature (hypothermia) on the auditory brainstem response (ABR) has been repeatedly demonstrated in animal models and in the clinic. Latencies of ABR wave components increase exponentially as temperature decreases. Latency increases are greater for later waves (e.g. wave V) than for earlier waves (e.g. wave I). Less well studied is the effect of hyperthermia on the ABR. Gold and associates recently found decreased ABR latency and amplitude with elevation of body temperature in rats. There are no clinical reports of ABR and hyperthermia. We compared the effect of whole body hyperthermia on ABR latency and amplitude in man vs. rat.

ABR's were recorded during whole body hyperthermia with similar instrumentation and test protocol for 10 human subjects and 10 rats. Stimuli were clicks presented monaurally via Etymotic transducers and eartips for man, and a miniature receiver with plastic tubing secured in the external auditory meatus for rats. The response was detected with disk electrodes for man and with needle electrodes for rats, placed at the high forehead (positive) and earlobe (negative) positions. Core temperature was measured with a rectal thermistor.

Latency decreased as temperatures increased for man and rat. Latency changes were greatest for later waves. Amplitude remained constant or decreased with increased temperature.

In man, latency and amplitude returned to baseline values with return to normal temperatures. Rats were heated until systemic failure occurred. At temperatures between 43 and 43.5 degrees C, ABR amplitude rapidly diminished

and the response was no longer detectable. Clinical and basic science implications of these findings will be reviewed.

Speech Audiometry with the Elderly

M.L. Matthies, R.C. Bilger,
and L.A. Proctor
University of Illinois
Champaign, Illinois

The validity of speech audiometry is questionable if a patient's willingness to respond affects the obtained word recognition score. Elderly subjects' volition to respond may be related to the criterion effects debated by Rees & Botwinick and by Marshall & Jesteadt. Possible effects that could cause the understanding of speech to be underestimated include inattention, lack of cooperation, and unwillingness to respond to difficult stimuli.

The present analysis includes several data sets with subjects from 18 to 81 years of age tested with the Speech Perception in Noise test (SPIN) at a variety of signal-to-babble ratios (+8 to -2 dB). All subjects were tested at a single presentation level calculated as 50 dB above babble threshold. The data sets included subjects from the SPIN standardization study (n = 128), a hearing aid experiment (n = 40), a study of older listeners (n = 60), and subjects from a study of word recognition in noise (n = 86). All subjects were required to respond to all of the SPIN items, and the experimenters did not continue testing until a response had been given.

Statistical analyses concentrated on the question of whether an age effect occurred for those subjects falling outside of the specified relation between high and low context items. The relation between high and low predictability sentences is independent of hearing loss and is so precise that the tester can be assured when a valid result has been obtained. Goodness-of-fit analyses indicated that older subjects were no more likely to exhibit response biases than were younger subjects. Valid results on the SPIN test are obtained with elderly subjects by virtue of its design and the demand to respond to every item.

Reasons for Obtaining Hearing Aids: Do They Relate to Subsequent Benefits?

H. Gustav Mueller
Letterman Army Medical Center
Presidio of San Francisco, California
and
Donald R. Bender
Office of the Surgeon General
Fort Sheridan, Illinois

The selection of the hearing aid candidate is most frequently based on the degree of the individual's hearing impairment. This is only one of many indicators, however, which may contribute to overall success with amplification. In a previous paper, we identified several factors that prompted hearing impaired individuals to obtain hearing aids (e.g., communication problems in noise, encouragement from spouse, media promotional material). Seventeen different contributing factors were established, and the subjects ranked the factors with respect to significance. These rankings were obtained from 300 individuals, and all subjects were then fitted with hearing aids. (Subjects received their hearing aids free of charge from the military. Therefore, payment for the hearing aid was not a relevant measure of motivation.)

In the present follow-up study, conducted a year after the initial hearing aid fitting, it was questioned whether the original reason for obtaining amplification was related to subsequent use or benefit. For example, would someone who had independently sought amplification for communication assistance report more benefit than someone who obtained a hearing aid only because he was instructed to do so by an audiologist?

Each subject was mailed a short questionnaire, and 234 responses were returned. The questionnaire consisted of eight items, allowing the respondent to rate use of, benefit from, and satisfaction with the hearing aid(s). A five-point continuum was used for each item.

Hearing aid use, benefit, and satisfaction results were categorized according to the original reasons stated by the subject for obtaining

amplification. While the groups were not matched for hearing loss, mean audiograms were relatively similar. It had been previously determined that three of the leading reasons for obtaining a hearing aid were communication difficulties in noise, encouragement from spouse, and advice from a medical professional (audiologist). Interesting differences and unexpected similarities regarding hearing aid use and benefit were noted among these groups. For example, the group that many would consider to be the best candidates for hearing aid use would be those individuals stating a need for a hearing aid because of communication problems in noise. This group, however, reported significantly less use of hearing aids than did the other two groups. A second unexpected finding was that the reported benefit and satisfaction from hearing aids was essentially the same for all three of these groups. This suggests that a perceived need for a hearing aid may not be a prerequisite for subsequent success, if appropriate encouragement and counseling is provided. Of the seventeen groups studied, greater satisfaction from hearing aids was reported from the group who sought amplification because of communication problems in primarily quiet listening situations. Paradoxically, these individuals reported the lowest use rate.

These and other findings of this survey suggest that it is difficult to predict benefit and satisfaction obtained from hearing aid use based solely on the patient's original reason for obtaining amplification. Importantly, these results indicate that successful hearing aid fittings occur frequently for patients who are not self-motivated to obtain hearing aids.

Characteristics of the Electrical ABR

Robert C. Fifer and Michael A. Novak
Carle Clinic Association
Urbana, Illinois

As the field of cochlear implant rehabilitation moves into the pediatric population, a need exists for objective tests to evaluate candidacy and to monitor performance. One such test is the electrical auditory brainstem response (EABR). Researchers use this procedure to obtain data regarding the status of the VIIIth nerve to determine potential benefit from the implant system. This matter becomes particularly important in the very young children with etiologies of hearing loss that detrimentally influence VIIIth nerve survival in addition to cochlear function. In this paper, we present some unexpected characteristics of the EABR recorded from a pediatric cochlear implant candidate.

The patient is a 2 year, 10 month old child who acquired pneumococcal meningitis at age 2 years 5 months. The resulting hearing loss was profound in degree with absence of response to auditory stimulation at 134 dB SPL measured in the ear canal. EABR measurements were obtained at the time of implant surgery

using a stainless steel needle electrode placed on the round window through a mastoid/facial recess approach to the middle ear. We used a Nicolet CA1000 to record the responses and a component somatosensory stimulator to deliver the electrical pulses. One hundred microsecond pulses were delivered to the round window at rates of 1, 2, and 13 per second. After finding the stimulation level that produced facial motion, the intensity was decreased to the minimum level and then increased in a series of steps to evaluate the EABR function.

A stimulation level of 17 milliamps (mA) (dial reading) was necessary to elicit facial muscle contraction. However, we made video recordings of the stapedius muscle activation at levels as low as 1 and 2 mA. A signal averaged recording was not observed until 4 mA. At that level, a vertex-positive peak appeared at approximately 3.5 msec. The wave at that latency demonstrated an intensity-amplitude growth function through 10 mA similar to those seen for acoustically elicited ABR's.

When the child was paralyzed with Tracrium, a non-depolarizing skeletal muscle relaxant, the morphology of the signal averaged response changed dramatically. Instead of the large wave and relatively low threshold, higher intensities were needed to elicit waveforms that consisted of two small amplitude waves (0.1 to 0.3 uV) at latencies of approximately 3.5 msec and 4.5 msec. Moreover, at high levels of stimulation further growth in waveform amplitude was not apparent.

It appears from these observations that the EABR elicited with a needle electrode is heavily contaminated with stapedial and/or facial muscle activity. In contrast to the unparalyzed waveforms, the actual EABR is of relatively small and constant amplitude. This finding represents an "all-or-none" phenomenon of VIIIth nerve excitation that does not change with increasing electrical stimulus intensities.

Electrically Evoked Middle Latency Responses in Man, Monkey, and Guinea Pig

J.M. Miller, M.J. Burton, and P. Kileny
University of Michigan
Ann Arbor, Michigan

Electrically evoked middle latency responses (EMLR) have been studied to assess their utility in the selection of candidates for cochlear prosthesis implantation. With promontory stimulation in humans, our studies indicate that the EMLR may be elicited by pulsatile electrical stimulation. The characteristics of the response are similar to those observed with acoustic stimulation in normal hearing subjects, and responses may be recorded uncontaminated by electrical artifact. Comparative studies in profoundly deaf patients indicate that the threshold of the EMLR is comparable

Continued on page 6

IVth INTERNATIONAL SYMPOSIUM ON AUDIOLOGICAL MEDICINE

The International Association of Physicians in Audiology (I.A.P.A.) will have its Fourth Symposium in Tenerife, Canary Islands, Spain, November 8-13, 1987.

The scientific program will include round table discussions with invited speakers, together with free paper sessions on the two main themes:

1. THE STATE OF THE ART OF AUDITORY EVALUATION

Overview and evaluation of the hearing impaired child, methods of investigating a unilateral hearing loss, audiological training for ENT surgeons.

2. IMAGING CONTRIBUTIONS TO AUDITORY DIAGNOSIS

Computed tomography; magnetic resonance imaging; brain mapping; auditory evoked magnetic fields; single proton emission computed tomography and its diagnostic applications in the anatomy of the auditory system, in diseases of the otic capsule, in sensorineural hearing loss of the cochlear type, and in the retrocochlear pathology of sensorineural hearing loss.

For further information, contact:

Dr. Jose J. Barajas
Perez de Rozas, 8
38004 Santa Cruz de Tenerife
Canary Islands, Spain
Phone: (22) 27.54.88

Meeting Abstracts

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to behavioral electrical thresholds. On the average, behavioral thresholds are 5-10 microamps lower than EMLR thresholds.

EMLR's were compared in humans, monkeys, and guinea pigs implanted with scala tympani electrodes. Their characteristics vary as predicted by auditory evoked MLR's in these species. In acute guinea pig preparations, acoustically and electrically evoked MLR's were demonstrated to be quantitatively similar: latency and amplitude input-output functions are comparable. EMLR's in the guinea pig have also been compared for promontory, round window, scala tympani, and modiolar stimulation sites. Promontory stimulation was found to elicit EMLR's only variably, in spite of placing the electrode at times in indentations in the thin lateral wall bone of the guinea pig cochlea. Round window stimulation was found to be equal in effectiveness to scala tympani stimulation. Modiolar stimulation demonstrated the lowest threshold and the steepest input-output function. Thus, the dynamic range of modiolar input-output functions tended to be smaller than that for scala tympani and round window stimulation, reflecting electro-anatomical features of the inner ear.

The EMLR would appear to be an appropriate measure for evaluation of the excitability of the central auditory pathways with electrical stimulation in the prospective implant candidate. On the basis of animal investigations, it would appear that round window stimulation sites are clearly superior to promontory sites and may be equivalent to intracochlear sites in their effectiveness and reliability of eliciting EMLR's.

Comparative Study of Hearing Aids and Cochlear Implants in Children

Barbara A. Bell and Lisa L. Tonokawa
House Ear Institute
Los Angeles, California

The effects of ongoing training, maturation, and the "halo" effect on children with the 3M/House cochlear implant have long been concerns of many professionals. It is difficult to separate these factors to determine the benefit of the cochlear implant alone in the development of auditory skills. We compared the amount of auditory improvement with hearing aids to the amount of improvement with cochlear implants in 31 children who wear both devices. This was done by comparing improvements in their implanted ear to changes in their hearing aid ear. We found that unaided thresholds to warble tones and speech stimuli remained consistent from pre- to post-test sessions for both ears. Thresholds were significantly improved from pre-implant with a hearing aid to post-implant with the cochlear implant in the implanted ear. In the non-implanted ear, aided thresholds remained the same.

On the Discrimination After Training test, before implantation, the mean aided score was 1.4 for the implanted ear. With the implant, that score was 7.9. For the non-implanted ear, the aided mean score improved from 2.8 at pre-evaluation to 3.5 at the post-test. Average follow-up time was two years. On the Test of Auditory Comprehension, the pre-implant mean score for the implanted ear was 0 and improved to 1.2 with the implant. The non-implanted ear had a pre-implant mean score of 0.3 with little change at a follow-up (mean = 0.2).

The implanted ear improved more than did the hearing aid ear. The little improvement

measured with the use of a hearing aid for an average period of two years represents what might be expected from training and/or maturation. The much greater improvement with the cochlear implant is even more striking when we consider that the hearing aid results represent the preoperatively better-hearing ear. Since both ears of each child were subjected to the same training and experience, results indicate that the cochlear implant provides significant benefit beyond potential benefits with hearing aids over time.

Short Term Auditory Memory in a Patient with Cochlear Implant

Susan Jerger, Karen Johnson,
Rose Chmiel, and James Jerger
Baylor College of Medicine
Houston, Texas

Information processing theories represent speech perception as a sequence of events involving registration, encoding, storage, and identification of information. Within this theoretical framework, the role of short-term storage mechanisms is viewed as crucial for speech comprehension. Speech sounds arrive sequentially and must be held in storage until sufficient information accumulates for identification by higher level perceptual processes.

The aim of this research was to study short term auditory memory in a patient with a cochlear implant. These specific questions were addressed: Does electrical stimulation of an impaired auditory system produce a memory trace in short-term auditory memory that aids processing? If yes, is this electrically induced memory trace differentially vulnerable to interference by new input as in normal hearing listeners?

The subject was a 36-year-old male with severe, bilateral, sensorineural hearing loss of approximately 6 years' duration. The loss had occurred after ototoxic drug therapy. The patient had worn a cochlear implant for 13 months. He

was considered a successful user.

The experimental tasks involved serial recall of auditorily presented digits. A stable characteristic of auditory serial recall tasks is superior recall for the last presented item, termed the "recency effect". A widely held assumption is that improved performance for the terminal item is due to the echoic component of short term auditory memory. The standard explanation is that immediately following list presentation, the last presented item continues to be represented in short term auditory memory and augments recall. Thus, the magnitude of the recency effect is an index of whether an echoic representation of auditory input is available to aid processing.

If an auditorily presented list is followed by an additional, irrelevant auditory item, the recency effect is selectively reduced. This effect, called the "suffix effect", is usually attributed to the erasure of echoic information. The precise conditions under which a suffix effect occurs have been explored as a means of studying the characteristics of short term auditory memory. For example, experimental findings have consistently indicated that echoic memory of spoken materials is not sensitive to meaning, but is highly sensitive to the speech-nonspeech distinction. Thus, the magnitude of the suffix effect for lists followed by an irrelevant speech item vs. an irrelevant noise should provide an index of how well the speech vs. nonspeech distinction is encoded by the cochlear implant.

The significance of the central auditory mechanisms underlying speech comprehension in patients with cochlear implants will be discussed.

Continued on page 6

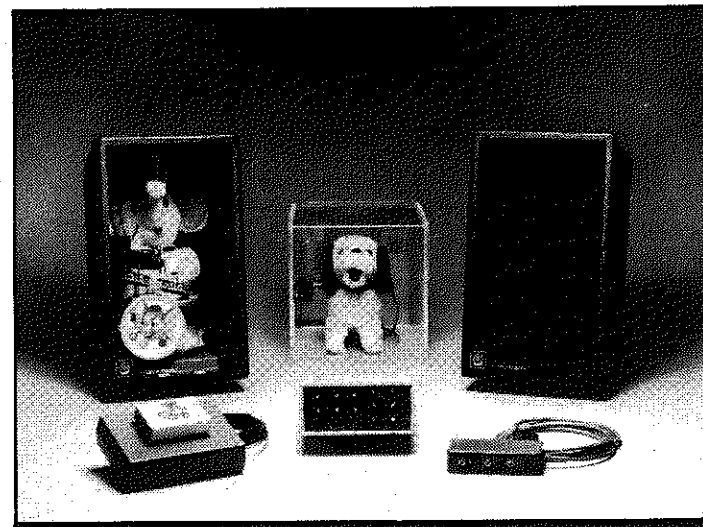
15th Annual Convention of the
Southern Audiological Society
September 11-14, 1987 aboard the *Carnivale*
Contact: Robert Harrison, Ph.D.
Audiology-Speech Pathology (R56)
University of Miami School of Medicine
P.O. Box 016960, Miami, FL 33101
305/549-6451

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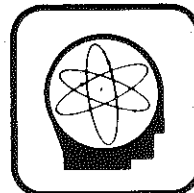
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Meeting Abstracts

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Clinical Update: Speech Recognition Abilities of Nucleus 22 Channel Cochlear Implant Recipients Using the F0/F1/F2 Speech Feature Extraction Coding Strategy

A.L. Beiter, J.A. Brimacombe,
and M.J. Barker
Cochlear Corporation
Englewood, Colorado

Three month post-operative scores for Nucleus multichannel cochlear implant recipients were obtained on several speech recognition tests. The coding strategy used by all subjects was that which extrated from ongoing speech estimates of the fundamental frequency, first and second formants, and their respective amplitudes. The NU-6 word test was the most difficult, with a mean score for the group of less than 10 percent. Although CID Sentences and Iowa Sentences were somewhat easier (means of 20 percent and 24 percent, respectively), the variability in scores was large, with some subjects scoring 0 percent and others scoring greater than 50 percent on these sentence materials. Mean scores on all three speech recognition measures were significantly higher than those obtained with subjects using the earlier F0/F2 coding strategy.

In addition, speechreading abilities while using the cochlear prosthesis were significantly improved, as evidenced by a mean score of 31 percent on the Visual Enhancement subtest of the Minimal Auditory Capabilities Battery, as well as by a mean difference score of 30 words per minute (wpm) for two conditons of speech tracking ("speechreading + hearing" and "speechreading only"). For a subset of the group in which speech tracking "hearing only" was attempted, a mean tracking rate of 25 wpm

was achieved. Again, tremendous variability was seen with the lower 25 percent of subjects tracking at less than 17 wpm and the upper 25 percent tracking at rates higher than 40 wpm.

Seventy-one percent of the subjects reported using the phone, and of these, 50 percent recognized enough speech to use the phone interactively, i.e., without a code. Sentences developed at the Psycho-Acoustic Laboratory were administered over the phone interactively. These results will be presented in this paper.

Finally, longitudinal speech recognition scores on a subset of the subjects showed a consistent trend of improved performance over time. Both mean and individual data will be presented.

Auditory and Linguistic Performance in a Young Multichannel Cochlear Implant Child

Margery N. Somers
House Ear Institute
Los Angeles, California

In October of 1986, the Nucleus multichannel cochlear implant was approved for trials in children aged 2 to 9 years. The first young child in North America to receive this device, a five-year-old boy, was implanted at the House Ear Institute in February, 1987, 8 months after meningitis left him profoundly deaf.

This study is examining selected linguistic and auditory skills in three environmental contexts: classroom, therapy and home. Because this first child just received his device, the study is not yet complete. However, considerable data will be available by September of this year.

In this study the child's skills are assessed pre-operatively and reassessed monthly between April and September, 1987. Auditory skills will have been rated monthly by the child's teacher. The child's ability to respond to auditory stimuli in a classroom or therapy setting is being evaluated with a scale developed to assess awareness/detection, identification, discrimination, and comprehension.

Pre- and post-implant communicative interactions are videotaped to assess pragmatic functions of linguistic development, in particular, the discourse skills of topic initiation and topic maintenance. Discourse analyses are performed monthly with transcription of the video taped events. The number of initiations by the child are counted in relation to the total number of initiations by the child and his discourse partner. The number of contingent turns taken by the child are also noted. Monthly evaluations are done both in the home and in the school settings.

Since this child so recently received the multichannel implant, limited post-implant data are available. Pre-implant and one month post-implant findings follow.

Pre-implant data revealed no consistent auditory awareness or detection of sound or speech, and no discrimination or comprehension skills. Ratings were 1.0 (seldom/never) to auditory responses in all areas.

Post-implant data at one month showed consistent awareness and detection to sound and speech. Ratings were 1.8, revealing consistent responses above chance, but not at the 100 percent correct level. Discrimination abilities were consistent on specific closed set tasks (2.0). No comprehension skills were evident at one month post-implant.

Since loss of hearing, this child has been hesitant to initiate topics and has been unable to maintain a topic during communicative interactions in school and in home contexts.

At one month post-implant, increased attention skills in communicative interactions were evident. Topic initiation and topic maintenance

analyses showed increased skills in both pragmatic functions.

Functional assessment in varying environmental contexts can provide a different profile of abilities than can clinical evaluations, and is an important adjunct to the testing that is typically done. Comparison of pre- and post-implant results will help to define the full benefits of the multichannel cochlear implant.

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Urbana, Illinois 61801

ANSWERS TO TRIVIA QUESTIONS:

- A1: Virginia Berry.
(Our thanks to an anonymous police informant.)
- A2: Mexico.
(Our thanks to Mitchell B. Kramer, Ph.D. of Rutland, Vermont.)
- A3: Celsus, in the First Century A.D.
- A4: Paracetus of Willis.
- A5: Method of constant stimuli.
- A6: As an insect repellent.
- A7: Lovelace Clinic, in Albuquerque, NM.
- A8: Mid-States Laboratories of Wichita, KS.
- A9: -3dB per octave.
- A10: Forward masking.
- A11: The scala vestibuli.
- A12: Jewett (ABR Waves I-V).

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San Diego was Site of ADA Meeting

The Academy of Dispensing Audiologists (ADA) held their annual meeting at the Princess Resort in San Diego, CA, from the 26th to the 29th of May, 1987. Members enjoyed the educational offerings of an impressive array of speakers and other participants, as well as the recreational opportunities which abound in the San Diego area.

A new feature of the annual conference was an evening devoted to forum-type discussions of various topics related to the business aspects of dispensing. These sessions focused on professional and product liability, marketing strategies, the value of marketing consultation, and the importance of referral sources to one's practice.

The keynote address of the conference was given by president-elect, John House, M.D. Dr. House emphasized the importance to audiologists of adequate physician awareness and of patient education.

Following this talk were panel discussions on the subjects of quality control in hearing aid manufacture and unfair competition from non-profit organizations. Finally, the program included a talk on professional burnout by Donn O'Neil (San Diego's Sharp Memorial Hospital), and a presentation on marketing by Kathleen Griffin (American College of Health Care Administrators, Bethesda, MD) and by Michael Pollack (Professional Hearing Services, Akron, OH).

In addition to providing stimulating lectures and discussions, the meeting afforded an opportunity to watch demonstrations on various procedures used in the modification of hearing aids. Bud Raas (Earmold Design in Minneapolis) and Tana Triantos (Siemens Hearing Instruments) coordinated this part of the program.

The ADA's next annual conference is scheduled for May 11-13, 1988, in Orlando, FL. The tradition of stimulating meetings is expected to continue.

Professionals Convene for Second Annual Children's Cochlear Implant Conference

A three-day conference addressing the progress and challenges of the multichannel children's cochlear implant program was held in Wild Dunes, South Carolina, June 19-21, 1987.

The conference, sponsored by the Denver-based Cochlear Corporation, focused on the need for extensive interaction among deaf education facilities and medical centers involved with the rehabilitation of implanted children. Participants concluded that a multi-disciplinary team of medical and allied health professionals is essential to ensure that children with cochlear implants are not left to cope with new sound sensation without comprehensive rehabilitation. Further, they concluded that parents need to be strong advocates of the mandatory special education granted them by law for their children.

Herman Jenkins, M.D., of the Baylor College of Medicine, Houston, chaired a surgeon's panel, which addressed the crucial issues associated with surgically implanting multichannel devices in children. Their discussions were directed towards anatomical considerations and surgical techniques unique to children.

The conference was attended by 100 professionals representing audiology, otology, deaf education, speech-language pathology, and allied health professions invited from clinical centers and educational sites across the country, as well as from Australia and England.

One paper, "Teaming with Educational Sites: Maximizing the Clinical Center/School Relationship", presented by Margery Somers, Ph.D.,

of the House Ear Institute in Los Angeles, communicated the importance of mainstreaming implanted children into public schools, but, stressed the need for continued special education.

Another paper, "Responsibilities of a Sponsor/Monitor and Investigator", delivered by Dave Segerson of the U.S. Food and Drug Administration, emphasized that participating centers should carefully follow the protocol to comply with FDA regulations and to evaluate fully the benefits of the Nucleus 22 channel implant for children.

In addition to round table discussions and case summaries, keynote speakers presented these additional papers: "Developmental Implications for Auditory Prosthesis", delivered by Ben Clopton, Ph.D., Kresge Institute, Ann Arbor, Michigan; "Growth of the Mastoid and Facial Recess", "Clinical Predictors of Spiral Ganglion Survival", given by Joseph Nadol, M.D., Massachusetts Eye and Ear Hospital, Boston, and "Speech Production Changes Following a Cochlear Implant: Implications for Children", presented by Emily Tobey, Ph.D., Louisiana State University Medical Center, New Orleans.

Work is currently underway to publish a synopsis of the round table discussions, as well as a summary of the surgeon's meeting.

For more information contact Dianne J. Mecklenburg, Ph.D., Cochlear Corporation, 61 Inverness Drive East, Englewood, CO 80112, 1-800-523-5798.

1986 AAS MEETING AVAILABLE ON VIDEOTAPE

The 1986 meeting of the American Auditory Society is now available on videotape.

The videotape is approximately 6 hours in duration. It includes the Carhart Memorial Lecture by Joseph E. Hawkins entitled

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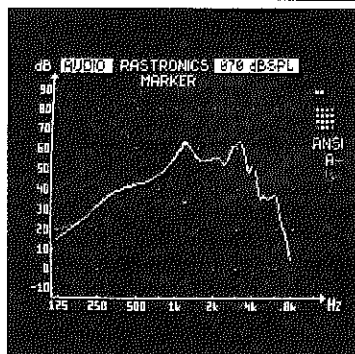
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CORTI'S ORGAN

The Official House Organ of The American Auditory Society

Volume 11, No. 6

Fall/Winter 1987

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1987 Annual Meeting Big Hit

Nearly 250 people converged on the Inn of Chicago on Monday, September 21, for the 1987 annual meeting of the American Auditory Society. It was one of our largest turn-outs for a meeting held in conjunction with the American Academy of Otolaryngology.

Laszlo Stein of Michael Reese Hospital in Chicago served as Program Chair for the meeting. His Program Committee is to be commended for the excellent job done on the format of the program and on its organization. A series of outstanding papers was presented covering many contemporary issues of interest to all of us. A special tutorial session was scheduled entitled "An Update on Advances in Hearing Aid Technology". Experts from the fields of hearing aid fitting and research discussed significant issues relevant to amplification. The entire day was filled with dynamic and interesting papers, with quality time provided

for exchange of information among participants.

Certainly, one of the parts of this year's meeting that made it such a success was the Carhart Memorial Lecture delivered by Dr. Peter Dallos of Northwestern University. His topic, neuro-sensory development, was timely and most intriguing. A special treat was the presence of Mrs. Raymond Carhart as our guest at the special lecture given in tribute of her late husband. We were thrilled to have her with us.

The 1987 Business Meeting was also a highlight of this year's conference. President Bergstrom presided and welcomed everyone to our 14th Annual Meeting. Many special awards were given, including Ear and Hearing Editor's Awards and the Beltone Award for Distinguished Teacher in Audiology. (Articles

describing these may be found in this issue.)

The day of professional activity was topped off with an outstanding evening of dining, fun, and entertainment. David Hill, Chair of local arrangements, saw to it that our day did not end on a dull note. Society members and guests "let their hair down" on a gala cruise around the lights of Chicago on the Star of Chicago. A gourmet-delight of a buffet dinner was served. Participants then enjoyed dancing and revelry for the remaining time on board this wonderful ship. All who attended agreed that this was a perfect end to a perfect day!

Needless to say, this year's annual meeting will long be remembered by those who attended.

Those who didn't attend, wish now that they had. Now, it's time to count the days till Boston!!



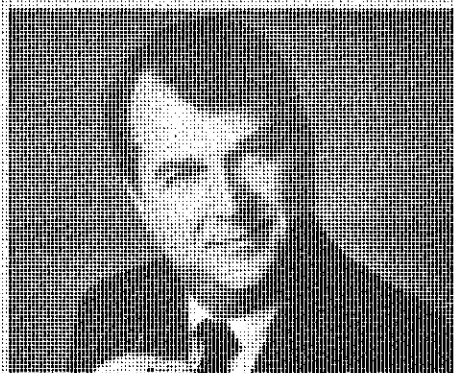
Dr. Peter Dallos, 1987 Carhart lecturer and Mrs. Raymond Carhart who was a guest of the Society

Otolaryngology

Welcome New Executive Committee Members

The 1987 elections have been cast, and the new Executive Committee members are in place. All candidates were outstanding performers and helped to make this year's election a tough one.

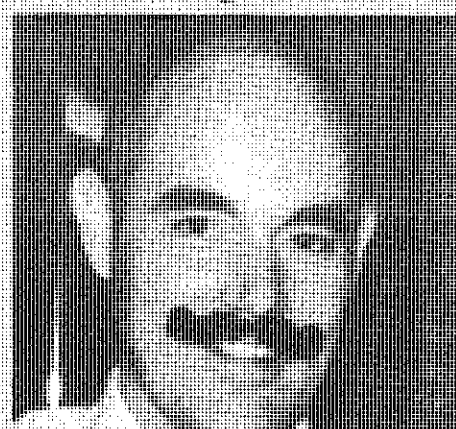
Welcome aboard, new Executive Committee Members!



J. Gail Neely, M.D., F.A.C.S., Professor and Head, Department of Otolaryngology, College of Medicine, University of Oklahoma, Oklahoma City, Oklahoma. Fellowship, Otolaryngology, The Otolaryngology Medical Group, 1973-75. Otolaryngology residency, Baylor College of Medicine, 1969-72. M.D., University of Oklahoma, 1965. B.S., Biology and Chemistry, Central State University, Edmond, OK.



B. Hill Britton, M.D., Associate Professor, Section of Otolaryngology, The Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC. Otolaryngology Fellowship, The Otolaryngology Medical Group, 1968. Otolaryngology residency, 1964-1968. M.D., University of Oklahoma, 1960. B.A., University of Oklahoma, 1956.



Neal C. Killion, Ph.D., President, Dynamic Research, Elk Grove Village, IL. Adjunct Professor of Audiology, Northwestern University, Ph.D., Audiology, Northwestern University, 1978. M.S., Mathematics, Illinois Institute of Technology, 1970. A.B., Mathematics, Wake Forest College, 1961.

Audiology



Deborah Haynes, Ph.D., Director, Audiology and Speech Pathology, The Children's Hospital, Denver, Ph.D., Baylor College of Medicine, 1976. M.A., 1972. B.S., Northwestern University, 1971.

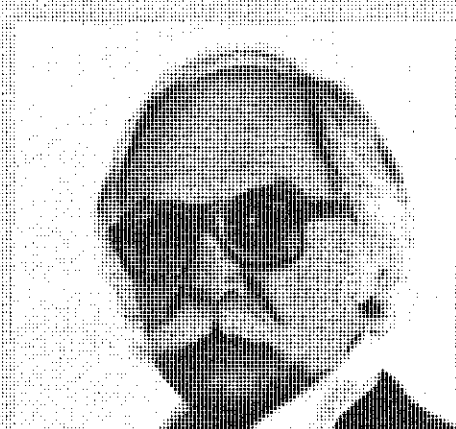


Frank E. Musiek, Ph.D., Director of Audiology and Professor of Otolaryngology and Neurology, Dartmouth-Hitchcock Medical Center, Hanover, NH. Ph.D., Case Western Reserve University, 1975. M.A., Kent State University, 1971. B.S., Edinboro University, 1963.



James H. Curran, M.S., Research Audiologist and Professional Accounts Manager, Starkey Laboratories, Minneapolis. M.S., Communication Disorders, University of Wisconsin, 1962. B.S., Speech Pathology, University of Minnesota, 1961.

Industry



William F. Carver, Ph.D., President, ALHTECH, St. Louis. Ph.D., Audiology, 1967. M.A., Speech Pathology and Audiology, 1965. B.A., Psychology, 1963, 1964.

Letter to the Editor

Dear Corti's Staff:

I would like to take this opportunity to thank you for the visibility you have provided SHARE in past issues. Members of AAS have been very supportive of the SHARE program with their donations of books and cash. The program is now established in several countries, but additional materials are still needed for future distribution.

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Thanks again for all your help and keep up the good work.

Sincerely,
Bob Keith

(Editor's Note: For those not familiar with the SHARE program, a description is included below).

Speech and Hearing Alliance for Resource Exchange



The primary purpose of SHARE is to assist in the international development of Audiology and Speech/Language Pathology training programs and services through the sharing of surplus textbooks, journals, reprints or other materials and resources.

A secondary purpose is to share experiences and information among persons with the common interest of helping the communicatively impaired.

The primary recipients of these resources are training or clinical programs located in developing nations that do not have the means to purchase journals and textbooks necessary for professionals who serve the communicatively handicapped in their countries. Individual requests for materials will also be honored.

Books, journals, and other materials are obtained through donations from individuals and libraries. Although more recent editions of textbooks are most useful, any edition can be of help as background information for beginning scholars and as a reference for more advanced professionals. In addition, recent volumes of professional journals serve as valuable resources.

The conduit for distributing these materials is the Communicative Disorders Foundation, a non-profit, tax-exempt foundation. The Communicative Disorders Foundation has obtained a start-up donation to cover expenses of forwarding materials to recipients. Additional grants and donations are being solicited. Gifts of books, journals, materials, or cash are acknowledged in writing by the Communication Disorders Foundation.

Suitable recipients will be forwarded materials appropriate to their stated needs. A stipulation of the exchange is that materials will be placed in libraries where they will be generally available to scholars.

Any donations of resources or letters of inquiry should be addressed to:

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The President's Corner

Count Your Blessings and Your Decibels

This late summer and early fall I spent five weeks in China — my second trip there. I spent two weeks in Beijing attending the first International Otorhinolaryngology/Head and Neck Surgery Conference. After that we toured Xian, Shanghai and other cities. In Hangzhou when we toured a silk factory I pushed my tragus into my external ear meatus and for good measure folded my ear lobes over the tragus and kept them in place with my index fingers, which reduced the roar of the machines to a distant whisper. I used this technique everywhere we toured factories. On a flight to Jiuquan in the Gansu province I sat right next to the propellers and used the same technique, which interfered a little bit with picture-taking. Thus far I had conserved my hearing, which had been at or near zero dB all the way out to 8K Hz.

In the last city we visited on the Silk Road Tour, Urumqi, which is about 400 km from Russia, we had a lovely hotel with all the amenities. One "amenity" I will describe. Between the beds in all the hotels there is a console with controls for TV, radio, air conditioning, and lights. I did not notice that an alarm clock had been added. At 5:15 a.m. I came violently awake because a painful high

pitched crescendoing alarm went off. I hit the off button quickly, but immediately noted loud tinnitus in my right ear which was on the side of the noise. The head shadow *does* work. My left ear was OK, and several hours later the tinnitus subsided. The next morning the same thing happened only I couldn't find the button, so I faced the console and got a moderate dose of excess noise to my left ear before I found the right button pushed. I was rewarded with left tinnitus and recurrent tinnitus in the right ear also. I plan to write the Chairman of the Chinese Academy of Medical Sciences, who is an otolaryngologist and a member of the Communist Party, hoping that perhaps he can influence the Chinese to provide a more pleasant and safe wake-up call.

Hearing conservation is not practiced in China!

An audiogram today shows a 4K Hz dip to 20dB in the right ear and a 6K Hz dip to 30dB in the left ear. I am building up a supply of earplugs! The deficit at 8K Hz is 10dB in the right ear, 25dB in the left.

— LaVonne Bergstrom

From the Editor

With the close of this year's annual meeting and the completion of over eleven years of Society membership, I had a startling revelation. AAS has grown! That, by itself, is not so overwhelming. Our growth has not been in numbers alone.

What I find even more significant than increased attendance at meetings or doubled membership rolls is the reason behind the growth. Our interests are changing; our specialties are broadening. No longer are we simply a group of hearing professionals involved in diagnosis and rehabilitation. We have evolved into marketing experts, financial analysts, environmentalists, and much more.

As I looked around at the annual meeting, I saw many old faces but with new complexions. It was refreshing to see members who have

been involved with AAS since its creation, discussing new areas of involvement, but having just as much fun doing it. They did see the need to "re-invent the wheel" and many professionals often do. AAS has not been comfortable with standing still. It always challenged its members to add different dimensions other than those considered traditional.

This year, we had members travel to China; we had members affiliate with special interest groups; we had controversies addressed; we had members honored for accomplishments. I'm excited about what 1988 holds. I look forward to another eleven years as an AAS member. They're guaranteed to be filled with changes!

— Virginia S. Berry

Editorial Comments Concerning the Role of Medicare in the Hearing Aid Delivery System

By Matthew W.F. Smith, M.Sc., CCC-A

Editor's Note: The following was presented to the ASHA Legislative Council during the 1987 Annual Convention in New Orleans. Matt Smith, Features Editor for Corti's, welcomes your comments and feedback.

ASHA's governmental affairs group is currently lobbying Congress with a proposal to involve Medicare in the delivery of hearing aids. While at face value this would appear to be a noble thing to do, looking beyond the surface I see serious problems which could destroy the fiscal integrity of the Social Security Trust Fund, could almost certainly guarantee the lowest standard of hearing health care for the largest group of hearing impaired consumers, and, last but not least, could destroy the autonomy and economic feasibility of the private practice of audiology in America.

With our national debt soaring and the Social Security System struggling to keep afloat at current benefit levels, such a proposal seems fiscally irresponsible. I cannot see how Congress could even consider increasing benefits.

This idea becomes even more fiscally irresponsible when you consider the demographics of the twenty-first century. In the year 2010, the biggest population group in America, the Baby Boomers, will cross the Medicare threshold age. With presbycusis hearing loss a statistical certainty in ten to fifteen percent of this population group, I see a sudden demand for benefits that will almost certainly swamp the Social Security trust.

While the Baby Boom population surge into Medicare eligibility is a serious problem, more serious is the problem of the Baby Bust group, those born in the years following the Boomers. There is a population deficit in this group,

which should be paying into Social Security while the Boomers are drawing benefits from Social Security.

Increased benefits plus increased beneficiaries supported by fewer contributors is a formula for fiscal disaster.

A proposal which offers reimbursement of one hearing aid per person per three years would almost virtually guarantee failure of hearing aid use by a large portion of the beneficiary group. Since there would be no incentive to buy one aid now and another one in three years for the other most initial fittings would be monaural. Most presbycusis hearing loss is bilateral, symmetrical, and since we now know binaural fittings afford the best results, would be assuring substandard care. While the monaural hearing aid fitting is considerably less than perfect, it would likely add to the collection of horror stories of "how bad hearing aids are". As a result, second aid would not be purchased, and a negative attitude would be fostered and forced. Would you advocate a system of only funded the purchases of monocular binocularly symmetrical visual problems course not. Then why is ASHA advocating a proposal to encourage monaural hearing use with binaural hearing loss?

Further, the ASHA proposal suggests Congress would mandate a cap of \$500 for hearing aids. This is unacceptable today considering the overhead expenses incurred in private practice. With the next round of inflation, this would become an economic nightmare for the private audiologist.

This would stall research and development

Continued on p.

Family Physician Targeted in New BHI PSA Featuring *L.A. Law* TV Series Star

Richard Dysart, starring in the top-rated NBC-TV drama series *L.A. Law*, appears in a new Better Hearing Institute television public service announcement encouraging hard-of-hearing viewers to benefit from available hearing help. The announcement is designed to increase the family doctor's awareness of his important role in helping people with hearing problems.

The PSA was filmed at the Santa Monica home of Dysart, who uses hearing aids himself to correct a hearing loss. Dysart plays senior partner Leland McKenzie on *L.A. Law*, which aired a special November 19th episode featuring hearing help. In the segment, McKenzie battled his vanity and admitted he needed a hearing aid when he went to court to fight an age-discrimination case.

BHI president Richard Burger said that Dysart's PSA, scheduled for February release to the major networks and local stations in the top U.S. markets, should be especially effective in inspiring others with hearing loss to benefit from available hearing help. He emphasized that the PSA benefits from marketing studies conducted by the Hearing Industries Association and the Institute, and supports other family physician projects being implemented cooperatively by both organizations.

Dysart's PSA is the latest in BHI's award-winning series featuring famous people who overcame hearing loss. Other PSA stars include Eddie Albert, Art Carney, Bill Cosby, Norm Crosby, Phyllis Diller, Nanette Fabray, Lou Ferrigno, Henry Fonda, Lorne Greene, Florence Henderson, Bob Hope, Jack Klugman, Arnold Palmer, Burt Reynolds, Richard Thomas, Charlene Tilton, and Keenan Wynn.

Editorial Comments

Continued from page 2

digital hearing aids which would initially exceed \$1000 per unit, wholesale cost. This would virtually guarantee that Medicare beneficiaries would get the *cheapest*, not necessarily the *best* hearing devices available. We owe our patients much more than that!

The ASHA proposal to Congress mandates a 30 day trial period with 100% refund if not successful. This offends me and worries me for three reasons:

1) The Federal Trade Commission, after years of testimony, including ASHA's, determined that a mandatory trial period and mandatory refund policy is not needed. Is ASHA making an end run around the FTC?

2) Hearing aid fittings which are acoustically perfect often fail because of patient motivation problems. A 100% refund would encourage frivolous trials, and implies that we should not be compensated for our time expended with the patient.

3) What other prosthetic device can be returned after trial? None. By mandating a return privilege for hearing aids, the implication is made that we don't know what we're doing with hearing aids.

Another concern of mine is that this proposal, which appears to attempt exclusion of the traditional hearing aid dispensers from Medicare, borders on an anti-trust action which could put ASHA at risk for litigation from the National Hearing Aid Society and others. Much as we dislike their existence, they have every legal right to participate in any governmental program.

Regarding professional autonomy, Medicare has placed the Speech-Language Pathologist in the position of technician, directed and supervised by physicians, who are least qualified to supervise. I do not want to see audiologists end up in this position.

Finally, our experience with Medicaid and other third party carriers suggests that the best way to economically cripple our profession would be to put 85% of our target market under government run insurance programs.

I have jokingly told my friends and colleagues that I'm taking home study courses in truck driving. If ASHA's proposal is successful with Congress, I'm afraid this will no longer be a joke.

Please rein in this proposal until the entire membership can consider it. Our patients' future care and our profession's future existence depend on you!



"L.A. Law" TV series star Richard Dysart discusses his BHI PSA script with Institute director Joe Rizzo.

Old AAS Friends Enjoy Reunion on Evening Cruise



Aural Rehabilitation Forum

A Family Systems Approach to Disabilities: The Hearing-Disordered and Alcoholic Families

Sharon I. Eve, MA, MFC
Alcoholism Center for Women
Los Angeles, California

Editor's Note: Ms. Eve is a psychotherapist in private practice in Playa del Rey, California, who until recently occupied a position as Director of Programs and Clinical Supervisor at the Alcoholism Center for Women. She currently serves on the Board of Directors of the Disabilities/Substance Abuse Task Force in Los Angeles, and has authored several articles on alcoholic family issues.

Loneliness, fear, anger, confusion, resentment. It has been noted in recent years (Wegscheider, 1980, 1981; Ackerman, 1983) how these feelings have come to appear in the alcoholic family system as alcoholism progresses. Through consultation between the author, a psychotherapist, and audiologists, it has become apparent that some similarities exist between the dynamics found in the alcoholic family system and in the hearing-disordered family in which at least one member is suffering an untreated and often progressive, acquired hearing loss. A systems approach will be utilized to examine the individual suffering from the disability, the family members, and implications for treatment.

Alcoholism and Acquired Hearing Loss

Alcoholism and hearing loss have many features in common as well as differences. Hearing loss may be, as alcoholism is, a progressive and chronic process which affects the physiological, psychological, and social status of the individual. The alcoholic suffers physical impairment as a result of excessive addictive consumption. The physiological consequences of drinking may include cirrhosis, cardiac arrest, elevated blood pressure, various forms of cancer, and pancreatitis. The hearing-impaired individual may suffer irreversible damage to the auditory system, whether the onset is abrupt (i.e., due to accident) or gradual.

Neither the alcoholic nor the hearing-disordered individual has voluntarily initiated the disease process. The hearing-disordered individual did not elect a hearing loss. The alcoholic may initially have chosen to drink, though he or she did not choose to become addicted to alcohol. However, both individuals may be in denial about the severity of their problem, how it is affecting them, and how it is affecting those around them.

Denial of the severity and consequences of the problem may be maintained by a number of factors in both cases, serving as an impediment to obtaining treatment. The alcoholic in our society is often seen as an unsavory, immoral, skid row character. The hearing-disordered individual may be seen as getting old, with all the implications this has in our youth-oriented society.

In addition, acknowledgement and confrontation of the problem, whether it be hearing impairment or alcoholism, has powerful implications for the individual. The alcoholic who stops drinking must begin to deal with life without the aid of his or her drug, cushion, or anaesthetic. The alcoholic in early recovery from alcoholism may need to develop coping skills to address the feelings and situations which arise. This is a long and arduous process. The hearing-disordered person, when acknowledging the severity of the hearing impairment and obtaining treatment (i.e., a hearing aid) is confronted with the body's aging process and his or her own mortality.

Entering the recovery process for the alcoholics and obtaining treatment for the hearing-disordered persons require that the impaired individuals address a difficult reality and begin to take responsibility for themselves, their disability, and their treatment/recovery. This may be a tremendous step, especially if family members, co-workers, or others close to the individual take up that responsibility.

The Family

Family systems theorists view the family as an operational system. Bowen (1973) has stated that "change in the functioning of one member is automatically followed by a compensatory change in another family member." To each action, there is an equal and positive opposite reaction within the family system.

Family systems operate with their own sets of roles and rules of behavior. Recently, these

roles and rules have been described as they relate to the alcoholic family system (Black, 1981; Wegscheider, 1989; Subby and Friel, 1984). Similar roles and rules may operate in the hearing-disordered family system as well. Examination of roles and rules in the alcoholic family may shed light on what is taking place between family members in the hearing-impaired family, and may offer implications for treatment approach.

A primary role in the alcoholic family system is that of the enabler. The enabler comes between the alcoholic and the consequences of his or her behavior. The enabler may rescue the alcoholic (in covert or overt ways), make excuses for the alcoholic, call in sick for the alcoholic. The enabling individual alters his or her life around the behavior of the alcoholic. Feelings that eventually arise may include loneliness, frustration, anger, guilt, resentment, and depression.

The enabler in the hearing-disordered family may come between the hearing-impaired individual and the consequences of his or her hearing loss. The enabler may speak in a louder voice, may avoid conversation with the hearing-impaired person, may avoid social situations, or may turn the television or radio up to louder levels. The feelings that may arise are similar to those of the enabler in the alcoholic family — loneliness due to decreased communication and contact, frustration, anger, guilt, resentment, and depression.

In both cases, the enabling behavior aids the impaired individual to continue to deny the severity of his or her problem and not obtain treatment, whether that treatment is in the form of a hearing aid or alcoholism treatment.

Other role patterns taken on in the alcoholic family, often by the children, may be applicable to the hearing-disordered family as well. These patterns include the sensible one, the adjuster, the placater (Black, 1981), or the family hero, the scapegoat, the lost child, or the mascot (Wegscheider, 1980). Children in the hearing-

disordered family may adopt similar compensatory or reactive roles in order to maintain a sense of balance or homeostasis in the family.

The alcoholic family is a system that appears to function in accordance with a set of rules. Subby and Friel (1984) have noted the following: (1) It's not okay to talk about problems; (2) Feelings should not be expressed openly; (3) Communication is best if indirect, with one person acting as a messenger between two others; (4) One should be good, strong, right, perfect; (5) Do as I say, not as I do; (6) It's not okay to play or be playful; and (7) Don't rock the boat. Similar rules may operate in the hearing-impaired family as well.

Treatment Implications

In the untreated alcoholic and the untreated hearing-disordered families, denial continues, communication worsens, and frustration and loneliness increase. Each individual in the system plays a part, and each experiences the pain of his or her position. Through our outreach, education, and treatment, a family systems view will allow us to serve not only the suffering hearing-impaired or alcoholic individual, but the family members who suffer as well.

Appropriate assessment of the family situation is needed. What part does each individual play in the dysfunctional family operations? How has each individual been affected? Feelings need to be validated, and healthier coping strategies need to be introduced for all members of the system who are affected.

Family members must come to understand the nature of their enabling behaviors. Enabling may be an obvious or subtle process. Understanding and change take time, guidance, and support. It is recommended that support groups be made available not only to hearing-impaired individuals and alcoholics, but to family members and significant others as well.

Literature in the form of pamphlets, articles, and books are now available to the alcoholic and to members of the alcoholic family. Educational information may be made available to

the hearing-disordered person and to family members about how the problem affects each one of them (not only the impaired individual). Information provided may help all involved understand their experiences, receive so validation for their feelings, and begin to address new, healthier coping strategies.

Education and treatment efforts must address the many aspects of an individual's life who are affected by hearing impairment or alcoholism, whether his or her own or that of a loved one. These include not only physiological aspects, but also the psychological and social states and the functioning of all persons involved in the system.

An interdisciplinary approach would help address the multifaceted effects of alcoholism and hearing disorders. The audiologist, otolaryngologist, and psychotherapist may work together to reach and treat families who suffer from hearing impairment as the physician, psychologist, and alcoholism specialists work together to serve the impaired alcoholic family.

Conclusion

The author has never worked with an alcoholic family in which the entire family sat down to dinner one evening and decided they all had a problem and would seek help together. Rather, one person reaches his or her limit of emotional pain and begins the treatment/recovery process. Thus the system begins to change. There are many roads into the hearing-disordered family. Whether the first to reach out for help is the hearing-impaired individual or a family member, adequate services must be available to the individual. In this way, hopefully, all members of the family system will eventually receive help needed to build more fulfilling and satisfying relationships with each other.

A family systems approach was discussed; it relates to the alcoholic and hearing-impaired families. It is recommended that an interdisciplinary approach addressing the physiological, psychological, and social aspects of the impairments be utilized in outreach, education, and treatment of all family members affected.

ADDRESS OR NAME CHANGE ??

Ear and Hearing subscribers and AAS members should send changes to:

AAS
1966 Inwood Road
Dallas, Texas 75235

(NOT to Williams & Wilkins)

Minutes of the American Auditory Society Executive Committee

DATE:

September 20, 1987

PLACE:

The Inn of Chicago, Chicago, Illinois

TIME:

1:30 p.m.

MEMBERS PRESENT:

Virginia Berry, LaVonne Bergstrom, Patrick E. Brookhouser, Alison M. Grimes, Deborah Hayes, Robert W. Keith, Susanne Kos, David J. Lilly, Richard T. Miyamoto, James J. Pappas, David Preves, William F. Rintelmann, Ross J. Roeser, Michael F. Seidemann, Wayne J. Staab, Laszlo K. Stein, Don W. Worthington.

MEMBERS ABSENT:

F. Owen Black, E. Robert Libby, David Lipscomb.

GUESTS:

B. Hill Britton, Tomi T. Browne, William F. Carver, James R. Curran, Michael Dybka, Irvin Gerling, Mead Killion, J. Gail Neely, Ken Startt.

1. President Bergstrom opened the meeting at 1:45 p.m. She thanked the members of the Executive Committee for their attendance and recognized the new Executive Committee members in attendance. They were: B. Hill Britton, William F. Carver, James R. Curran, Deborah Hayes, Mead Killion, J. Gail Neely.

2. The minutes of the 1986 AAS Executive Committee meeting, held in Detroit, Michigan, were reviewed and approved.

3. The financial report for the period January, 1987, through August, 1987, was presented by Ross Roeser. Total revenues of \$44,806 and total expenses of \$75,880 were reported, resulting in a net deficit of \$31,074. However, it was pointed out that most of the income from dues was collected between August and December of 1986, thus explaining the paper-operating deficit. Overall, it is projected that the Society will operate at a profit for 1987. Assets included \$7,654 in the checking account and \$31,907 in savings, making the total assets \$39,561. Based on the financial condition of the Society no increase in dues was recommended for 1989. Following the report a motion was made and passed that there be no increase in dues for 1989.

4. Ross Roeser reported on the membership. As of September 1, 1987 there were 2002 members. Of this number 1,854 were regular members and 148 student members. The last five years have shown a very positive increase in membership as follows:

1983	— 1,337
1984	— 1,554
1985	— 1,702
1986	— 1,992
1987	— 2,002

A break down of the membership indicates that the majority (86%) of the members are audiologists with only 9% being otolaryngologists. It was recommended that the Membership Promotion Committee develop a strategy to attract otolaryngologists to membership in AAS.

5. Ross Roeser was appointed as Secretary/Treasurer for 1989.

6. Susanne Kos was appointed as Assistant Secretary for 1989.

7. Laszlo Stein gave a report on the 1987 meeting. He recognized the efforts of the local arrangements person, David Hill, and thanked the other members of the Program Committee. A motion was made to extend the appreciation of the American Auditory Society to Laszlo Stein for his efforts in planning the 1987 meeting. The motion passed.

8. In Frank Musiek's absence Michael Dybka reported on the plans for the 1988 meeting. The meeting will be held on Thursday, November 17th, in Boston. The annual meeting will be held at the New England Medical Center (Tufts Medical Center). An auditorium has been reserved that will seat between 300-460 individuals. It is within walking distance of the ASHA Convention hotels. The program committee is looking at the possibility of providing lunch with the registration fee. The possibility of having a poster session was also discussed.

During the discussion of the 1988 meeting, a motion was made to establish a permanent Program Committee consisting of past and present program committee chairpersons, and other members as seen fit. The motion passed. Don Worthington was appointed Chairman, and Laszlo Stein, Bill Rintelmann, and Frank Musiek were appointed committee members.

Michael Dybka and LaVonne Bergstrom were appointed as *ad hoc* committee members.

Other plans for the 1988 meeting were discussed. Modification of the call for papers was suggested so that abstracts of no more than 200 words would be included for publication in *Corti's Organ*, along with longer summaries. Possible Carhart lecturers were discussed and one individual was identified for the 1988 meeting. In addition, another individual was identified for the 1989 meeting. LaVonne Bergstrom will contact both individuals and invite them to be speakers for those meetings.

9. The 1989 meeting will be held in New Orleans in conjunction with AAO/HNS. Mike Seidemann was appointed as local arrangements chairman. Don Worthington, as Chairman of the Program Committee, will supply names for the Program Chairman for the 1989 meeting. Previously, the scientific meeting has been held on the Monday during the AAO/HNS meeting. The possibility of holding the meeting on Sunday was raised and it was voted to hold the meeting on Sunday, September 24, rather than Monday. The Executive Committee meeting will be held on Saturday, September 23rd.

10. Bob Keith gave a report on *Ear and Hearing*. He introduced Ken Startt, the representative from the Williams & Wilkins Company. Ken Startt indicated that circulation was up 10%, which he felt was highly favorable. He indicated that royalties from *Ear and Hearing* will be approximately \$22,000 for 1987. Based on all financial projections there will be no increase in the members' cost for *Ear and Hearing* for 1989.

Bob Keith began by announcing that Kathy Grauvogel had been replaced as Managing Assistant by Marie Christakos. He also indicated that Irvin Gerling, who has been Editorial Assistant, had been named Associate Editor. He reviewed the manuscript flow and indicated that the average time for acceptance is 5.2 months. Several suggestions were made to improve the appearance of *Ear and Hearing*. Finally, he discussed the future plans for *Ear and Hearing*. (The *Ear and Hearing* editor's report appears in full in a separate section of this issue of *Corti's Organ*.)

11. Virginia Berry reported on *Corti's Organ*. Susanne Kos continues to serve as Assistant Editor. Subject Editors include Frank Brister (Equipment/Material Review), Matt Smith (Features), and Karen Patterson (Clinical). Ms. Patterson replaces Bill Domico on *Corti's* Editorial Board. Virginia summarized the past year's activities of the publication and described new features to be included this next year, such as a Meeting Review Column. A 10th Anniversary Special Issue will be considered.

12. Standing Committee Reports were given.

Long Range Planning Committee — Ralph Naumton was not in attendance to give the Long Range Planning report.

Membership Promotion — Mike Seidemann reported on membership promotion. At the 1986 meeting the target population for the membership promotion was otolaryngologists. A letter was written, but has not been sent. Jim Curran and Alison Grimes were added as Committee Members.

Continuing Education — Deborah Hayes reported on the Continuing Education activities. She indicated that ASHA and NIHIS CE credit and CME credit were obtained for the 1987 meeting. An arrangement has been worked out so that AAS will not have to pay the normal \$150.00 fee for NIHIS credits. She recommended that AAS continue to offer CE and CME units for the annual meeting.

Qualifications — Susanne Kos presented lists of applicants for membership (the lists in their entirety are published following the minutes). There were 91 applicants for membership with sponsors, 30 applicants for associate membership, 128 applicants for student membership, and 18 applicants with no sponsor or one sponsor. After the lists were reviewed for membership a motion was made to accept the applicants and the motion passed.

13. Mike Seidemann reported on videotaping. He indicated that 55 copies of the 1986 meeting had been ordered. The quality of the tape was marginal, he felt, but acceptable. He indicated that there had been a problem in obtaining slides from speakers. He also indicated that it would be beneficial to purchase additional equipment for this activity. A motion was made to spend up to \$5,000 on additional video

equipment after the Executive Committee was polled by mail. The motion passed. Bill Carver was added to the Videotaping Committee.

14. Ross Roeser reported that AAS is now an incorporated non-profit organization in the State of Texas.

15. At the 1986 Executive Committee meeting Ross Roeser was directed to investigate the costs of having a separate membership directory. He reported that the costs of the directory would be \$5,500. The directory would include each member's name, professional address and affiliation, home address, membership category, and home and office phone numbers. After discussion, either having the membership directory published by Williams and Wilkins and sent out with an issue of *Ear and Hearing*, or

publishing the directory as a separate item, was recommended. (Following the Executive Committee meeting several members indicated that the costs of the directory appeared to be excessively high and recommended that the Executive Committee be polled by mail to explore keeping the directory in *Corti's Organ*, but expanding the information.)

16. Professional liability insurance was discussed. Mike Seidemann indicated a concern for the professional liability of AAS Executive Committee Members. Ross Roeser explored the cost of liability insurance and indicated that it would cost approximately \$5,000 for this type of insurance for AAS. A motion was made that

Continued on page 8



'You Should Hear What You're Missing'

Legendary golfer Arnold Palmer, who personally overcame a hearing problem, urges others to benefit from available hearing help:

Hearing the cheers of the gallery can be music to a golfer's ears. I can hear them much better now, since I got help for a hearing loss.

You know, nearly 20 million Americans with hearing problems needlessly miss life's precious sounds. Why needlessly? Because virtually all of them can *now* be helped—medically, surgically, or like me, with hearing aids.

If you suspect a hearing loss, or thought nothing could be done about it, ask your family doctor who can guide you. Thanks to significant advances in the hearing field, there are many hearing health care professionals who can help you.

So if you or someone you love doesn't hear well, arrange for a hearing test today. For hearing help information, call toll-free Hearing HelpLine at 800/EAR WELL.

Because you should *hear* what you're missing!



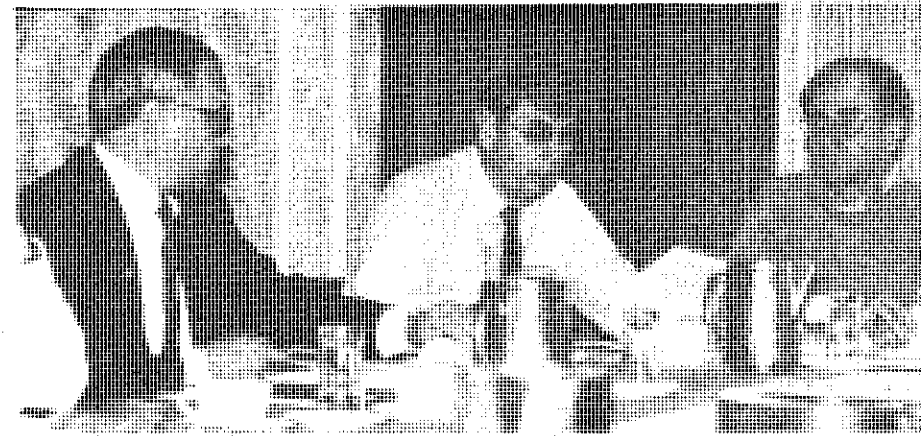
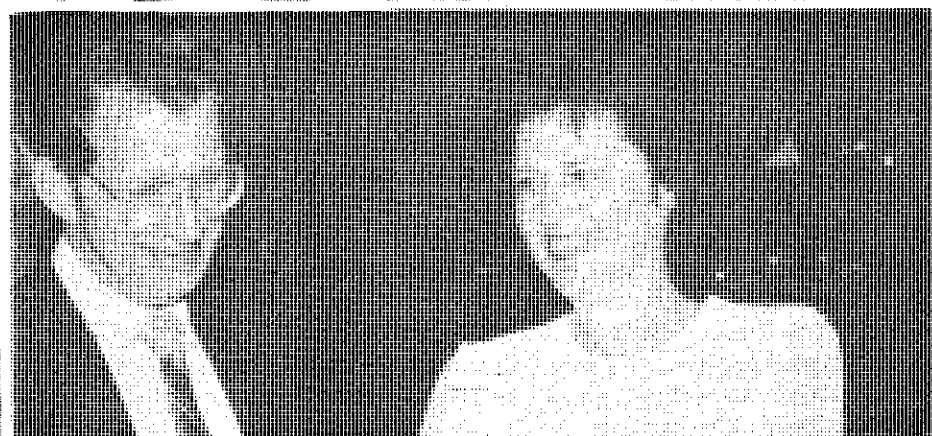
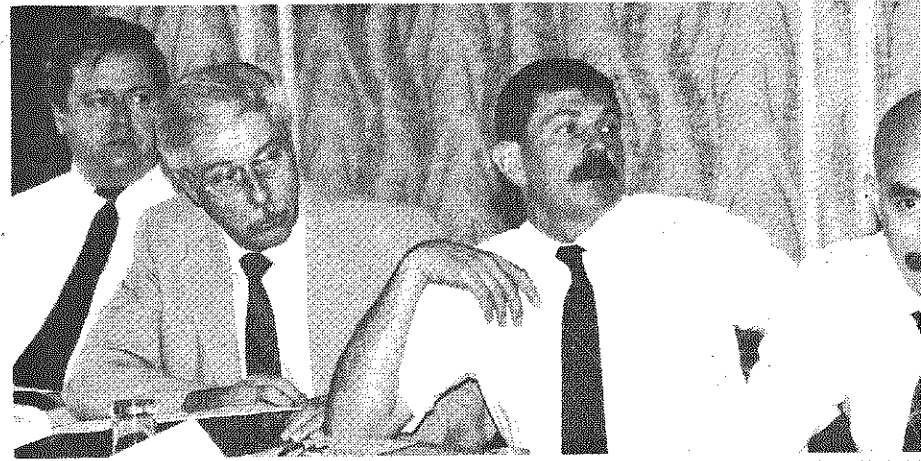
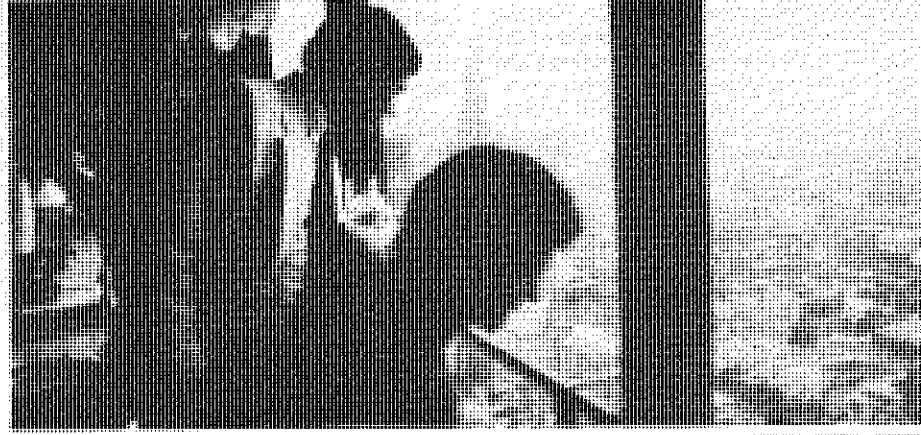
Better Hearing Institute

P.O. Box 1840, Washington, D.C. 20013

EXECUTIVE COMMITTEE

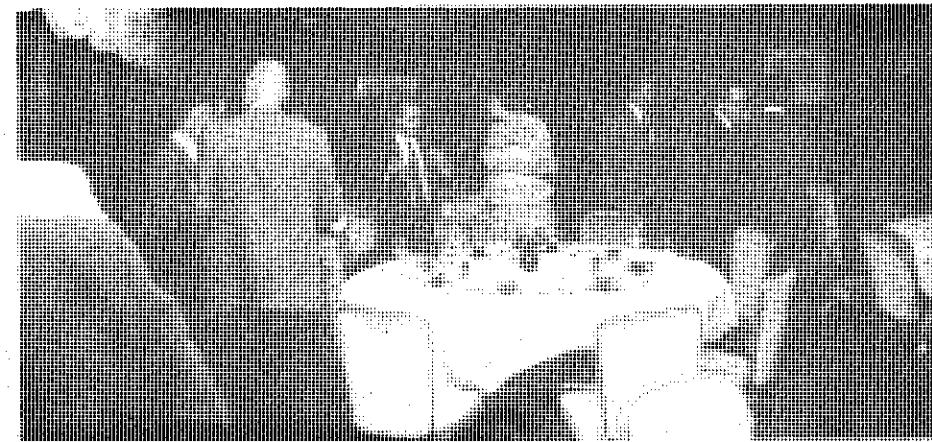
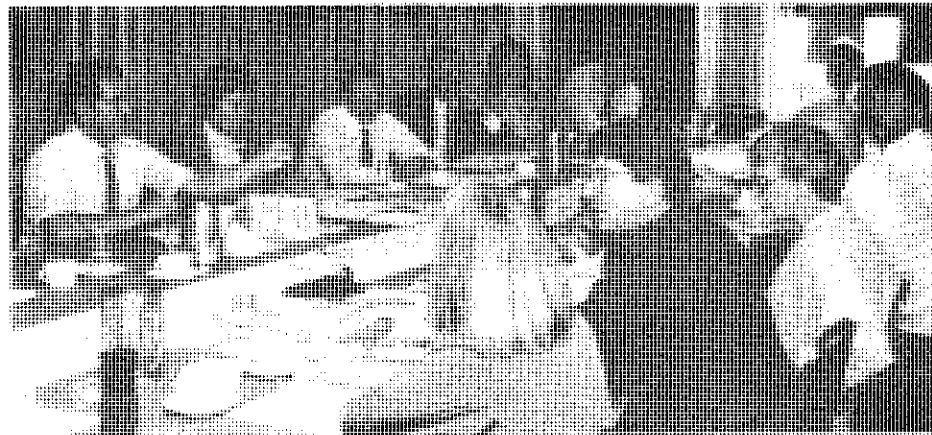
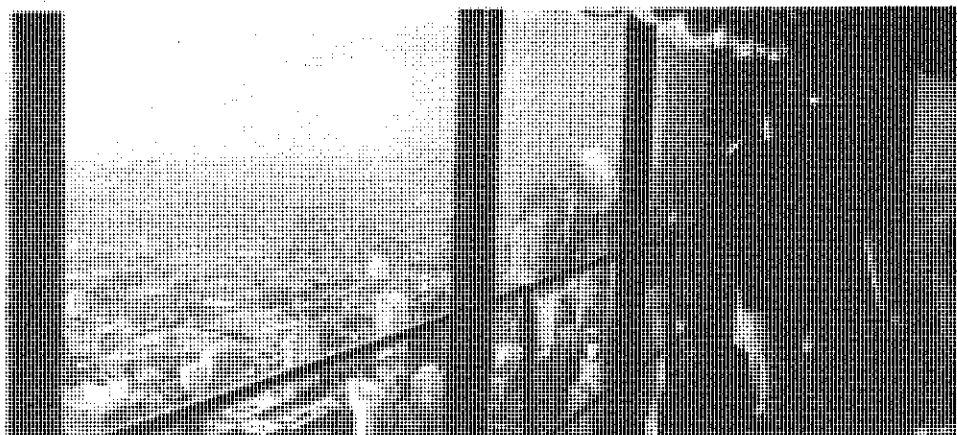
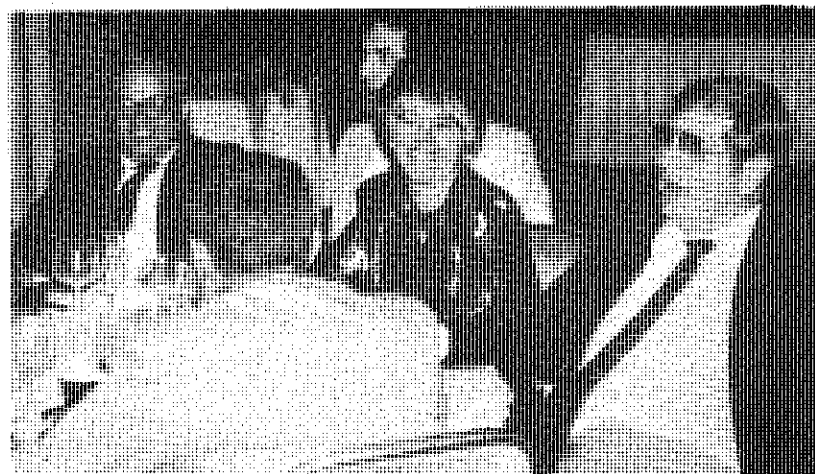


The AAS Executive Committee met on September 20th for its annual day of hard work and decision making. Old committee members, joined by those newly elected, spent hours around the conference table reviewing the year's business and discussing what next year might hold.



E AT WORK AND PLAY

Their hard work was rewarded with a terrific evening of dining and conversation at Chicago's spectacular 95th Restaurant atop the John Hancock Building. An overpowering view of the city was the perfect site to finish off the day!



Minutes

Continued from page 5

AAS self-insure and the motion passed.

17. LaVonne Bergstrom discussed the role of AAS with the 19th International Congress of Audiology. Moe Bergman extended an invitation to AAS to meet with the 19th International Congress of Audiology in Jerusalem in 1988. After discussion, it was decided that AAS would not have a formal program at the 1988 ICA meeting. Rather, AAS would support the ICA by announcing the meeting. David Lilly was appointed liaison to the ICA.

18. Reconsideration of the annual meeting duration was discussed by Mike Seidemmann. He indicated that the size of the annual AAS meeting had grown to the point that either having a two-day meeting or having a separate meeting might be considered. After discussion, it was felt that neither of these options was desirable at the present time.

19. Tomi Browne discussed the Council for Better Hearing and Speech Month. She and Lloyd Bowling have been co-representatives to the Council for the past year. She indicated that it was necessary for Lloyd Bowling to resign due to other commitments. She reviewed the activities of the Council for the past year and recommended that AAS continue to support the Council for the 1987-88 campaign. Membership dues are \$1,000. The Executive Committee thanked Tomi and voted to continue her as Chair of the Council for Better Hearing and Speech Month for the 1987-88 campaign.

20. Ross Roeser indicated that he had contacted a professional association management company to explore using them to manage AAS. Banks, Miller and Associates, located in Austin, Texas, submitted a proposal for \$12,000 per year plus costs. After discussion it was felt that this and other possibilities should be explored during the next year and that this

item should be discussed at the 1988 Executive Committee meeting.

21. The standing committees of the AAS were listed as follows:

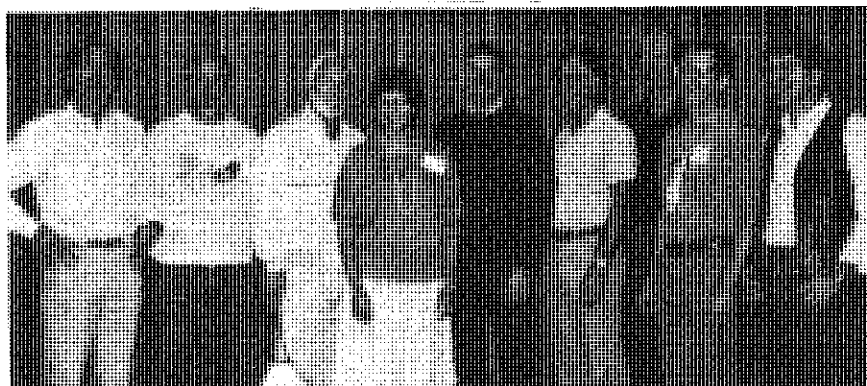
Committee	Chair	Members
Continuing Education	D. Hayes	
Council for Better Hearing and Speech Month	T. Browne	
Long Range Planning	R. Naunton	D. Preves W. Staab
Membership Promotion	P. Brookhouser	J. Curran A. Grimes M. Seidemmann
Nominations	W. Rintelmann	J. Curran D. Lilly R. Miyamoto F. Musiek
Program Committee	D. Worthington	W. Rintelmann L. Stein (Ad hoc — L. Bergstrom, M. Dybka)
Qualifications	S. Kos	
Videotapes	M. Seidemmann	W. Carver

22. LaVonne Bergstrom recognized the efforts of the departing Executive Committee members and thanked them for their service. The retiring members are: F. Owen Black, E. Robert Libby, David Lipscomb, James Pappas, Mike Seidemmann, and Wayne Staab. As Vice President, Wayne Staab will continue to be an Ex Officio Executive Committee Member.

23. There being no further business the Executive Committee was adjourned at 5:50 p.m.

LaVonne Bergstrom, M.D.
President

Ross J. Roeser, Ph.D.
Secretary/Treasurer



Third Annual Scott Haug Audiology Retreat Held in Kerrville, Texas

The Third Annual Scott Haug Audiology Retreat was held September 24-27 in the beautiful Texas Hill Country. The Texas weather cooperated, and, with the participation of nearly 100 attendees and an outstanding faculty, three days of information and various group activities provided a fun and educational weekend. The Retreat provided over 13 hours of continuing education for audiologists, and hearing aid dispensers from a highly qualified group of presentors: David Lipscomb, Ph.D.; Geary McCandless, Ph.D.; Jerry Northern, Ph.D.; Ross Roeser, Ph.D.; Steven Staller, Ph.D.; Robert Traynor, Ph.D.; and Don Worthington, Ph.D. Group activities included golf, horseback riding, tennis, a team softball tournament, and a country-western fifties dance.



New Applicants

I. Applicants For Full Membership With Sponsors

R. Steven Ackley
Lois C. Adamiec
Sonja R. Allen
Cathy S. Allsman
Russell J. Baird
D.J. Barr
Karen E. Bauer
Susan E. Beall
Lois Bennardo
M. Victor Berrett
Michele A. Biagiarelli
Tracey J. Bishoff
Cheryl Blair
Art Brock
Ann M. Calkins
Sharon Cargill
Michael R. Chial
Mary Ann Coderre
Mark Conradt
Kathryn S. Copmann
Edith Lynne Cox
Mateja DiMare
Begina C. Donnelly
Sharon Donlan
Barbara Duerr
Barbra Fahad
Ronald J. Fecek
Lucy E. Figuerra
Carole A. Flores
Marsha D. Flores
Ian Gillespie
Lawrence Kevin Guess
Maureen Hannley
Abigail Gilson
Ellen Goldman
Lisa R. Gosselin
Ann Guzauskas
Holly Susan Haggerty
Pamela L.W. Halligan
Jean W. Hamilton
Eve L. Hensler
Carolyn J. Hill
Susan E. Hoge
Janet K. Jensen

George C. Koutures
Nelly R. Ledesma
Michael S. Mallahan
Kristi J. Martin
Kathy Elaine Matonak
Mark A. Matteson
Emily P. Maulsby
Patricia L. McCall
John C. McDermott
Bradford B. Melancon
Lucy Mendez-Kurtz
Jayne E. Miller-Fritz
C. Scott Mills
Paul Milner
Alicia M. Mitter
Diantha Morse
Bonnie Lynn Nolen
Patricia P. Olson
Macy S. O'shaughnessey
Anne L. Oyler
James L. Pehringer
Lori Stiritz Peterson
Jane Byrd Poteat
Andrea Brown Reed
Teresita R. Rivera
Therese Robier
Jodi A. Rogers
Alicia Rohena-Pagan
Michael P. Rosenblatt
Jean T. Rosowski
Beverly Russell
Carolyn J. Sears
Candler Leslie Shealy
Allen Schade
Cynthia J. Short
Benigno Sierra Irizarry
Lisa Hunter Smolak
Steven J. Staller
Lindsay Stein
Sandra H. Sweeney
Lisa L. Tonokawa
Elizabeth P. Wade
Marie Webb
Joel S. Wernick
Linda Wyatt
Amy E. Youatt
Lawrence M. Zocchi

II. Applicants For Associate Membership

Kathryn Albright
James E. Bridgewater
Jane Cartwright
Peggy Chalmers
Jody E. Chesser
Betsy J. Cohen
Donna Crosby
Santee J. Dueber
Electone Inc.
Patricia A. Hecknebr
Fayans Rachel
Steve Forget
Cecilia M. Hayden
Debra Hirshout
Marion Jouseu-Poole
Hugh S. Knowles
Barbara Kurpita
Susan Lane
Maryrose McInerney
Marilyn R. Miller
Nancy Northway
Barbara Okonek
Rhona S. Ostrow
Cindy Platt
Cleo D. Powers
Mack J. Preslar
Gila Rollhaus
Theresa L. Stempian
Kimberly Stewart
Geoffrey Thompson

III. Applicants For Student Membership

Julie Aarons
Maheen Ahmad
Michelle Baer
Susan R. Bahm
Judith Ann Baker
Eve Bakula
Renee Beach
Bonnie L. Blamick
Sandra L. Book
Wendy S. Brooks

Laura A. Burke
Karen M. Burris
Clyde D. Byrne
David C. Byrne
Marcia Camilleri
Nanette M. Caton
Anne C. Chandler
Mariam Chellappa
Cheryl L. Childress
Joleen Chiles
Sharon H. Clements
Leonard Cornelisse
Carol Ann Cuthbertson
Amy L. Dess-Schwender
Jennifer Dixon
Dwight Eichelberger
Laurie Eisenberg
Michele B. Emmer
Linda A. Engelmann
David A. Fabry
Mary Sue Fino
Wendy Fletcher
Pamel Flinn
Eric Fournier
Peggy Frank
Elizabeth E. Galletta
Beth Gartaen
Kitty Gingerich
Julia A. Gaugh
Michael Anne Gratton
Amy S. Grayson
Scott K. Griffiths
Nancy Tara Hale
Victoria Ann Hartman
Melinda M. Heald
Andrea Hedley
Larrain Hedlund
Karen Helfer
Eileen Hensler
Marie L. Hepola
Carol M. Hession
Mary Hinshaw
Heidi Ann Hosick
Deborah K. Howard
Michael J. Howitz
Skye Hurlburt
Debbie Ingenito

Laura S. Jennings
Antony R. Joseph
Christine R. Kapke
Isidore Kirsh
Sheryl A. Klima
Dawn A. Koschmann
Andrew Kovalovich
Elizabeth Anne Larkin
Sheri Larks
Ilse Lehmann
Gail Lynn Leininger
Timothy C. Louis
Onita C. Lynch
Terri Lynch-Kenyon
Cindy Lynn
Piedad A. Martin
Ann Masuda
Caryn S. Mayerhoff
Karen A. McGuire
Jane E. McNicholas
Jill Mecklenburger
Amy M. Meiser
Sue Luanne Merritt
Sue A. Messinger
Stephanie Monsees
Jeffrey N. Moore
Sherry G. Morris
Heather L. C. Olson
Catherine Papso
Ann Persenairo
Miles E. Peterson
Diane Piva
Elizabeth Rabin
Linda Jo Reiter
Izel Marice Rivera
Helaine Robinson
Mary C. Rodwell
Nancy Rosen
Tayebeh M. Salamat
Alicia Schmidt
Randi Schreiber
John A. Seikel
Hope Stall-Guttenberg
Charlotte R. Strawn
Tina Tarantino
Carrie J. Shapiro
Anne Ruppe Shields

Roy Shinn Jr.
Polly M. Shipp
Barbara Simcic
Danetta Sokoloski
Marta Christina Solomonson
Jodene Spencer
Kevin Squibb
Teresa Stehlin
Ann M. Thompson
Margaret A. Trochlil
Marion Unverdorben
Margaret Upham
Cheryl J. Van Selus
Ted Venema
Silvia Vidas
Lynn E. Weissler
Peter K.H. Wightman
Kelly K. Wilber
Chris Wilson
Susan M. Wright
Sandi Ybarra
Mary Zoe Zangrando
Erika Zettner
Erika Zimmerman

IV. Applicants For Membership With One Or No Sponsors

Karen Sue Barnett
Debbie Bell
Tomi Browne
Thomas H. Cameron
Patricia E. Connelly
James Dean
Thomas Dolan
Patricia E. Joyce
Kazumari J.M. Koike
Rochelle Mahinoff
Jim O'Hara
Pamela J. Patterson
Samuel B. Polen
Werner R. Roth
Janet P. Sells
Barbara J. Stewart
Ann Wallin
Michael J. Zagarella

Annual Meeting Will Be One Not To Miss

Plans are already underway for the AAS 1988 Annual Meeting to be held in Boston, Massachusetts in December. This will be the first time the meeting has been held in the Northeast.



Musiek

In an interview with Virginia Davis, Frank Musiek, Ph.D., 1988 Program Chair, discussed some of the exciting preliminary plans for the meeting.

Question: Frank, what time and place arrangements have been made for the 1988 meeting?

Answer: The meeting will be held in Boston at the New England Medical Center Hospital on November 17, 1988. This is the Thursday before the ASHA Convention begins.

Question: With your office in Hanover, New Hampshire, at the Dartmouth-Hitchcock Medical Center, wasn't it difficult to have the meeting in Boston?

Answer: Not when you've got the kind of support team I have. Michael Dybka, Ph.D., from the New England Medical Center is the Local Arrangements Chair and is already busy planning many great activities in Boston. Mike and I have returned in discussion with people across the country that there is an abundance of interest in coming to Boston. Certainly, recent attendance is expected.

Question: Will the 1988 Annual Meeting follow the same format as previous Society meetings?

Answer: Much of the program will be devoted to contributed papers representing the research and clinical work being done by members of the Society. A call for papers will be mailed to members and interested persons in the early months of 1988. The Program Committee hopes that the diagnostic emphasis of contributed

papers will be balanced to represent all areas of interest.

Question: What about any new ideas or innovations for the program?

Answer: Although much of the planning is still in the early stages and many statements must be tentative, there is one innovation that will take place at the 1988 meeting that should be of interest to many. A special session, hopefully, will be scheduled that will be a take-off of "Places that Listen" in Curt's Organ. This session will be devoted to diagnosis of one condition which the audience will be challenged to "name that lesion".

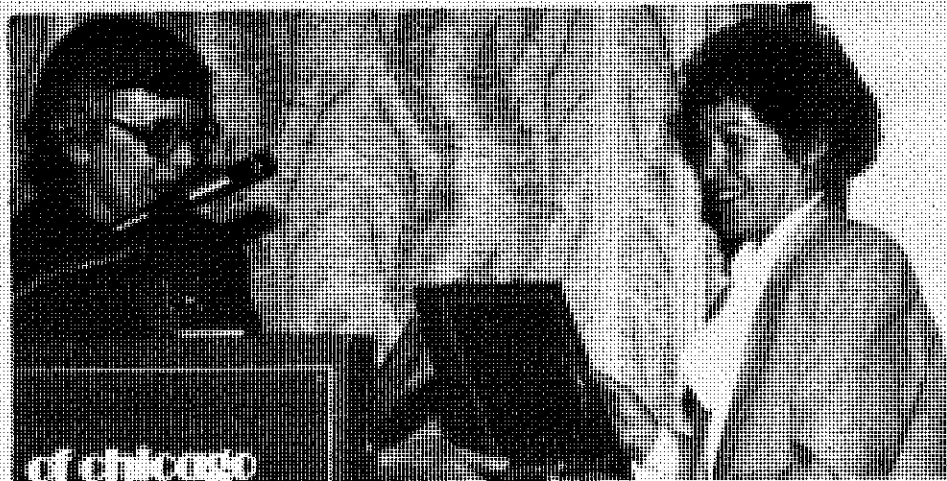
Question: Sounds great! How will this part of the program be organized?

Answer: The Program Committee, under my direction, is in the process of inviting some of the top diagnostic audiologists across the country to present some most intriguing cases. The presentations will be staged in such a manner that the audience can interact and make a preliminary "guess" as what the final diagnosis may be for each case. We plan to have a wide variety of cases, including both adults and children, that are of primary diagnostic significance.

Question: What prompted you to come up with such an innovative session?

Answer: The purpose of having this special session was felt that it is highly relevant to all of us involved with clinical assessment. As clinicians, we are often faced with difficult cases. This will provide some good interaction between the "expert" and the audience. Since most clinical practitioners are interested in case studies, we are highlighting this in a way that should be fun as well as very educational. I will moderate this special session, and I hope to have some lively interaction among all participants.

Well, Frank, you and your Committee have certainly been hard at work already. I know I speak for all of us when I say I can't wait for 1988.



Jane Collins is named Outstanding Distinguished Teacher.

M. Jane Collins Granted Distinguished Teaching Award

The 1988 Annual Distinguished Teaching Award in Audiology was awarded during the American Audiology Society's annual meeting held in Chicago on September 21, 1987. This award was established by Bellini in 1981 and remains the only one in the field of audiology which recognizes the importance of teaching professionals to the continued growth of our field.

The Distinguished Teaching Award in Audiology is presented for teaching excellence, and, to be eligible, one must have at least five years' experience in teaching audiology and must be nominated by a student. Ten distinguished audiology researchers and educators from colleges and universities across the country are the judges for the award, joined by one member of the National Student Speech-Language-Hearing Association.

Eleven nominees were submitted for consideration this year. Needless to say, the judges faced a difficult task in making the final decision because of the superior quality of all individuals proposed. Each has fostered teaching excellence in a significant manner.

The 1987 Bellini Distinguished Teaching Award in Audiology was presented to M. Jane Collins, Ph.D., of Louisiana State University in Baton Rouge, Louisiana.

Dr. Collins is Associate Professor and Director of Audiology at her institution. In addition, she has adjunct status at the Kresge Hearing Research Laboratory of the South and in the Department of Otorhinolaryngology at LSU Medical Center in New Orleans.

Widely published herself, Dr. Collins is also an editorial consultant for the *Journal of Speech and Hearing Research* and for the *Journal of Speech and Hearing Disorders*. She has received numerous honors and awards for her research, and has, through her enthusiasm and willingness to involve her students, inspired a new generation of audiologists excited by original thought and discovery. Above all else, she asks



her students not to take for granted long-held assumptions.

A fellow clinical faculty member at LSU states that the 1987 award recipient encourages students "to question and evaluate for themselves even the classic evidence which supports 'truths' in audiology. Moreover, she does not simply provide information. [She] requires that students ask critical questions and work through problems themselves to arrive at conclusions.... She promotes and rewards creativity.... Her students have a high level of self-confidence, resourcefulness, and thoroughness in their clinical and research endeavors."

In all their comments about this year's recipient, Dr. Collins' colleagues and students point to her *emphasis on original thought* and her ability to bring out the best in each student, to capitalize on students' strengths while gently guiding them to fill in necessary holes, producing well-trained, confident graduates. In the words of the audiology department chairman at LSU, Raymond Daniloff, Dr. Collins has "the uncanny ability of fostering students' love of thinking without smothering their originality." He adds, "Only such a well published and enthusiastic researcher could be so fine a teacher."

It is certainly fitting that this award should have been presented at an AAS Annual Meeting, as the Society was the first professional association joined by Dr. Collins some 14 years ago.

Congratulations, Jane!!

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19th International Congress of Audiology

The International Society of Audiology will hold its 19th International Congress of Audiology in Jerusalem, Israel, June 5-9, 1988. Topics of the round table (plenary) sessions will be Hearing Dysfunction Associated with Systemic Diseases, the Auditory Deprivation of Otitis Media, and Methods for Evaluating the Benefits of Hearing Aids.

Contributed papers at these congresses are accepted on a variety of topics in audiology, such as auditory physiology, psychoacoustics, auditory evoked responses, speech audiometry, central auditory tests, auditory disorders of aging, noise-induced hearing problems, hearing

aids, cochlear implants, auditory habilitation and rehabilitation, paediatric audiology, impedance measurements, epidemiology of deafness, high-frequency audiometry, middle ear implants, etc.

A one-day Pre-Congress Symposium on June 5, 1988, will consider the topic of Early Detection, Identification, and Management of Deaf Infants.

For further information contact:

19th International Congress of Audiology
P.O. Box 50006, Tel-Aviv 61500, Israel
Tel: 03-654571, TLX 341171 KENS IL
FAX: 972-3-655674

DON'T FORGET
19th INTERNATIONAL CONGRESS
OF AUDIOLOGY
JERUSALEM, ISRAEL, JUNE 5-9, 1988



Lucille Beck and Jerry Bunch receive editor's awards for outstanding article.



Deborah Hayes receives award for service as Section Editor.

Ear and Hearing Awards Announced

At the Chicago meeting of the American Auditory Society three awards were presented by the editor of *Ear and Hearing*. The first was an award to Deborah Hayes in appreciation for her service as Section Editor during the years 1983 to 1987. Deborah was editor of the Speech Audiometry section during that time.

A second special award was given to Frank E. Musiek for his tutorial series on neuroanatomy, neurophysiology, and central auditory assessment that appeared in Volume 7, 1986. The three part series focused on the brainstem, the cerebrum, and the corpus callosum and efferent pathways.

Finally, the Editor's Award for the outstanding article, which appeared in Volume 7, 1986, was given to Jerry L. Punch and to Lucille B. Beck. Their article was entitled, "Relative Effects of Low-Frequency Amplification on Syllable Recognition and Speech Quality" (pp. 57-62). The purpose of the Editor's Award is to acknowledge manuscripts that exemplify the standard of quality that the *Ear and Hearing* Editorial Board strives to achieve. The scientific standards to which the Journal subscribes and the basis on which manuscripts are evaluated include:

An interesting and well thought out research question.
Appropriateness of research design and methodology used in gathering data.
Appropriate analysis.
Clarity of writing.
Timeliness of the subject.
Appropriateness to purpose of the Journal.

The recipients of these awards are to be congratulated for their contributions to *Ear and Hearing*.



Frank Musiek is given special award for his tutorial series.

New Subjects Editor Joins Corti's Staff

Karen Patterson of Arkansas State University has joined the *Corti's Organ* Editorial Board as Clinical/Rehabilitative Audiology Subjects Editor. Karen holds her master's degree from North Texas State University and is currently completing her doctorate from the same institution. She holds dual certification in Speech-Language Pathology and Audiology. Karen is now an instructor in Communication Disorders at Arkansas State University in Jonesboro, Arkansas.

Karen brings to the *Corti's* Editorial Board a wealth of experience and extensive background in clinical and rehabilitative audiology. She is a member of Arkansas' Governor's Task Force on Deafness and Aging and is a member of the March of Dimes Executive Board. She has published numerous articles in the area of geriatric aural rehabilitation.

As Subjects Editor for Clinical/Rehabilitative Audiology, Karen will be responsible for articles and columns related to case studies, clinical practices, intervention programs, and other areas relevant to this segment of our profession. She will take charge of *Corti's* Aural Rehabilitation Forum. Karen has already begun designing some new and creative formats to be included in future issues. So, be prepared. She may be calling on you for input. If you have any ideas, articles, etc., for consideration in Karen's edi-



Karen Patterson

torial realm, you may contact her directly:

Karen Patterson
Arkansas State University
P.O. Box 2773
State University, Arkansas 72467
Telephone: (501) 972-3061
Welcome aboard, Karen!

Society Displays Debuts at AAO Annual Meeting

At the 1987 American Academy of Otolaryngology annual convention, in conjunction with the Society's annual meeting, a new concept for AAS was introduced. A portable display is now available for meetings, workshops, etc. The display describes the Society's organization and Executive Committee makeup. In addition, it depicts a sample of our activities, including our sponsored publications.

For many years now, members have shown an interest in "spreading the word" on the advantages of membership in the American Auditory Society. Last year, the Executive Committee agreed that the development of such a display would be an excellent way to communicate to both members and non-members what purpose our organization serves and what benefits can come from membership.

The display is quite portable and is an outstanding mechanism for promoting the Society. It would be useful for display at any activity where participants might share an interest in AAS goals and directions. For information on

obtaining the display for exhibit, contact Ross Roeser at 1966 Inwood Road, Dallas, Texas 75235.



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For More Information Contact
The Colorado Hearing Foundation
 Box B210, 4200 East 9th Ave.
 Denver, Colorado 80262 • 303/394-7856

Gerber Awarded Fulbright Grant

Sanford E. Gerber, University of California, Santa Barbara has been awarded a Fulbright grant to conduct research in England, the Board of Foreign Scholarships and the United States Information Agency (USIA) announced recently.

Dr. Gerber is Professor of Speech and Hearing Sciences at the University of California at Santa Barbara. He received his doctorate at the University of Southern California in 1962 and joined the UCSB faculty in 1965. He is a Fellow of the American Speech-Language-Hearing Association; a Fellow of the Society for Ear, Nose and Throat Advances in Children; and an Associate Fellow of the American Academy of Otolaryngology — Head and Neck Surgery. In addition, Dr. Gerber is an honorary member of the Czechoslovak Medical Society, and is also a member of the executive committee of the International Society of Audiology. Closer to home, he is a member of the boards of both the Santa Barbara and the California Associations for Retarded Citizens. He is the author of 10 books and scores of scientific articles dealing with handicapped infants. His work with the Medical Research Council of the UK has been to assess their programs for early identification of and intervention for at-risk infants.

Dr. Gerber is one of approximately 2,500 U.S. grantees being sent abroad for the 1987-88 academic year under the Fulbright exchange program. Established in 1946 under Congressional legislation introduced by former Sen. J. William Fulbright of Arkansas, the program is designed "to increase mutual understanding

between the people of the United States and the people of other countries." Approximately 7,000 grants are awarded each year to the U.S. students, teachers, and scholars to study, teach, and conduct research abroad, and to foreign nationals to engage in similar activities in the United States. Individuals are selected on the basis of academic and professional qualifications plus their ability and willingness to share ideas and experiences with people of diverse cultures.

More than 155,000 "Fulbrighters," over 54,000 from the U.S. and 101,000 from abroad, have participated in the program since it began 40 years ago. The program is administered by the U.S. Information Agency under policy guidelines established by the presidentially appointed Board of Foreign Scholarships and in cooperation with a number of private organizations. Scholarships are awarded through open competition, with final selections made by the Board of Foreign Scholarships. Twenty-seven foreign governments share in the funding of these exchanges.

The U.S. Information Agency is an independent agency within the executive branch whose mission is to inform other nations about American society and to provide opportunities for Americans to learn about the rest of the world.

For further information about the Fulbright Exchange program, contact:

Office of Public Liaison
301 4th Street, S.W.
Washington, D.C. 20547
Telephone: (202) 485-2355



Executive Committee member Don Worthington named "Arkansas Traveler" by Governor at State Association Meeting.

Activair/Duracell Funds Family Physician Program

As part of a coordinated effort by both the Better Hearing Institute and the Hearing Industries Association to inform nerve deafness patients and their family physicians about the benefits of modern hearing instruments, a pilot program has been made possible by a special grant from Duracell U.S.A., a division of Duracell Inc.

Duracell has sponsored a new edition of BHI's *Nerve Deafness and You* booklet, written by Gale Gardner, M.D., which emphasizes that hearing aids may be the most effective remedy for nerve deafness patients with some residual hearing. This counters the misconception revealed in BHI focus group studies and in the HIA marketing survey that people with nerve deafness cannot be helped.

Duracell is also funding a test mailing of the booklet to family physicians offering complimentary booklets for the doctor's patients or waiting room. This mailing will include a cover letter from James G. Jones, M.D., professor and chairman of the Department of Family Medicine at E. Carolina University, who is also personally fitted with binaural hearing instruments. A

follow-up survey will help gauge the project's impact for other possible mailings.

Reinforcing the Duracell-sponsored program are other BHI projects that include:

- * A new magazine public service advertisement featuring Arnold Palmer, released to major consumer magazines that have contributed millions of dollars worth of space to previous BHI messages. It complements a television public service announcement starring Palmer, currently being broadcast by local stations throughout the country.
- * A newspaper article, also written by Dr. Gale Gardner, emphasizing his nerve deafness booklet theme, issued to 4,000 daily and weekly newspapers across the United States.
- * A special BHI exhibit, dramatizing the nerve deafness help theme, which premiered at the "Time of Your Life Expo" attended by more than 42,000 senior citizens in Los Angeles.

Dr. Gardner, associate chairman of BHI's advisory board, is a member of the board of directors of the American Academy of Otolaryngology — Head and Neck Surgery.

Minutes of Editorial Board *Ear and Hearing*

Chicago, Illinois — September 20, 1987

The Editorial Board met at the Inn of Chicago. Those present included Irvin Gerling, Lucille Beck, Jerry Northern, Gail Neely, Susan Jerger, Laszlo Stein, Hiroshi Shimizu

1. The following announcements were made:

Kathy Grauvogel, who has been the managing assistant of *Ear and Hearing*, has been replaced by Marie Christakos.

Irvin Gerling who has been Editorial Assistant of the Journal was named Associate Editor.

2. Our manuscript flow is as follows:

We have received 85 articles to this date. That includes manuscripts published in the supplements. One year ago in November we had received 100 manuscripts. We are scheduled into February of 1988 with two manuscripts scheduled for April. There are presently 16 manuscripts in the review process; 18 are in the hands of the authors in revision.

The average time lapse between receipt of manuscript and the first editorial decision is 3.2 months, with a range from .5 to 9 months. The average time from receipt of manuscript to acceptance is 5.2 months, with a range over the past year from .5 to 21 months. The average delay between receipt of a manuscript and publication is 10.9 months, with a range of 5 to 25 months. The occasional long delay between receipt and acceptance for publication is due to sending a manuscript back to an author for revision.

3. The Editor's Award for most outstanding article appeared in Volume 7 and was written by Jerry Punch and Lucille Beck. A special award was given to Frank Musiek for his three part tutorial on the neuroanatomy of the central auditory system. Deborah Hayes was given a plaque acknowledging her four years of contribution on the Editorial Board.

4. Several suggestions were made to improve the appearance of the Journal.

5. A suggestion was made that any paper accepted for presentation at the annual AAS meeting become the property of the Journal for possible publication in *Ear and Hearing* following editorial (peer) review. Following discussion it was decided that we would encourage presenters to publish their manuscripts in *Ear and Hearing*, but that we would not insist that their manuscripts become property of the Journal.

In addition, we would provide presenters with information to contributors at the time that their paper is accepted; we would assure them priority review, but we would require that the normal peer review process be done and that final publication would be a decision of the editor.

6. There was a discussion of future issues and plans for 1988. Included in the suggestions for future articles was one on "clinically oriented basic sciences" that could include articles on toxicology, the auditory system, animal models of noise induced hearing loss in Meniere's disease, effects of aminoglycosides, etc. Another suggested topic was auditory manifestations of otologic diseases. Another was acoustic emission and its clinical application. Magnetic Resonance Imaging of the auditory system was suggested as a tutorial. Other suggested topics were: noise suppression techniques and amplification, psychoacoustics of auditory pathology, and late cognitive evoked potentials. I would appreciate any additional suggestions from the Editorial Board or from the membership about these or other subjects.

7. In the February issue there will also be a revision of information to contributors and also revision of the description of the journal sections. In 1988 we will return to the APA style of referencing, with author/date in the text and the references listed alphabetically.

8. Finally, Ken Startt from Williams and Wilkins, publisher, reported on the status of the Journal. Our circulation is approximately 3,000 including 2,000 plus members. Circulation has increased approximately 10 percent per year. In 1987 we had 66 pages of ads, which was a record year. There have been no problems with production. During the current year there were approximately \$11,000 in royalties that came back to the Society. Next year it is predicted the Society will receive \$23,000 in royalties.

9. Following the Editorial Board meeting a summary report of this information was given to the Executive Committee and an even briefer report to the membership during the business meeting.

10. At the business meeting the awards were presented.

Respectfully submitted,
Robert W. Keith, Ph.D.
Editor-in-Chief

1987 AAS MEETING AVAILABLE ON VIDEOTAPE

The 1987 meeting of the American Auditory Society is now available on videotape.

The videotape includes the Carhart Memorial Lecture by Peter Dallos entitled:

NEUROBIOLOGY OF THE COCHLEA: HAIR CELLS AS RECEPTORS AND MOTORS

The videotape is available in VHS format only. To order, send the specified amount after checking one of the below:

_____ I am sending a T-120 blank videotape. Please duplicate the 1987 convention tape and return it to me. Cost = \$25.00.

_____ I am not sending a blank videotape. Please send me a copy of the convention tape. Cost = \$35.00.

Make check payable to the American Auditory Society.

Send order to: Michael F. Seidemann, Ph.D.
Jo Achim Eye, Ear, Nose and Throat Hospital
145 Elk Place
New Orleans, LA 70112

The videotape should be mailed to:

Please allow 4-6 weeks for delivery.

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Meet Karen Patterson	10

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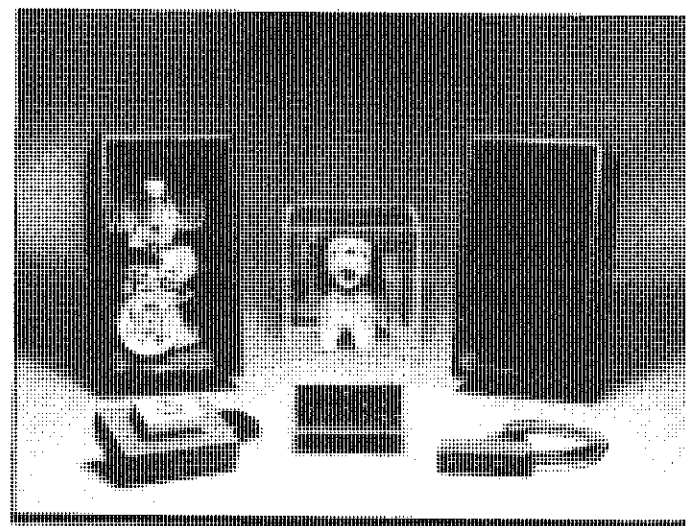
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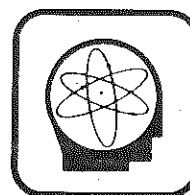


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CORTI'S ORGAN

The Official House Organ of The American Auditory Society

Volume 11, No. 1

Spring 1986

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AUDITEC of St. Louis Alive and Still Growing

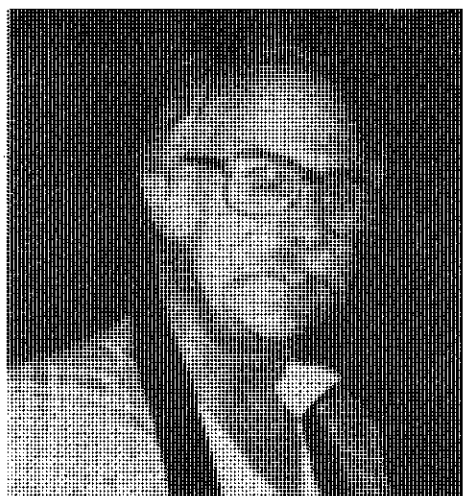
(An interview with Dr. William F. Carver,
President of AUDITEC)

Editors Note: We learned that AUDITEC of St. Louis is celebrating its 15th birthday this year. In just 15 years the company has grown into what is probably the largest supplier of recorded auditory tests in the English speaking world. We felt that our readers would be interested in finding out more about this company. To accomplish this, we recently interviewed Dr. William F. Carver, President, owner, and founder of AUDITEC of St. Louis.

Dr. Carver, what were the circumstances that made you decide to start a venture such as AUDITEC?

I had been thinking about the concept for some time, but I wasn't certain about how to put it all together. Early in 1971 my wife and I were invited to dinner by a new acquaintance, Robert Hille, and his spouse. Bob was an announcer for a local television station and also had a recording studio in the basement of his home. He asked me if I would be interested in seeing his studio and, of course, I was. On the way back upstairs, I suddenly realized that here lay the perfect opportunity to follow up on the idea which had been ruminating up there in my brain for some time. I told Bob about it and asked him if he would be interested. He was and we did!

You said that the idea had been in your head for some time, when did it first occur to you?



William F. Carver

Early in the 1960's when I was Manager of Audiological Services for Beltone Electronics Corporation, the idea came to me, I don't recall what triggered it. But it seemed to me that Beltone should supply tape recordings of auditory tests as an adjunct to their audiometer line, and I suggested the same to the marketing people. The idea bombed; I couldn't even generate a glimmer of interest. Thank goodness I was a lousy salesman!

Getting back to Auditec's beginnings, can you give us a brief description of how it went after that dinner?

Well, before the evening was over, Auditec had been formed. Our first recording session was the next week as I recall. We recorded W-1, W-22, NU-6, PBK-50, children's spondees, and connected discourse (cold running speech). My partner, Bob, was the voice (except for the female connected discourse, of course) and I ran the tape recorder. The recording process was relatively easy. Bob was a good announcer and, after understanding how audiologists present word lists, performed with professional ease. My biggest problem

(Continued on Page 3)

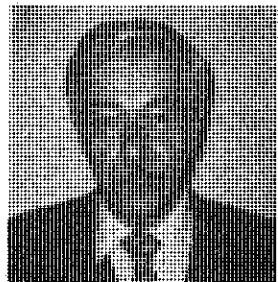
1986 Convention Will Be A Hit!!!

The 1986 annual AAS meeting will feature Dr. Joseph E. Hawkins as the Carhart speaker. The title of his presentation will be "Traces of Age in The Ear and The Eye."

A gala evening of entertainment in Detroit's famous Greektown is planned

for the Association Dinner on November 20, 1986. A traditional Greek dinner followed by Greek folk entertainment will be the highlight of the evening. Dancing to popular music will be available after the entertainment to top off your evening!

1986 Call For Papers



William F. Rintelmann

The 13th annual meeting of the American Auditory Society will be held in Detroit, Michigan on Thursday, November 20, 1986. This year the meeting is scheduled immediately prior to the annual convention of the American Speech-Language-Hearing Association.

The program will consist of contributed papers placed in groups according to topic. The time allotted for each presentation will be 12 minutes.

Interested persons are invited to submit five copies of a summary approximately 300 words in length.

Authors' summaries of accepted papers will be printed in *Corti's Organ*. The deadline for submission is May 15, 1986. Notification regarding Program Committee decisions will be mailed to presenters by August 10, 1986.

Summaries must be postmarked by the submission deadline and should be mailed to: William F. Rintelmann, Ph.D., Chair, AAS Program Committee, Department of Audiology, Wayne State University School of Medicine, 4201 St. Antoine, Detroit, Michigan 48201.

Aural Rehabilitation Forum

Editor's Note: An area each of us as professionals needs to address is that of rehabilitation and intervention. Too often we are caught up in innovative diagnostic techniques and technology research, forgetting that we are service providers. Without attention to patient rehabilitation, we are limiting the focus of our service.

Because of this rehabilitation need, a new feature is being tried for *Corti's Organ*, the "Aural Rehabilitation Forum." Over the next few issues, a series of presentations and panel discussions will be included which were organized under the direction of Ronald L. Schow. The general theme of these articles will be aural rehabilitation concerns for aging adults. These discussions were presented as a part of a conference on aural rehabilitation held in 1983 at Winter Park, Colorado.

Each of these upcoming articles will thoroughly investigate one area of intervention services. But, there are many other populations that also need our attention. As you read this continued series, think about your personal experiences with your specific caseload. In order for this Forum to continue, other papers must be generated by our readers. Intervention is an area that concerns all of us. Let me hear your biases and feelings on any area of rehabilitation. Remember, we need to hear from pediatrics!

Rehabilitating the Elderly Hearing Impaired Audiologists as Hearing Aid Dispensers

Ronald L. Schow
Idaho State University
(First in a series of three.)

Abstract

This presentation summarizes the status of aural rehabilitation efforts for the elderly hearing impaired and calls attention to the great number who need but are not using hearing aids. Data are summarized which emphasize the importance of the hearing aid in rehabilitation. Efforts to improve the hearing aid and its delivery system are described, and a strong plea is made for a more united effort on the part of rehabilitation audiologists and hearing aid specialists, who have the same goal of helping the hearing-impaired elderly. Possible methods for more vigorous promotion and the ethical problems involved are discussed.

Some have wondered why a presentation on rehabilitative services for aging adults would want to concern itself with an issue like the dispensing of hearing aids. Perhaps it would be advisable to provide a rationale for this emphasis as I begin.

First, I should like to underscore the importance of amplification as the major rehabilitative tool in dealing with hearing loss. For some reason there is a persistent and, I think, mistaken notion that rehabilitative audiology primarily involves speechreading and auditory training. This general impression has been difficult to dislodge. Upon reflection most audiologists would concede that amplification really is part of the rehabilitation process, but somehow it is often perceived as being a separate matter. As a case in point, ASHA audiology convention committees include one on diagnosis, one on aural rehabilitation, and a separate committee for hearing aids.

Notwithstanding this tendency to separate amplification from aural rehabilitation efforts, I think that most of us recognize the importance of amplification in rehabilitation. It is, without dispute, the remedy used by more hearing-impaired persons than any other. Further, there are more audiologists by far involved in hearing aid evaluations and hearing aid follow-up than are involved in speechreading and auditory training therapy. Table 1 contains some 1980 data from a large representative sample of ASHA audiologists which demonstrate this (Whitcomb, 1982).

Table 1. Aural Rehabilitation Activities of ASHA Audiologists*
(N = 371 Total Respondents - 51% Return Rate)

	Number	%
Hearing Aid Evaluations/Fitting	295	80%
Hearing Aid Follow-Up/Orientation	308	83%
Counseling/Coordination with Other Professionals	304	82%
Speechreading/Auditory Training Therapy	148	40%

*Whitcomb, 1982

Without too much fear of contradiction, then, my first major premise is this:

1.) Amplification holds a place of pre-eminence in Aural Rehabilitation.

The second major point has to do with the importance of amplification for the elderly hearing impaired. I would argue that the elderly are not very different from any other segment of the hearing-impaired population in their heavy reliance on amplification as a solution for their hearing problems. The evidence indicates, as seen in Table 2, that about one-half of the hearing impaired persons in this country are in the retirement years (Schein and Delk, 1974).

(Continued on Page 5)

From The Editor

Now that the first two issues of *Corti's* for 1986 are under my belt, I am beginning to relax a little. As I'm sure it's obvious, our format has changed. I hope as readers you feel the "new look" is a move in a positive direction.

Beginning with this issue, other new dimensions have been added to *Corti's Organ*. I feel strongly that this publication should be more than simply a mechanism for distributing workshop information, directory details or miscellaneous news items. *Corti's Organ* should be our opportunity as professionals to publish papers, research, etc. in a relaxed, non-journal style manner.

In order to generate papers in various clinical areas, a new approach has been developed. Subjects Editors have been selected who will be responsible for articles on specific topics. All of us on the Editorial Staff hope that the preliminary areas chosen for attention are of interest to you as readers. At this time, two areas have been selected. We realize that these only begin to represent the different directions we take as professionals. We would like to expand our "coverage" of subjects but we can't do it alone. Do you have any area you'd like to "take charge of?" If so, please let me know.

Corti's is your publication. Without your input and assistance, it becomes a publication of a select few.

If you have papers, pertinent information, etc., that you wish to submit, please send it to one of the Editorial Board members listed below. Remember, there's room for your name.

1986 *Corti's Organ* Editorial Board:

Virgina Berry, Editor, 11701 St. Charles Blvd., Little Rock, AR 72211; (501) 371-2554 (office) and (501) 224-7833 (home).

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William Domico, Ph.D (Clinical Editor), Memphis Speech and Hearing Center, Memphis State University, 807 Jefferson, Memphis, TN 38105 (901) 525-2682 (office).

To The Editor

I am currently researching data that I have gathered relating to hearing loss due to barotrauma. In my experiences with people flying, scuba and free diving, I have audiological information on hearing loss due to barotrauma.

I would like to use *Corti's Organ* and/or *Ear and Hearing* as a means of aiding my research. Should other hearing professionals have similar data, I would appreciate hearing from them. My data is limited to approximately twenty cases, and more case studies would be helpful.

Any assistance you could give me in this matter would be appreciated. Anyone having information to share, write or call: Peter Proul, M.A., Box # 10233, St. Thomas, US, Virgin Islands 00801, (809) 776-3546.

Members of AAS who attended last year's meeting will recall my introduction of SHARE, the Speech and Hearing Alliance for Resource Exchange, and the description that followed in *Corti's Organ* (Vol 10, No. 3, Fall/Winter 1985-86, P. 3). At the AAS meeting I handed out a description of the program. A copy is published on page 4. I

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1986 CARHART MEMORIAL LECTURE

Renowned scientist, Joseph E. Hawkins, will address the American Auditory Society's annual meeting on Thursday, November 20, in Detroit, Michigan, just prior to the 1986 American Speech/Language/Hearing meeting. Dr. Hawkins' presentation is entitled "Traces of Age in The Ear and The Eye."

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Susanne Kos, M.A.,
Assistant Secretary

wanted to bring your readers up to date on the status of the program.

Since October I have been working to get additional support to acquire and distribute appropriate materials. With the help of Kristine Takekawa, past president of the National Student Speech/Language/Hearing Association and the organization's consultant, Dr. John Bernthal, we have received an endorsement by NSSLHA. That means we can contact the individual association chapters in order to solicit their support. In addition, NSSLHA is considering the possibility of adopting SHARE as one of their special projects next year. The support of NSSLHA is a significant step in the development of this program, and it is deeply appreciated.

I have received many phone calls and messages about SHARE, and have received several boxes of books and journals from individuals. Materials have already been forwarded to a graduate training program and also to a hospital-based cleft palate program in Sao Paulo, Brazil. We are corresponding with an otolaryngologist in Nigeria about some needed books there. In addition, there is a request from an investigator in Prague, Czechoslovakia, for some specific needs. They are looking for any of the three books authored in the early 1970's by Samuel Kirk and his co-authors on the ITPA. They include: Kirk, S.A., *The Diagnosis and Remediation of Psycholinguistic Disabilities*, 1966; Kirk, S., McCarthy, J., and Kirk, W., *The Illinois Test of Psycholinguistic Abilities*, 1968; and Kirk, S. and Kirk, W., *Psycholinguistic Learning Disabilities: Diagnosis and Remediation*, 1971. Perhaps readers of *Corti's Organ* could ask their speech/language colleagues if they have any books by Kirk that they would be willing to donate.

At this time we are attempting to identify individuals and training programs in countries where resources and finances are limited. To assist in this effort, a group of professionals, including Jon Shallop, Jerry Northern, Jose Barajas (Spain), Salah Soliman (Egypt), and Orozimbo Costa (Brazil), have agreed to serve as consultants. We are also interested in identifying any foundations that might provide financial assistance toward the cost of shipping materials. Any suggestions from readers of *Corti's Organ* would be welcome.

Our progress will be slow but sure. However, we know that we are on the right track and that efforts like this will serve the communicatively handicapped around the world. If you have books or journals to donate, let me know. I'd prefer a letter or call before you send them so that I can determine whether they are needed. Any cash donations that can be used for shipping costs will be equally welcome. Thanks for your help.

Any donations of resources or letters of inquiry should be addressed to:
Robert W. Keith, Ph.D. or Tel. 513/872-4893 (office)
Div. of Audiology and Speech Pathology
Dept. of Otolaryngology
Room 6009, Univ. of Cincinnati Medical Center
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Reflex Decay in Two Patients with Labyrinthitis

(The following is excerpted from a presentation by Kathleen D. Eccard, M.S., Suburban Hospital, Bethesda, Maryland, at the November, 1985 meeting of the American Speech/Language/Hearing Association.)

Labyrinthitis refers to inflammation of the labyrinth of the inner ear. Symptoms can include tinnitus, vertigo, hearing loss, or any combination of these. These complaints are often sudden in onset, and patients are usually treated symptomatically (1).

Adour, et al. (2) studied patients with acute vestibular neuronitis, acute labyrinthitis, and acute epidemic vertigo to test the hypothesis that vestibular vertigo is a manifestation of a viral cranial polyneuritis. Their patients demonstrated normal or bilaterally symmetric puretone audiometric results with abnormal electronystagmography (ENG), i.e., unilateral weakness of caloric response, or spontaneous or positional nystagmus. However, many of these patients also demonstrated transient cranial nerve dysfunction. On retest one month after the onset

of the symptoms, all but one of the sixteen patients had complete resolution of their signs and symptoms.

Two patients referred to the Neurotology Unit of Suburban Hospital with a diagnosis of labyrinthitis showed disappearance of acoustic reflex decay upon resolution of their presenting symptoms. These cases are discussed below.

Patient 1

M.C., age 37, was referred to this hospital by an otolaryngologist. Her symptoms included bilateral tinnitus ("extra loud when dizzy"), and true vertigo. She reported no decrease in hearing and no significant personal or familial history of auditory or vestibular disorders.

The hearing evaluation indicated normal hearing bilaterally, with 100% speech discrimination in each ear using the W-6 word list. No PI-PB rollover was obtained in either ear. Immittance testing indicated normal middle ear pressure and compliance bilaterally. Acoustic reflex thresholds were within normal limits bilaterally when stimulated ipsilaterally and contralaterally.

(Continued on Page 3)

AUDITEC (Continued from Page 1)

was getting him (and the female voice too) to read the connected discourse *without* inflection! The most time consuming task was editing and reordering the words for the different "forms." It was several months before we were ready to sell our tapes.

Who else was involved with Auditec?

No one. It was just Bob and I.

You were working for Washington University Medical School then, weren't you? Did you quit then?

Oh no, both of us kept our regular jobs. No, we just worked one evening a week. And I spent extra time weekends on the business end, and shipping, invoicing, etc.

How did you market your tapes?

Word of mouth. Since both of us had full time jobs, we just kind of eased into the market place. Backed into it might be a better description. I told a local distributor of audiometers (and a friend as well) about our venture and he began to distribute the tapes and also to pass the word. After a time, I thought we should advertise, but Bob didn't want to. Nevertheless, the word spread, slowly, and business increased a little each year. I found that I was spending more and more of my weekends doing Auditec business, though we still only needed to record once a week.

Your product line is considerably larger than you described earlier. How did that happen?

I contacted audiologists who had developed tests, (one contacted me) with the proposal that Auditec market their tapes for them. We obtained three new tests that way. Having these tests in our catalog helped us expand because persons would read about the test in a journal, ask the developer for his test, and he would refer them to us. This gave us the opportunity to tell them of the rest of our line.

I know that you have a lot more tests than that. What happened next?

I believed that Auditec could grow into a company which would supply most of the recorded needs of the audiologist. But I also knew that to accomplish this, more time and effort would have to be devoted to the business than we were giving it then. At that time Auditec could not support one of us, much less both of us, but I knew that the potential was there for at least a one man operation. So, in 1977, I borrowed a pile of money, bought out my partner, left Washington University, leased a space for the studio, and took a part-time teaching position to help support me while I tried to make Auditec self

supporting. To make it work, for four years I spent seven days and evenings a week either teaching or working on Auditec business. I think my family forgot what I looked like, but I made it work.

Did you do anything special to make Auditec grow?

Simply put, I began to let people know that Auditec existed. I advertised and used direct mail on a limited basis (not too much money to work with then). I began to expand the product line with materials which I thought audiologists might want. Also, test developers continued to contact me allowing further expansion of the line. My hunch about Auditec's potential was right, my gross sales increased 55% the first year post-partner and 40% the next year!

Wow! That's quite a record. Have you been able to maintain that pace?

Don't I wish! No, growth has been sort of up and down, more or less following the nation's economy. 1985 was a banner year, though, and I look forward to an even better year in 1986.

How big is your product line now and how can our readers get information on it?

Our catalog lists 69 reel-to-reel items, 85 cassette items, two video tapes and a variety of supporting printed materials. The catalog is available to anyone who wants it, simply write or phone, we'll send one by return mail.

I would like to add that Auditec is still very small. I employ two part-time individuals now. That's it. But this allows us to be very flexible; we act like a "job-shop." That is, we can record to order almost anything that one may desire.

Let's change the subject to the technical end of the recording business. What are some of the technical problems that one faces in recording speech testing materials?

Our biggest problem is "print-through."

Print-through, what's that?

When one section of recorded tape lies next to another section of tape as they do when stored on reels or cassettes, the magnetized (recorded) particles in that section will partially magnetize the adjacent sections, both above and below. On tape which has continuous material recorded on it such as music, or our cold running speech, the print-through is so minimal that it escapes detection most of the time. With our tapes, however, the majority of the tape is blank. There are at least four seconds of silence between stimuli on our standard tapes, but stimulus duration is just over a second in most cases. Therefore, the stimulus material is highly likely to lie next to virgin tape, inducing its signal on it, at a markedly reduced level, of course, but audible, especially when played at high output levels.

What can you do about it?

I'm afraid that it's not enough, especially for those individuals who employ very high output levels, looking for roll-over. We use "reproduce" tape which has good (reduced) print-through characteristics. We record at slightly reduced levels (relative to "standard record level"). Finally, we use an electronic gate between our master tapes and the production copy. The result is that the print-through is about 50 dB below the level of the primary signal, sufficient for most speech discrimination tasks. Recently a study was reported in **EAR AND HEARING** which used one of our tapes. In the appendix of their article they indicated that while print-through was audible, it was not discriminable, even at high levels.

Any other problems?

Yes, we need standardization. The industry has audiometer standards, but there is nothing for speech testing materials. Standards not only maintain or upgrade

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International Hearing Foundation

Week in Minnesota

This otology/audiology/technology "Week in Minnesota" will begin on June 2, 1986, with the Minnesota Ear Surgery Course. The Course will consist of a temporal bone dissection format, with workshop and discussions led by Drs. Potami, Sadé, Tos, Maniglia, Paparella, Goycoolea, Koutroupas, etc. It will be held at the Minnesota Head & Neck Center.

Friday, June 6, brings the Clinical Otology Workshop with a number of luminaries discussing such topics as "Sensorineural Hearing Loss in Children," "Anatomical Variations," surgical procedures, cochlear implant updates, etc. Additionally, Friday's workshop faculty will include Drs. Facer, Portmann, McGee, Shea, Hough, Schuknecht, and Mecklenburg.

The International Hearing Symposium being held on Saturday and Sunday, June 7 & 8, 1986, at the Amfac Hotel in Minneapolis offers an ecumenical meeting involving medicine, otology, technology, and business/marketing arenas. An international cast of speakers in medicine, professional and technological fields, including many of the above-named physicians, as well as Kurt Hecox, M.D., James Jerger, Ph.D., and Jerry Northern, Ph.D., will be participating in this outstanding symposium. This will be highlighted by the Reese Award and banquet being held on Saturday night at the Amfac.

The Reese Award is a new annual award for advancement in biomedical and technological hearing research. The recipient, chosen by an international scientific committee, will receive a \$30,000 cash award plus a gold medal. This presentation will be made at the banquet, which will also include an appearance by a special guest speaker.

Last, but certainly not least, is the Minnesota Audiology-Technology Symposium/Workshop to be held on Monday, June 9, as a continuation under the

(Continued on Page 10)

INTERNATIONAL HEARING SYMPOSIUM

June 7 and 8, 1986

Amfac Hotel

Minneapolis, Minnesota

This unique two day symposium combines Current Developments in Medicine, Audiology and Technology on such practical topics as medical and surgical treatment, audiology, hearing aids, technology, marketing, etc.

The first annual international award for hearing, the Reese Award, will be presented at the Award Banquet.

An outstanding faculty of international authorities includes Drs. Schuknecht, Maniglia, Jerger, Tos, Sadé, Northern, Hecox, Ward, McGee, Oliveira, Goldstein, Goycoolea, Paparella, Hough, Lim, etc., along with leaders of technology.

In addition, symposium attendees can participate in "bonus" sessions on June 9 dealing further with audiology, technology and marketing, as well as hands-on earmold and ITE modification experience.

For more information and registration (modest fee includes Award Banquet, lunch, etc.) please phone or write to:

International Hearing Foundation
701 25th Avenue South
Minneapolis, Minnesota 55454
(612) 339-2120

New Officers of Acoustic Systems Named

Earnest Butler, Chairman of the Board of Acoustic Systems, formerly Tracoustics, Inc., announces the election of Jeff G. Schmitt as President. Mr. Schmitt joined the company as an intern while in graduate studies at the University of Texas. He holds a BSEE and a Masters degree in acoustics.

Bill Weitzenkorn, Wyndy Ellis and Steve Hart were also appointed as Corporate Officers at the annual shareholders' meeting. The Austin based manufacturer designs and constructs audiometric examination rooms and suites as well as systems for industrial noise control.

Aural

(Continued from Page 1)

Table 2. Percentage of Significant Bilateral Hearing By Age*

Age In Years	Percent of Total Population
Under 6	0.8
6 - 16	5.9
17 - 24	3.6
25 - 44	9.8
45 - 64	28.6
65 - and over	51.3
	100.0

*Schein and Delk, 1974

Other evidence in Table 3 indicates that about one-half of the hearing aids being used in the U.S. are based by the elderly (Eisenberg, 1976; Cranmer, 1983).

Table 3. Percentage of Hearing Aid Purchasers by Age
Percent of Total Hearing Aid Sales

Age In Years	**1970-75	*1980	*1981	*1982	*1983
18 and Under		9.1	8.1	5.8	7.0
19-39		11.7	8.5	7.6	9.7
40-65		30.5	26.7	29.4	27.7
66 and Over	56.5	48.7	56.7	57.2	55.5

**Eisenberg, 1976
*Cranmer, 1983

This suggests that the elderly are more or less using their proportionate share of the hearing aids. My first point, then, may be modified to include the elderly.

2.) Amplification holds a place of pre-eminence in Aural Rehabilitation for the elderly hearing impaired.

The next issue has to do with the pathetically limited use of hearing aids by the hearing impaired, both old and young alike. Even the most conservative estimates of hearing loss indicate there are about 15-16 million Americans who have bilateral hearing losses of various degrees (Mahon, 1982; Punch, 1983). However, there are only about 2.5 million in this country using hearing aids (Mahon, 1982). That is no more than about 17% of the hearing-impaired population (See Table 4).

Table 4. Estimates of Hearing Impaired Persons and Hearing Aid Wearers in Various Countries

	U.S.*	Canada**	Scandinavia***
Hearing Impaired Persons	15,118,000	708,000	1,210,000
Hearing Aid Wearers	2,588,760	283,000	370,000
Unaided	12,529,240	425,000	840,000
% of H.I. Using Aids	17%	40%	31%

Sources: Hearing Aid Journal, November, 1981**, Mahon, 1982*, and Skadegard, 1982***)

In Canada and certain Scandinavian countries where hearing aids are supplied with government support, about 30-40% of hearing impaired persons use aids (Hearing Aid Journal, 1981; Skadegard, 1982). In the United States this means that about thirteen million hearing-impaired persons are not using aids, and about half of these are elderly persons. If we then ask what can we do as rehabilitative audiologists to help the several million elderly hearing impaired, one answer is that we should try to find out why about seven million of them are not using hearing aids. Further, we might ask "What can we do to get more of them to consider this solution?" Still another question is: "Will any of those not using aids be helped to communicate better by using one?" I think the answer to the last question is "yes". The higher use figures in Canada and the Scandinavian countries would suggest a higher percentage can be helped. In fact, these numbers suggest we should be able to at least double hearing aid use in this country.

Reasons For Non-Use of Hearing Aids

Are hearing aids not being used because of a faulty product, or because of a poor delivery system, or both, or could there be some other reason?

I suggest that there are problems in both aids and the delivery. Hearing aids have improved, and any number of special features have been devised so that these amplification units function better. Still there has not been a major breakthrough to an aid that most people simply put on and refuse to take off because it is so satisfying. Audiologists and manufacturers will continue to work for improvements, but if the magic breakthrough ever comes, it could certainly change the use of aids.

Assistive listening devices may help us overcome some of the product problems if we can get people to use them. While we are waiting for other technical developments, and learning to use the improvements available, what can we do to improve the hearing aid delivery system? If the government could be persuaded to give hearing aids away, that would certainly help. We probably cannot look to government agencies to give away more hearing aids. So what else can be done?

Dispensing Audiologists or Hearing Aid Dealers

Perhaps all hearing aids should be dispensed by audiologists. Would that create a major change in hearing aid use? Would elderly persons seek services from audiologists in large numbers? The evidence after about ten years of audiologists' dispensing is encouraging. For example, these data in Table 5 suggest that hearing aid users fit by dealers are less satisfied than users fit by audiologists (Oja & Schow, 1984).

(Continued on Page 5)

Speech and Hearing Alliance For Resource Exchange

Share

The primary purpose of SHARE is to assist in the international development of Audiology and Speech/Language Pathology training programs and services through the sharing of surplus textbooks, journals, reprints, or other materials and resources.

A secondary purpose is to share experiences and information among persons with a common interest in helping the communicatively impaired.

The primary recipients of these resources will be training or clinical programs in developing nations which do not have the means to purchase journals and textbooks necessary for the development of professionals, and which will serve the communicatively handicapped in their countries.

Books, journals, and other materials will be obtained through donations from individuals and libraries. Although more recent editions of textbooks are most useful, any edition can provide background information for beginning scholars or serve as a reference for more advanced professionals. In addition, all volumes of professional journals would serve as valuable resources.

The conduit for distributing these materials will be the Communicative Dis-

orders Foundation, a non-profit tax-exempt foundation. The president of this foundation is Donald A. Shumrick, M.D., and the vice president is Robert W. Keith, Ph.D. The Communicative Disorders Foundation has obtained a start-up donation to cover the expense of forwarding materials to recipients. Additional grants and donations will be solicited.

Tax deductible gifts of books, journals, materials, or cash will be acknowledged in writing by the Communication Disorders Foundation. The acknowledgment will contain an itemized listing of books, journals, or materials donated for distribution.

Suitable recipients will be forwarded materials appropriate to their needs. A stipulation of the exchange is that materials will be placed in libraries where they will be generally available to scholars.

Any donations of resources or letters of inquiry should be addressed to: Robert W. Keith, Ph.D.
Div. of Audiology and Speech Pathology
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Telephone: 513-872-4893

Reflex Decay

(Continued from Page 2)

ally. Acoustic reflex decay testing, performed at 10dB above the reflex threshold at 500Hz and 1000Hz (3), was normal in the left ear. Reflex decay testing in the right ear produced a positive retrocochlear sign, with decay of greater than 50% within 5 seconds at both 500Hz and 1000Hz on two consecutive trials.

ENG results indicated peripheral involvement with unilateral gaze nystagmus with eyes closed, positional nystagmus with eyes closed, and a non-localizing directional preponderance to the left.

Auditory Brainstem Response (ABR) Audiometry performed three months after the initial evaluation was normal. By this time, the patient reported complete resolution of the symptoms of vertigo and tinnitus. Reflex decay testing was repeated and was found to be normal in both ears.

Patient 2

M.G., age 49, presented with a three day history of "a feeling of water" in the right ear, tinnitus, and true vertigo. A diagnosis of labyrinthitis had been made by the referring otolaryngologist. An illness four years previously, also diagnosed as labyrinthitis, had resolved spontaneously.

Hearing tests done by the referring physician's audiologist were within normal limits bilaterally. Immittance test results indicated normal middle ear pressure and compliance bilaterally. Acoustic reflex thresholds were within normal limits, except for an absent reflex at 120dB SPL with ipsilateral stimulation in the right ear.

There was no acoustic reflex decay with the stimulus in the left ear. Questionably significant reflex decay was obtained on two consecutive trials with the stimulus in the right ear, i.e., greater than 50% within 5 seconds at 1000 Hz but less than 50% at 500Hz.

The ENG suggested peripheral involvement with spontaneous and/or positional nystagmus with eyes closed. Immittance measurements were repeated 23 days later. No reflex decay was obtained in either ear.

ABR tests, performed five days after the repeated immittance tests, were normal bilaterally. The patient reported significant diminution of the symptoms reported one month earlier.

In the Adour, et al. study (2), cranial nerves V (Trigeminal), VII (Facial), VIII (Acoustic), IX (Glossopharyngeal) and X (Vagus), as well as the second cervical nerve, were reported to be involved in acute vestibular vertigo. Their patients had acute vertigo with vestibular manifestations and no cochlear involvement, abnormal electronystagmographic (ENG) findings, and a normal neurologic examination. No mention was made of acoustic reflex measurements and/or reflex decay testing in the Adour study.

The findings reported here indicate that labyrinthitis can possibly affect the acoustic reflex, producing decay. These results may appear to support Adour's hypothesis of a polyneuritis involvement in acute labyrinthitis. Further investigation in a more controlled manner, with a larger population, could determine whether a true association exists between labyrinthitis and acoustic reflex delay. Such a study could also help determine the sites of involvement in labyrinthitis.

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Aural (Continued from Page 4)

Table 5. Summary of Hearing Aid Satisfaction Results on Sample of 45 Hearing Aid Users*

Dispenser	N	%	Highly/Moderately or Slightly Satisfied	Neutral or Slightly/Moderately/Highly Dissatisfied
Audiologist	19	42	89%	11%
Dealer	26	58	50%	50%

*(Oja & Schow, 1984)

This is certainly not the last word on the subject. Unfortunately, other data are very limited comparing the work of hearing aid dealers and audiologists. Whatever those data may ultimately show, if and when we get them, we do know this: Hearing aid users are not deserting the dealers in droves, nor are all audiologists providing 100% satisfaction on all fittings.

Statistics drawn from our 1980 survey indicate that about one of every five audiologists was at that time involved in dispensing hearing aids (Whitcomb, 1982). What impact are audiologists having as hearing aid dispensers? Are we doing a better

International Congress Scheduled

The International Congress on Brainstem Auditory Evoked Potentials is being held October 20 - 22, 1986, at the Summit Hotel, New York N.Y. It is sponsored by Brooklyn College, City University of New York, and co-sponsored by the School of Medicine, University of Pittsburgh, and Guinta Associates, Inc. The Congress will address the state-of-the-art of brainstem auditory evoked potentials and will isolate and critically evaluate central scientific and clinical problem areas. Not a "how to" workshop, the Congress will include critical reviews and presentations by internationally renowned scientists and clinicians. The topic is addressed with a focus toward specifying key problem areas leading toward recommendations for future research and clinical applications. In addition, the first day will be devoted to invited papers and selected submitted reports. The Congress proceedings will be published.

The Organizing Committee Chairperson is Aage R. Moller, M.D., Ph.D. The Congress Director is Shlomo Silman, Ph.D. The Organizing Committee members include Keith H. Chiappa, M.D., J.J. Eggermont, M.D., Stanley A. Gelfand, Ph.D., Aage R. Moller, Ph.D., Frank E. Musiek, Ph.D., Michael Seitz, Ph.D., Shlomo Silman, Ph.D., Arnold Starr, M.D., James J. Stockard, M.D. The Operations Chairperson is Carol A. Silverman, Ph.D.

In addition to the organizing committee members, featured speakers include Dr. Clarke Cox, Dr. Manuel Don, Dr. Robert Galambos, Dr. Michael Gorga, Dr. John T. Jacobson, Dr. James Jerger, Dr. Paul Kileny, Dr. David R. Stapells, Dr. Terence W. Picton, Dr. Hillel Pratt, Dr. Daniel

Schwartz, Dr. Laszlo Stein and others.

There is a Call for Papers on BAEPs. The deadline for submission of papers (Abstract of up to 200 words and a Summary of up to 800 words containing the introduction, method, results, and discussion) is June 30, 1986. The registration fees are as follows: Physicians, \$325 (\$350 for late registration); Audiologists, Residents, and other Professionals, \$265 (\$290 for late registration); and Students, \$155 (\$180 for late registration). The deadline for payment of registration fees is September 2, 1986. The registration fees include attendance at the Congress and lunch on the first and second days. There is a \$6.00 fee for ASHA Continuing Education Units (2.3 CEUs).

Brooklyn College is approved by the Continuing Education Board of American Speech-Language-Hearing Association to sponsor continuing education activities in speech-language pathology and audiology. As an organization accredited for Continuing Medical Education the Accreditation Council for Continuing Medical Education, the School of Medicine, University of Pittsburgh, designates this continuing education activity for 22.5 credit hours in Category 1 of the Physician's Recognition Award of the American Medical Association.

For further information call Dr. Shlomo Silman, (718) 780-5186 or Dr. Carol A. Silverman (212) 517-0576. Checks are payable to Brooklyn College and papers and registration fees should be mailed to: Shlomo Silman, Ph.D., Speech and Hearing Center, Boylan Hall, Brooklyn College, CUNY, Bedford Avenue and Avenue H, Brooklyn, New York 11210.

job than hearing aid dealers? Perhaps, but we have to qualify that answer pretty carefully.

I think there can be little argument but that audiologists, as a group, understand the technical aspects of hearing aid fitting better than dealers, or specialists as some prefer to call them. How important are these technical details in fitting? A dispensing audiologist friend of mine estimates technical aspects amount to 5% of a total quality dispensing process. He says the major thing needed in dispensing is good counseling, which includes full hearing aid orientation among other things, and which helps the client develop realistic expectations for the aid. Are the audiologists any better at counseling and orientation than the dealers? Naturally, it depends on the individuals involved. Audiologists, however, generally have more formal training in counseling and orientation. They have another advantage as well. They are trained to focus on the communication handicap and not on the "sale". This attitude toward the sale is often a major difference between dealers and what audiologists ought to be. I know two audiologists who have tried to work with dealers... good dealers, mind you, and finally in both cases, this sales attitude was the fundamental difference which broke up the arrangement.

The public confidence in the hearing aid dispenser is a very subtle and an important dimension in fitting aids. Audiologists have a natural advantage here because of our training and credentials, but it has to be more than "window dressing". It has to be reflected in a "genuine professionalism". We have to know what really matters most. I would submit that some of us, who are not in dispensing and extensive follow-up activities, may have a hard time finding out what really matters most with amplification. As a case in point I will tell you about a recent experience of mine.

After being an "ivory tower audiologist" for ten years, (meaning I have been doing hearing aid evaluations but not dispensing), I have recently had the opportunity to work with my mother as she has been fit by a local dispensing audiologist. Frankly, I have been amazed by the matters that seem to be of most concern to her. Gain, frequency response, and output limiting devices have been very, very peripheral, almost unimportant matters in her fitting. Much, much more important has been whether to buy an in-the-ear or a behind the ear unit. That decision ultimately was resolved to my satisfaction with the style that I believe has a better chance of being properly fit on her loss. But for what reasons?? Partly, it was my professional advice and that of my dispensing colleague that the behind-the-ear unit would give a better chance for an acoustically good fit. Far more important for her personally, however, were the following facts:

1. Her manual dexterity is good enough that she can manipulate the behind the ear unit without difficulty.
2. In her estimation it is less noticeable than the in-the-ear unit.
3. The particular behind-the-ear units in question have a two year warranty while the in-the-ears have only a one year.
4. The behind-the-ear units have a very low current drain, thus allowing for long battery life.

(Continued on Page 6)

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AUDITEC (Continued from Page 3)

quality, but give us guide lines so that everyone knows what to expect from a recording. Presently we record to "accepted practice."

And what is accepted practice?

Candidly, at Auditec it's what I think ought to be! OK, it's not really that bad. During my post-doctoral fellowship at Northwestern University under Tillman and Carhart, I learned how they prepared their tapes and, to a great degree, I follow their methods today. For instance, in most of our tapes, we zero the VU meter on the word *preceding* the stimulus word. The talker is trained to level at zero on "word" of the phrase "say the word..." and to let the stimulus word which follows fall naturally. This technique tends to insure that the stimulus word is not distorted by over (or under) emphasis in an attempt to reach zero VU unnaturally. One mistake that a lot of audiologists make when giving a test via live voice is to over-emphasize the stimulus word, especially the last phoneme, frequently almost making a two-syllable word out of it. The stimulus word should be spoken as if another word were going to follow immediately.

Do you have any advice on tape and tape recorder care?

Thank you for asking. I am aghast at the lack of care that people give their tapes and tape decks. The decks are mechanical devices which require periodic care. Tapes can be ruined by uncared-for decks. Tapes are treated as if they were completely

immune to destruction, or worse, to slow, unnoticed deterioration.

Can you give us some brief advice?

First, tape should be stored smooth wound, tail out...

Wait a minute, what do you mean, "smooth wound, tail out?"

At the end of the day, the tape should not be re-wound, but left played to the end or "tail-out." Fast rewind or fast forward will result in an uneven wind and unequal tension. The edges of the tape can be bent against the side of the reel. Regular wind speed, "play," will result in a smooth even load at equal tension, hence "smooth wound, tail out." Also, any print-through that occurs will follow the stimulus rather than precede it.

OK, what else?

Dirty heads and out-of-line heads will degrade the high frequency response of a tape. Recorded tape repeatedly passing over the tape heads will slowly build up residual magnetism. A magnetized head will permanently degrade the recorded material on a tape, again in the high frequencies.

Therefore, the tape heads, capstan and all other parts which come into contact with the tape should be cleaned periodically. Commercial cleaners are available from an electronics store. Simply follow the instructions on the bottle. Next, the

(Continued on Page 9)

Equipment Review

Infrared Assistive Listening Devices

Submitted By Rod McLennen

Amplified speech presented in large room and outdoor environments may be distorted through echo, noise, reverberation, distance or spectral deformation. The transmission characteristics from the finest sound systems will create less than a perfect copy of the input signal, imposing on the listener some degree of intelligibility degradation. For those individuals with minimal hearing impairment and for those who seek assistance through hearing aids, the solution has not been readily available. In fact, these conditions provide for an environment of such frustration that many individuals choose to avoid activities involving large room acoustics.

Manufacturers have sought to rectify this situation, reducing negative environmental factors by delivering the speaker's message directly to the listener. Communicative enhancement has been obtained

through such systems as direct line, audio loop, AM and FM devices. Over the past several years, however, significant interest has been focused on large and small room infrared assistive listening device systems. The purpose of the present article is to summarize information in such broad categories as function, application, advantages, disadvantages, and manufacturers specification of the infrared assistive listening device.

Function: Infrared light is a carrier source for audio frequencies usually in the range of 40-15k Hz. However, the infrared receiver will restrict the bandwidth reaching the ear to approximately 50-8k Hz. This invisible carrier is low in energy with a wave length slightly shorter than visible light. The system contains the infrared emitter/transmitter with infrared receivers. Audio signals are coupled from a microphone or amplifier to the emitter/transmitter where light emitting diodes illuminate the designated field of reception. Guidelines exist for determining the size

(Continued on Page 8)

Aural (Continued from Page 5)

This last item is perhaps the biggest of all, and underscores the strange, non-technical factors that are so important in the fitting of aids and the satisfaction of the elderly. I am reluctantly becoming convinced that an audiologist can do more with effective counseling skills which focus on communication, and with a good dremel drill and a few filters, than I can if I focus only on my knowledge of comparative hearing aid procedures, prescription formulas, and speech audiometry. Maybe many audiologists don't know enough about what matters most. I shudder when I think how many are out there dictating to the dealer exactly which brand and model to fit, as our 1980 survey shows that 88% of them are doing (Whitcomb, 1982). Unless these audiologists are heavily involved in the follow-up process, this may be a gross abuse of power.

In short, I suspect that despite tremendous advances we still have a number of problems with both the product and the delivery system. I don't think audiologists have all the answers to the delivery problems either. In other words, doing away with all the dealers would not solve our delivery woes.

Now that we have learned firsthand that we can't instantly solve all the problems that the dealers and manufacturers have been struggling with for several decades, I suggest we should be more open to considering the efforts dealers are making to increase the use of hearing aids. Table 6 shows they are doing a lot more advertising than we are (Cranmer, 1983).

Table 6. Percentage Using Various Types of Promotion in Hearing Aid Sales*

	Dispensing Audiologists	Hearing Aid Specialists
Newspaper	43%	75%
Radio	4%	9%
TV	0%	8%
Direct Mail	33%	66%
Phone Directory	65%	63%

*(Cranmer, 1983)

I recommend that we, as rehabilitation audiologists, need to lend vigorous effort to the amplification area. We need to learn to use whatever we can — like assistive devices or perhaps advertising. But we must be careful that our efforts are motivated by a true professional attitude with emphasis on communication improvement, not sales. If not, we may end up lacking the professionalism we pride ourselves on having.

If audiologists were to turn to vigorous promotional techniques, like indirect mail and heavy advertising, which are time honored tools being used to promote many products, including hearing aids, could we fit and help more persons with hearing loss? Or would we only become unprofessional and lose some of the confidence we now enjoy with clients and the elderly? What would be the ethical and professional problems with using more vigorous advertising efforts in promoting hearing aid use? How does this relate to all ethical problems associated with dispensing? Our next presentation and panel discussion will focus on these issues.

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Support Needed For Congressional Legislation

Various subcommittees in the House of Representatives are currently considering passage of a bill (H.R. 1403) which will guarantee continuing financial assistance to the aged and disabled who need audiological services and auditory rehabilitation. Funding for the bill has already been arranged through an excise tax on cigarettes.

Unfortunately, the bill is in danger of dying in the subcommittees listed below. Your help is needed to save this legislation. We strongly encourage you to write to committee chairmen and to committee members from your state, urging them to request a prompt hearing for the bill, to provide their support, and to sign the bill as a co-sponsor.

Address letters to: **The Hon. (name of representative)**
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Engstrom Awarded the 1985 Amplifon Research & Studies Center Int'l Prize

On Friday, March 21, at 9 p.m., at the Milan Press Club, Swedish professor Hans Engstrom was awarded a prize of ten million lire by A. Charles Holland, president and founder of the Amplifon Research and Studies Center. Engstrom was granted the CRS award for having devised an investigation methodology using the electron microscope. This new methodology represents a powerful diagnostic tool in auditory pathology.

During the award ceremony, Tedo Madonia, Professor of Audiology at the University of Catania, presented Hans Engstrom and his works; introduced Ettore Pirodda, Head of the Otorhinolaryngology Clinic at the University of Bologna; and coordinated the round table discussion on the cochlear ultrastructural and physiopathological bases of sensorineural hearing disorders. Speakers were Massimo Del Bo, Head of the Institute of Audiology at the University of Milan; Salvatore Iurato, Head Professor of Bioacoustics at the University of Bari, and Paolo Menzio, Head of the Otorhinolaryngology Clinic at the University of Turin.

Who is Hans Engstrom?

Head of the Biomedical Center and Department of Otorhinolaryngology at the University of Uppsala since 1979, Hans Engstrom started his career in medicine at the Karolinska Institute in Stockholm. Here the more important steps in his career were taken.

This Swedish scientist, a prolific author, published, among other works, two important monographs and wrote many articles on clinical research and basic science. For his research work, he was granted international recognition and prizes in various countries, including the "Shambaugh Prize" in the United States and the "Swedish Medical Association Prize" in his own country.

As a member of this medical association he achieved significant results in collaboration with a team of American specialists. This cooperation often extended to cholera coming from other countries; it has produced important studies and innovative hypotheses to stimulate new research.

A member of the leading otorhinolaryngology societies throughout the world, Hans Engstrom often attends the most important meetings, presenting the results ob-

tained through his original studies using the electron microscope.

"Surface Preparation": The Electron Microscopy Research Method devised by Hans Engstrom

Professor Engstrom devised an innovative electron microscopic method of "surface preparation" for studying cochlear cells. These cells are normally seen wound spirally around the cochlea. Engstrom's procedure provides a method of unwinding the spiral and of spreading out the nervous cells as on a keyboard. Thus, his surface preparation allows numerical counting of healthy and diseased cell, and provides a basis for a more scientific understanding of the origins of auditory disorders.

The Amplifon Research and Studies Center International Prize

This recognition, which has now been bestowed fifteen times and is known as the "Nobel Prize for Audiology", is given by the Amplifon Research and Studies Center according to the votes of a commission representing the major national and international scientific societies in the field of otolaryngology and audiology.

This International Prize is part of a wider educational and research program covering both the organization of conventions and meetings, and extensive didactic and publishing activities.

In previous years, the Amplifon Prize was awarded to two scientists from Italy (Ettore Bocca and Michele Arslan), two from France (S. Borel Maissonny and Jean Marie Aran), two from West Germany (Horst L. Wullstein and Wolf D. Keidel), two from Sweden (Erik Wedemberg and Nils G. Henriksson), one from Israel (Heim Sohmer), one from Japan (Tokuro Suzuki), and five from the U.S.A. (Hallowel Davis, James Jerger, Jozef J. Zwislowski, Aram Florig, and Peter Dallos).

Prof. Engstrom's Visit to Italy

During his stay in Italy Prof. Engstrom also visited Catania. On March 24, in the public hall of the Catania University, he presented the tutorial lecture, "The Normal and Pathological Organ of Corti".

His studies and the significant steps in his career were illustrated by Giovan Battista Catalano, Head of the Otorhinolaryngology Clinic at the University of Catania.

AAS
to celebrate
in Greece
in 1986...
in Detroit's
Greektown,
that is,
with traditional
Greek cuisine
and Greek folk
entertainment

Equipment (Continued from Page 6)

of the emitter. However, interactions between rooms with reflective surfaces, obstacles, emitter placement, and high intensity sun light will require empirical verification.

Applications: The categories of application are broad, ranging from the ability to communicate from one speaker to a group of listeners in large room situations to those where individual communicative enhancement needs may be obtained from a personal system. Examples of the former include the following: 1) classrooms for the hearing impaired, 2) business and industrial conference rooms, 3) courtrooms, 4) houses of worship, 5) theaters and concert halls, 6) university and medical lecture halls and, 7) hotel and other conference centers. An advantage for the individual wearing hearing aids is that the infrared receiver can be coupled to his aid through either an induction or a direct line input.

Advantages: Two major advantages of this system when compared to other large room assistive devices are the ease of installation and the reasonable cost for the diversity of use and quality of signal derived. Additional benefits involve the minimal safeguards required to eliminate outside interference from other infrared

systems. One large room may be easily designed to incorporate two infrared systems without concern for signal interaction. Also, there is never interference from AM and FM transmissions. Individual portable systems have been successfully used to 1) amplify telephone signals, 2) enhance communication in hospitals and nursing homes where restricted listening is preferred, 3) sharpen communication during travel where the elimination of unwanted noise is desired, and 4) facilitate the reception of radio and TV signals. Another benefit to the consumer is the compatibility of infrared receivers between manufacturers due to the present use of a common carrier frequency.

Disadvantages: Although manufacturers may claim success with outdoor usage in sunlight conditions, signal integrity is diminished as the intensity of the interfering light increases. The general rule requires that when an interfering light source creates transmission difficulties, it is necessary to intensify the generating capability of the transmitter through additional emitters. A minor disadvantage occurs when considering installation where obstacles may minimize the homogeneity of infrared illumination. In these conditions, it is recommended that the transmitter be located high above the floor of reception or, when necessary, that the signal strength be augmented through additional emitters.

Large Area Systems-Information:

Transmitter:
 No. of light emitting diodes 90-143
 Power requirement 120V/60 Hz
 Audio signal input 30mV-3mV
 Frequency response 40-15K Hz
 Infrared output 4k-4.5k sq. ft.*
 Carrier frequency 95k or 250k Hz
 Cost \$900-\$1300
**Greater output is available through slave or additional emitter/transmitter units.*

Receiver:
 Type diotic-dichotic
 Frequency response 50-8K Hz
 MPO 112 dB SPL
 S/N 50dB
 Battery AAA/recharge
 Operating time 5-10 hr
 Cost \$90-\$150

Large room assistive listening devices are produced by the following manufacturers: Controlonics (Sound Plus) and Sennheiser (Siemens).

Note:
 There is a conspicuous lack of information regarding standardized assessment for comparative purposes. Until standards are developed, the consumer must rely on subjective appraisal.

Subjects Editor: Frank Brister

1985 AAS MEETING AVAILABLE ON VIDEOTAPE

The 1985 meeting of the American Auditory Society is now available on videotape.

The videotape is approximately 6 hours in duration. It includes the Carhart Memorial Lecture by Sam Lybarger, B.S., entitled

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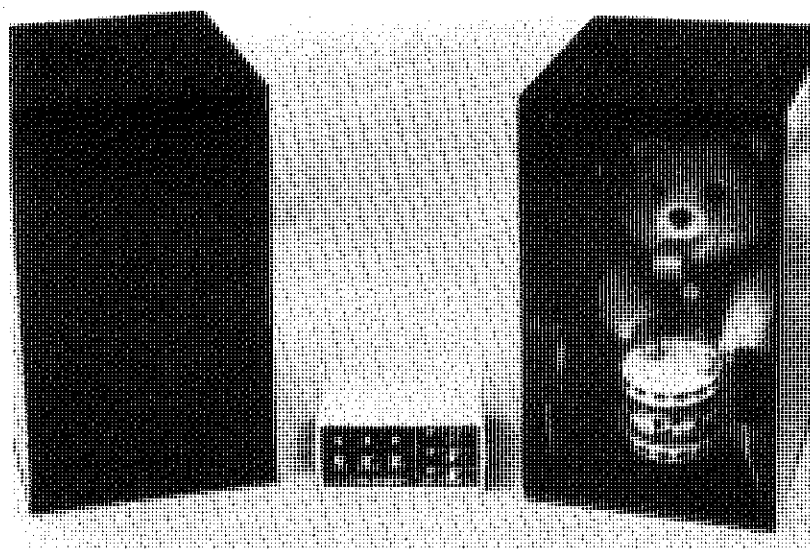
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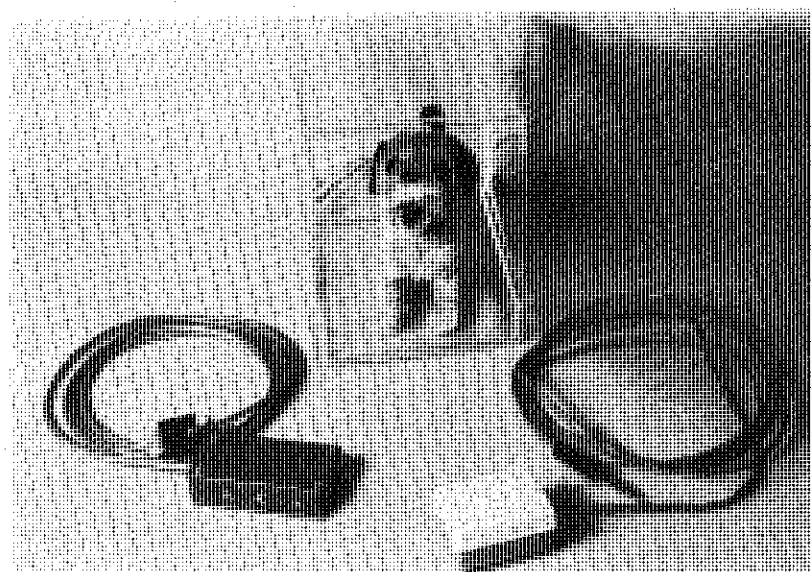
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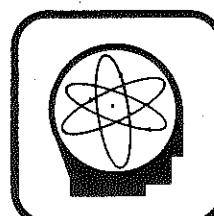
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AUDITEC (Continued from Page 6)

same parts, the metallic ones, should be demagnetized periodically, probably at the same time one cleans the heads. Demagnetizers for this purpose are available at the same source. Again, just follow directions. About once a year or oftener if used a lot, the heads must be re-aligned. It can be done "in-house" with a good alignment tape and a pure-tone oscillator, but professional help is the better bet. If anyone wants to know more, call me. I'll be happy to tell the hows and wherefores.

Do you have an 800 number?

No, but we accept collect calls.

Do you have much problem with people copying your tapes?

That's hard to tell. I know that our tapes are being copied, but I can't tell how many or how much. I get a little peeved when it comes to pirating of my tapes. I know that each individual copier believes that he or she is not hurting Auditec when they copy one or two tapes. This is just not realistic. I had on audiologist call with a complaint, noting that she was in the process of copying one of our tapes (a copyrighted one at that)! When I attempted to chastize her, she said, "Well, everybody does it." Thank goodness everybody doesn't, because if everybody did, I would be out of business. This market is very small, and each copy represents a small but significant part of my yearly output.

What about the size of your market?

The number of potential customers out there is extremely small relative to the general population. Record companies make a big deal out of selling a million copies of a recording, I get excited if we sell a hundred of one tape in a year! Some of our recordings are so popular that we may sell one in a year! Anyone with any sense looks at the size of this market and says "no way!" But I have no sense, so here I am.

What do you see coming in the future?

Well, the future is here. It is digitized recordings, of which compact disks are an example. Computers have the capacity to take analog signals and digitize them, store them on some medium in digital form which can be "read" and translated into analog form for "consumption."

What are the advantages of digitized recordings?

Well, the signal to noise ratio is extremely good, there is no tape hiss, there is no print-through, there is a very large dynamic range available and the digitizing process allows almost unlimited manipulation of the signal, far beyond the capabilities of an analog system.

Has Auditec gone to compact disks?

No. There are two primary reasons why we haven't taken that step. First, the demand is not there yet. Second, the cost is relatively high when related to the size of our market, which, as I stated earlier, is extremely small. Also, there are other media which are either available now or should be available soon which may suit our market better.

Are your customers limited to the United States?

No, we have a comparatively large export market. We have a large number of Canadian customers, and we also serve Australia and New Zealand. Some of our

tapes are being used in England and a few of our Spanish and French tapes and non-verbal tapes have gone to other countries as well.

What has been most rewarding about Auditec to you?

Yes, "rewarding" is a good word. I have derived a great deal of satisfaction from Auditec. It has been suggested by some that Auditec is performing a needed and valuable service for the audiological community. I had no altruistic motives in mind when I began this business. I saw a void and have tried to fill it. I have found that Auditec seems to have become syn-

onymous with recorded auditory tests, and this gives me a warm glow. And I still get a thrill out of seeing our name in print, when our tapes have been employed in a research project, for instance.

What are your plans for the future?

Continued growth. Business will not grow on its own, however, I have several projects "in the fire" and I am always on the lookout for new product ideas. If there are any readers who have ideas which they think might be marketable, I would like to talk with them. We have a number of tests in our line which have been developed by others and there is always room for more.

Dr. Carver, one final question. If you had it to do over, would you?

No question about it. I would have started earlier, however. Auditec has been the best thing that has happened to me. Beyond what I just said about personal satisfaction, I also have found that being my own boss is "the only way to fly." I would find it extremely difficult, if not impossible, to go to work for someone else again.

Thank you, Dr. Carver.

On the contrary, thank you.



Last year's "Run for Better Hearing" participants included both marathoners and joggers running a three-mile "fun run" along Lake Superior the day before the marathon. Fun run finishers (above) represented all hearing help disciplines.

8th Annual Run for Better Hearing...

Health Care Providers Running 26 Miles for Hearing Awareness

A 1986 "Run for Better Hearing" team of doctors, audiologists, hearing aid specialists, manufacturers, suppliers and researchers will each run a marathon to focus public attention on available hearing help. They personify the interdisciplinary support generated for the cost-effective public education program of the Better Hearing Institute.

Now in its eighth year, the Run is a fund-raising effort to strengthen BHI hearing awareness projects. Broadcasters and print media have donated the equivalent of more than \$118 million in commercial time and space to BHI hearing help messages. More than \$16 million was generated in the past 12 months alone. BHI's program has been spearheaded by famous Americans who overcame hearing loss. They include Art Carney, Norm Crosby, Phyllis Diller, Nanette Fabray, Lou Ferrigno, Henry Fonda, Lorne Greene, Florence Henderson, Bob Hope, Richard Thomas, Charlene Tilton, Keenan Wynn, and many others.

1986's Run doubleheader features BHI executive director Joe Rizzo in his seventh Boston Marathon on April 14. Then on June 21, in Duluth, MN, Joe will be joined in Grandma's Marathon by hearing help providers from across the U.S. and Canada. As in past years, *Hearing Instruments* magazine will promote and host Duluth Run activities, and the *Hearing Journal*, Ayer, MA, will extend its special support at the Boston Marathon.

Steering Committee

Organizing and coordinating this year's campaign is a steering committee that includes Al Bruce, chairman, Starkey; Jim Anderson, Qualitone; Pat Koepke, Dahlberg; Bud Raas, Earmold Design; Bob Tischbein, Starkey; and Cindy Werner, Duracell/Activair.

"BHI's program runs strong because of financial support from hearing help providers," said Bruce. "We therefore urge everyone to pledge to this year's campaign. Your tax-deductible contribution will reach far beyond the 26 miles, 385 yards that our runners will tackle this year."

Supporting Companies

Supporting members to date: Activair, Argosy, Audio-Aid, Beltone, Bernafon, Best Labs/Fidelity of Florida, Bosch, Dahlberg, Danavox, Emtech, Eveready, Fidelity Hearing Instruments, Finetone, Hal-Hen/Widex, Hearing Services Inc., Hearing Technology Inc., Knowles Electronics, Lang Hearing Instruments, Magnatone, Maico, National Hearing Aid Labs, Oticon, Phonic Ear, Qualitone, Ray-O-Vac, RCI, Resistance Technology, Rexton, Rion, Siemens, Starkey, and Unitron.

Better Hearing Institute

Box 1840, Washington, D.C. 20013

Name: _____

Office Affiliation: _____

Address: _____

City: _____ State: _____ Zip: _____

☐ You bet I'm supporting the 1986 "Twin Run for Better Hearing" team. Here's my check payable to Better Hearing Institute:

☐ \$13.00 (\$.50/mile) ☐ \$19.50 (\$.75/mile)

☐ \$39.00 (\$1.50/mile) ☐ Other

☐ Yes, please send me more information on BHI.



Beltone Opened '86 BDTAA Nominations

The 1986 search for an outstanding audiology instructor began with the opening of nominations for this year's Beltone Distinguished Teaching Award in Audiology (BDTAA).

The BDTAA is the only teaching award bestowed in the field of audiology. To be eligible, instructors must be nominated by a current or former student and have five

Foundation

(Continued from Page 3)

auspices of the International Hearing Symposium. Activities on this day will include an admirable cast of faculty participants and will delve further into topics of current audiology and technological interest, as well as into dispensing and marketing strategies, practices, and trends for the future.

Some hands-on experience for ITE and earmold modification will also be available in the International Hearing Foundation's Temporal Bone Dissection Lab (numbers permitting), making this truly a well-rounded symposium/workshop.

Information and/or registration materials may be obtained by calling Anna Douglas at (612) 339-2120 or by writing to the International Hearing Foundation, 701-25th Avenue South, Minneapolis, Minnesota 55454.

New Hospital Program Created

Suburban Hospital in Bethesda has initiated an unusual support program for patients who are hearing impaired. The Hearing Impaired Program is designed to eliminate misunderstandings between patients and hospital staff and to relieve hearing impaired patients' anxiety and increased sense of isolation in the hospital environment.

Within its first 50 days, the program served 85 patients. Currently as many as four patients a day join the program.

Coordinated by the hospital's neurotology unit, the program is for patients with any degree of hearing impairment from minor difficulty to total deafness. There is no charge to patients who use this service.

People with hearing impairments often are faced with communication problems in the hospital setting—lack of their usual hearing aids (especially just prior to surgery and in the recovery room) and masks over the faces of nurses and physicians.

Upon admission to the hospital, all patients are asked if they have a hearing problem. The medical charts of patients who join the program are labeled with the international symbol for hearing impairment. Similar signs are placed in their rooms and on their beds.

Hospital staff have received extensive training in methods to clarify and simplify communications with hearing impaired patients—getting the patient's attention, speaking deliberately, not shouting, writing messages when necessary.

Listening devices, telephone receiver amplifiers and TDD (telecommunication devices for the deaf) are available for these patients, and sign interpreters for deaf patients are on call.

Other services of Suburban's neurotology unit include complete hearing evaluation; ENG (electronystagmography), which is a test of inner ear function and balance control centers of the brain; ABR (auditory brain stem response), which is a test of neural activity in the auditory brain stem; evaluation for selection of hearing aids; and monitoring of ototoxicity to drug therapy.

For further information about the Hearing Impaired Program, call Kathy Eccard, M.S., CCC-A 301/530-3165.

years', or more experience in teaching audiology.

About 10,000 brochures containing nomination forms were mailed by Beltone to audiologists, audiology instructors and department heads at universities across the country. Deadline for nominations was April 15, 1986.

The nomination form is one of seven factors weighed by the judges to determine a winner. The other six factors are a required essay, curriculum vitae, former and current student evaluations, contributions to audiology, audiology department head evaluation and faculty evaluations.

The 1986 judging panel is composed of 10 outstanding professionals from the field of audiology—including the 1984 and 1985 BDTAA recipients—plus one student representative selected by the National

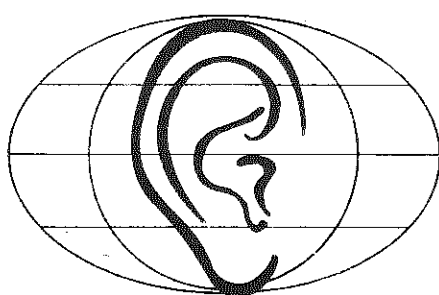
Student Speech, Language, and Hearing Association. The judges are Charles Berlin, Ph.D. (1984 BDTAA recipient), Louisiana State University; Michael Chial, Ph.D., Michigan State University; Marion P. Downs, M.A., University of Colorado; Renee Engelstein (student), Queens College of City University of New York; David Lipscomb, Ph.D. (1985 BDTAA recipient), University of Tennessee; Frank Musiek, Ph.D., Dartmouth-Hitchcock Medical Center; Jerry Northern, Ph.D., University of Colorado; Njeri Nuru, Ph.D., Howard University; William Rintelmann, Ph.D., Wayne State University; Ralph Rupp, Ph.D., University of Michigan; and Roger Ruth, Ph.D., University of Virginia Medical Center.

Announcement of the 1986 BDTAA recipient will be made at the November

meeting of the American Auditory Society. Beltone will award the winner \$1000 cash and a commemorative plaque. The fir will also host a banquet in the winner honor at his or her university and will sponsor three lectures by the instructor leading universities around the country. The winning instructor will also be invited to sit on the 1987 judging panel.

In addition, the award package includes a \$2500 scholarship from Beltone to the audiology department at the recipient university, and a \$100 cash award to the person nominating the recipient.

The 1986 winner will be the sixth audiology instructor honored through the program. Beltone established the BDTAA program to recognize contributions by the teaching profession in the field of audiology.



FACT SHEET

INTERNATIONAL HEARING FOUNDATION

WHAT IS IHF?

The INTERNATIONAL HEARING FOUNDATION (IHF) is a charitable, nonprofit organization dedicated to improving the lives of the hearing impaired.

IHF is especially committed to increasing public awareness of hearing problems and to the financial support of hearing research and education.

Deafness, tinnitus (ear-noise), and vertigo (dizziness) are examples of IHF's special interests.

The foundation's activities are local, national and international in scope.

- The International Hearing Foundation was granted tax-exempt status by the State of Minnesota April 9, 1985.
- IHF conceived, produced and owns a telethon, "Sentimental Sounds", at the cost of \$200,000.
- The 1985 telethon, viewed in March in Minnesota and the neighboring states on Channel 5, resulted in gross income of \$110,000.
- Money from the telethon attributed to the work of the Lions Clubs of Minnesota totaled \$49,500. This amount went directly to the Lions Center at the University of Minnesota for research.
- IHF is the recipient of a grant for \$35,000 to support an IHF Research Scholar for research in Otitis Media.
- IHF is the recipient of a \$60,000 grant to help construct the IHF Teaching Laboratory in Minneapolis.
- IHF will annually sponsor the FIEESE PRIZE, a new award for advancements in biomedical and technological hearing research. The recipient, chosen by an international scientific committee, will receive a cash award plus a 3-ounce gold medal and a tax-exempt bond.
- An annual social fund-raising event will be held in downtown Minneapolis on the Monday of Aquatennial. The 1985 event resulted in over \$9,000 income and garnered tremendous publicity.
- An officer of IHF will accompany Miss Deaf Minnesota in the two annual Aquatennial parades which is viewed by a combined street and television audience of over one and one-half million people.
- The IHF Board of Directors, which includes prominent otolaryngologists, scholars and community leaders from all around the world, meets semi-annually in March and September.
- IHF supports and sponsors education and research in Minnesota and, through its programs (telethon) and Board members and colleagues elsewhere, encourages such activities in other states and countries.

International Hearing Foundation, 3100 W. Lake St., Minneapolis, MN 55416 • 612/927-9220

The 1984 Amplifon Research and Studies Center International Prize Awarded

Scientists are beginning to find out the secrets of the hearing system.

More than one hundred years have elapsed since the Italian scientist Alfonso Corti (1822-1876) discovered the spiral organ of the ear, but only recently have scientists begun to understand the many mechanisms of our highly complex hearing system.

Peter Dallos, professor of otolaryngology, neurobiology, and physiology at Northwestern University in Evanston, Illinois, U.S.A., was recently awarded the 14th CRS Amplifon International Prize amounting to ten million Italian liras.

Dallos has been, since the 60's, the coordinator of all basic research in this field, supported by several annual allocations totalling more than one million U.S. dollars. Through his studies and research he came to revolutionary conclusions, concentrating his efforts on the inner ear (the labyrinth, made up of the vestibule and the cochlea) and above all on the organ of Corti, which is the real sensorial organ of the hearing system.

This highly complex and extremely delicate structure is placed in a cave within the temporal bone, which is the hardest bone in the human body. This structure is filled with a water-like fluid, called endolymph, and with thousands of sensory receptor hair cells, which transmit sound

and nervous impulses along the auditory nerves up to the brain, where every acoustic message, even every minimum sound, is selected and interpreted.

The hair cells can be divided into "inner" hair cells (approximately thirty-five hundred) and "outer" hair cells (approximately fourteen thousand). It is on these intriguing structures that Dallos has concentrated his attention, regarding them as "marvelous information transmitters and likely motor devices."

Ingenious work by Dallos and his associates elucidated the effects of chemically induced outer hair cell destruction on hearing. In this work they used computers to analyze data obtained from both cadaver and animal (mainly chinchilla) ears.

Georg von Békésy, in his 1961 Nobel prize winning research, demonstrated that acoustic stimuli initiate "traveling waves" which, in turn, mechanically distort hair cells. This mechanical activity somehow triggers action potentials in the acoustic nerve. Dallos has emphasized that metabolic energy is the driving force behind the generation of nerve impulses.

The ear is a miniature masterpiece because it is enclosed within a space as small as a hazel nut. However, even in this tiny organ, electric, metabolic, and

biochemical processes take place. The mechanisms are in part still unknown, though experimental evidence shows, as Dallos put it, that "virtually any damage to the auditory system is first of all evidenced by the destruction of the outer hair cells. Drugs, noise, aging, and trauma, all affect outer hair cells before influencing other structures. The loss of outer hair cells begins at a very early age in humans and tends to progress inexorably in persons over age sixty-five."

All this implies an altered, abnormal processing of sounds by the inner hair cells, which opens new fields of research and probably new prospects for better diagnosis and treatment of such hearing disorders.

This means that scientists are now beginning to understand how the inner ear converts sound vibrations into nervous impulses. At the same time attempts are being made to interpret the meaning of the electric or potential signals emitted by the inner ear.

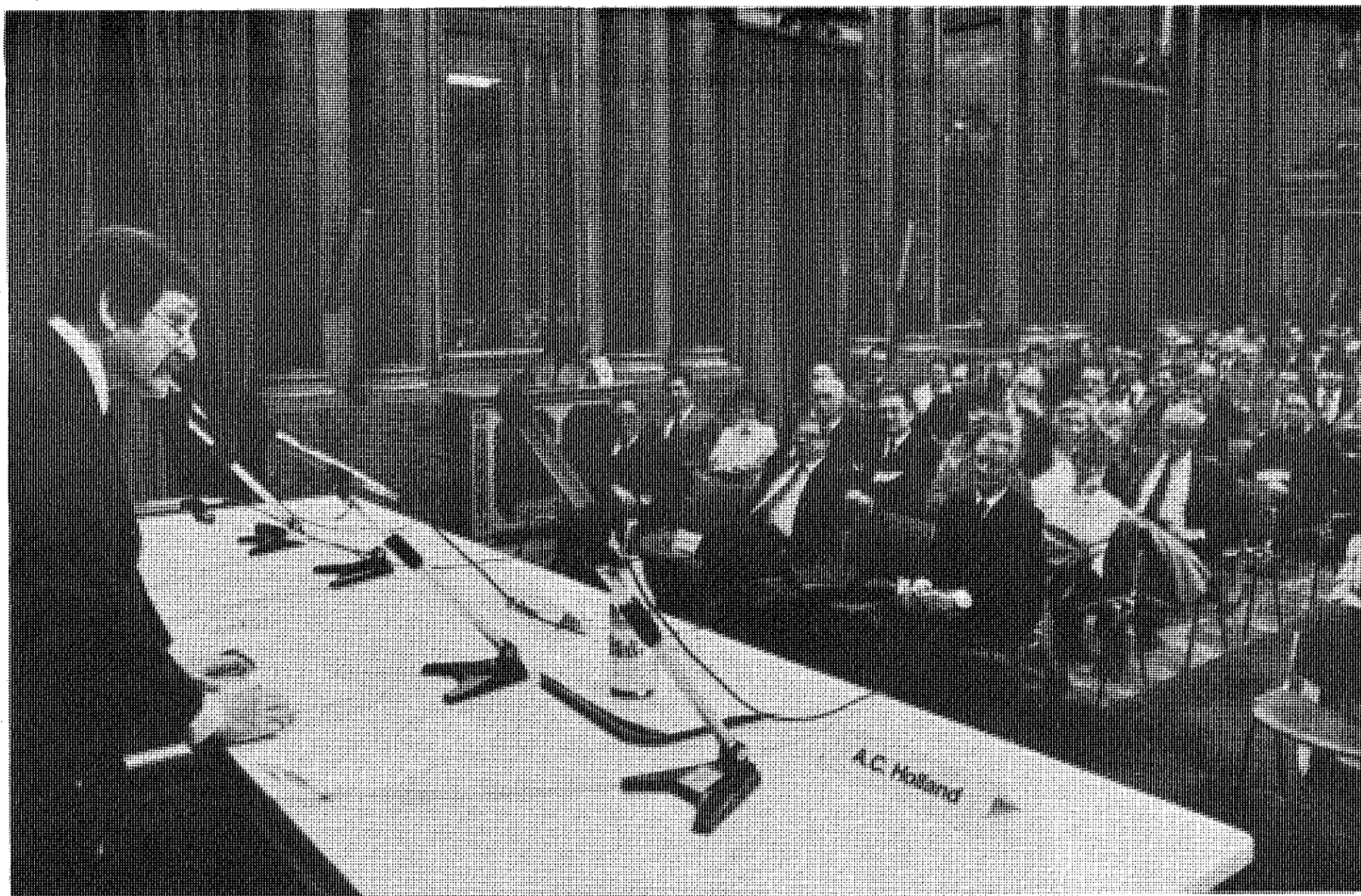
In this field there have so far been two major breakthroughs. One is represented by the tiny transistor hearing devices which can be hidden in the frame of glasses, behind, or even inside the ear, and are, therefore, hardly visible. The

second breakthrough was achieved through the development of biomedical techniques which enabled microsurgons to operate within very small cavities, thus allowing transplantation of one or more of the middle ear bones (hammer, incus and stirrup).

But it is, above all, through the study of the inner ear, carried out by Dallos and his collaborators, that ENT surgeons hope to develop new solutions to many fundamental problems regarding hearing loss and hearing disorders.

So far scientists have not been able to understand how an average grown-up person can store in his/her memory as many as 400,000 sounds, different from one another in frequency, quality and intensity. Another unsolved riddle is how a person with normal hearing can discern any sound ranging from 16 to 28,000 vibrations per second, whereas most animals have a much higher range (a cat, for example, can hear sounds with a frequency ranging between 60 and 65,000 vibrations per second).

Finally, scientists still have to better understand how calcium spreads through the most critical parts of the ear and what role proteins play in the cochlear mechanics at the base of the cilia of the hair cells.



A lecture delivered by the U.S. scientist Peter Dallos, who has been awarded the 1984 CRS Amplifon International Prize.

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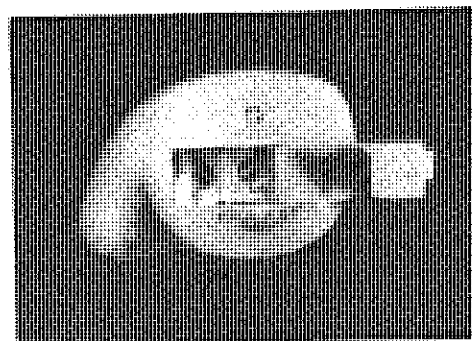
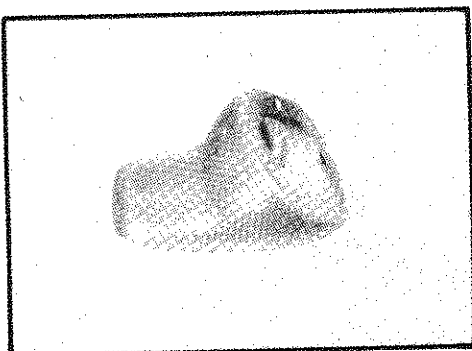
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1986 CONVENTION ISSUE

CORTI'S ORGAN

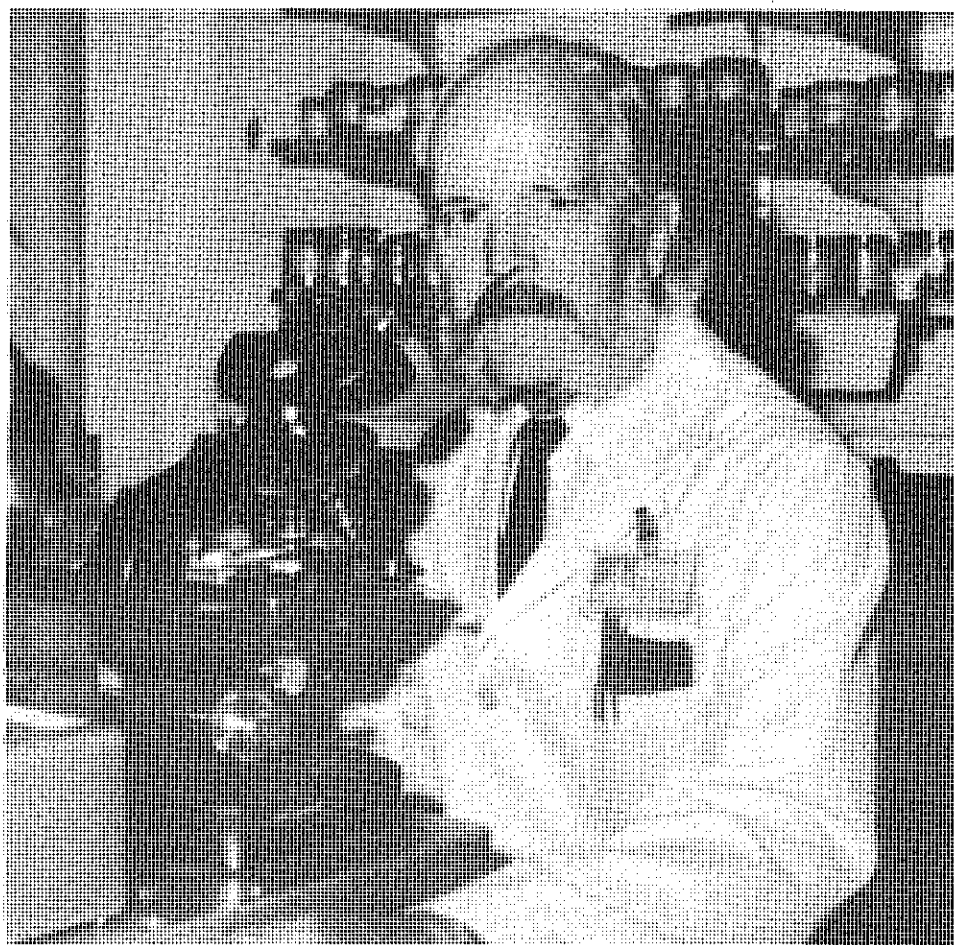
The Official House Organ of The American Auditory Society

Volume 11, No. 2

Fall 1986

*Dinner and
Entertainment
in Greektown*

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Dr. Joseph E. Hawkins

Detroit To Host Annual 1986 AAS Convention

The 13th annual meeting of the American Auditory Society (AAS) will be held in Detroit on Thursday, November 20, 1986, in the auditorium of the Children's Hospital of Michigan. AAS President Don Worthington's introductory remarks at 8:30 A.M. will be followed by an exciting series of 20 scientific papers lasting until about 5:00 P.M. A highlight of the day will be Dr. Joseph E. Hawkins' Carhart Memorial Lecture entitled "Traces of Age in the Ear and the Eye."

Following the meeting there will be an evening of Greek food and entertainment at Mykonos Supper Club. It should be a rewarding day and night for AAS members, many of whom will subsequently attend the annual American Speech/Language/Hearing Association (ASHA) meeting, which will be held at Cobo Hall, November 21-24.

IVth International Symposium On Audiological Medicine

The International Association of Physicians in Audiology (I.A.P.A.) will have its Fourth Symposium in Tenerife, Canary Islands, Spain, November 8-13, 1987.

The scientific programme will include round table discussions with invited speakers together with free papers sessions on the two main themes: "The State of the Art of Audiological Diagnosis" and Imaging in Audiology: X-Ray and Other Techniques in the Diagnosis of Auditory Disorders."

For further information, please contact Dr. Jose Barajas, Perez de Rozas, 8, 38004 Santa Cruz de Tenerife, Spain.

AURAL REHABILITATION FORUM

Editor's note: In the last issue of Corti's Organ this new feature was begun. The article in that issue was presented by Ronald Schow as a part of a conference on aural rehabilitation held in 1983 at Winter Park, Colorado.

Initial articles in this series will investigate intervention services specific to elderly clients. In order for this forum to continue, other papers must be generated. Areas of interest for our readers would include pediatrics or cochlear implantation. Let the editors hear from you!

Motivating the Hard of Hearing: A Contrast in Techniques

Thayne C. Smedley
Nu Ear Electronics
Idaho State University

(Second in a series of three.)

Abstract

The enormous pool of hearing-impaired elderly who have \$500 billion in buying power represent a powerful marketing incentive for the hearing aid industry. A promotional technique used to reach and motivate potential hearing aid users is described and contrasted with traditional efforts by audiologists. The suggestion is made that clinical audiologists will need to achieve a higher visibility profile—and perhaps adopt certain promotional techniques—if they hope to replace the hearing aid dealer as the primary source of hearing aid help for the majority of impaired adults.

There are believed to be over 11 million people in the United States who are potential hearing aid users among an ever-growing senior citizen population with \$500 billion in buying power (Radcliffe & Mahon, 1983). This body of prospects represents a very powerful marketing incentive for hearing aid manufacturers.

In this presentation I will describe a direct mail marketing technique used in the hearing aid industry which has proved to be very effective in reaching and motivating hard of hearing adults. I am not pretending that what I am about to describe represents the ideal or even the best method for motivating the hard of hearing, or that it will be necessarily well received by clinical and rehabilitative audiologists in general. This approach, however, does achieve certain objectives, particularly those of the hearing aid industry, and it may have some implications for audiologists who wish to get more directly involved in hearing aid programs.

An independent hearing aid dispenser agrees to be a cooperating partner with a hearing aid manufacturer sponsoring a special, short-term sales promotion, lasting usually three days. Local residents are invited by personal letter to come into the dealer's office for a free hearing test and an opportunity to examine the latest hearing devices. The event is called a "Special Hearing Aid Consultation." The Special Consultation always features a factory representative, who, ostensibly, is a trained and experienced specialist in remediating hearing loss with amplification. This consultant usually has had extensive experience with hard-of-hearing persons, but is sent primarily because of skill in selling.

In this program, the manufacturer prints the letters, stuffs them into pre-labeled envelopes and ships them as a unit to the dealer, who in turn takes them to the local post office for mailing into the community. Names of local senior citizens, obtained from commercially available national registers, are supplied by the manufacturer.

Although the letter does not contain any false statements, it uses phrases such as "hearing tests at no charge," designed as enticements and intended to elicit a favorable response. Other incentives are also included, such as the availability of refreshments and free gifts for those who attend, plus special discounts on batteries. A final motivational device is the inclusion of an endorsement of the testing program and manufacturer's product by a national celebrity. This endorsement creates interest in the letter and lends credibility to the invitation, the examination, and the products as well.

In the program I am describing, the endorsement comes from Art Linkletter, a TV and radio personality well known to senior citizens. Linkletter's picture is printed on the heading of the letter, and his printed message promotes the value of the hearing tests and invites the readers to take advantage of the opportunity to have their hearing evaluated. The impact of the Linkletter endorsement is substantial. A recent report illustrates this point:

A woman in the Northwest walked into one of these Special Consultations with her elderly mother, letter in hand, and said, "I have been trying for years to get my mother to do something about her hearing. I'm tired of

(Continued on Page 3)

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New Feature Editor Joins Staff

Matt Smith, an audiologist from Albuquerque, New Mexico and long time member of AAS, has joined *Corti's* Editorial Staff as a Feature Editor. Matt will "take charge" of two new columns to appear in *Corti's*, beginning with our next issue.

One, entitled "Name That Lesion", will be included in each issue. Case history, clinical data, and other relevant information will be presented which describes a particular auditory disorder or lesion. The intent of this column is for readers to use all their professional expertise, intuition, or whatever thought process they wish to "diagnose" the lesion being described. Sounds like fun, but don't worry, the "answer" will be given in each issue.

Matt's second column will be one which will appear now and again. Entitled "Audiology Trivia", questions will be asked which really test our skills. Do you know what year the first hearing aid was manufactured? This column will answer this question and more!!

Matt Smith is certainly a well-rounded professional. In addition to having a private practice, he is President of Cyber-smith, an audiometric manufacturing and consulting firm. His wealth of experience, as well as his sharp wit and humor, make him the ideal creator for these two columns.

Welcome, Matt, to the Editorial Staff. We'll all be watching for great things to come.

Corti's Organ Celebrates Anniversary

According to some of our "old timer" members, this year marks the 10th Anniversary for *Corti's Organ*, plus or minus a year or two. This is certainly a landmark occasion worth celebrating and rising to. In tribute to *Corti's* first decade, the Editorial Staff has something special planned.

An upcoming issue of *Corti's* will be dedicated to our past. Historical facts about the Society, old pictures, past articles of contemporary relevance, *Corti's* nostalgia will all be included.

For our "seasoned" readers, the memories should be exciting. For our "junior" readers, the historical perspective should be educational.

If you have any old convention pictures or information from our past, please send it to one of *Corti's* Editors.

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From The Editor

Let me begin by thanking those individuals who have responded to my request for contributions to *Corti's*. As Editor, I am pleased to find members who are willing to "pitch in." But we still have a long way to go to keep *Corti's* from being simply a calendar of events or directory listing. Contributions of all varieties are needed, particularly reports of case studies, light research, equipment review, etc. Don't be intimidated by the threat of "journal style." Develop a new way of thinking - "*Corti's* Style!!"

A new dimension that accidentally evolved in our last issue was a "Letter to the Editor" column. This is a segment the Editorial Board would like to continue. Maybe you have an issue important to you, a positive (or negative) reaction to AAS business, a "cause to preach", a request for information. *Corti's* can be your vehicle for communication.

As members, we all have a voice and a responsibility as professionals. Remember, the Editorial Board should represent the readers and their interests. That's you!! So keep those cards and letters coming (and other contributions, too)!!

Endowment Fund Named For M.P. Downs

The University of Colorado Health Sciences Center and the University of Colorado Foundation, Inc. have established an endowment fund in recognition and appreciation for the outstanding contributions of Marion Downs and her lifelong efforts on behalf of children with hearing impairment. This fund was created to assist in the development of the Marion Downs Children's Hearing Center.

Funds will support multidisciplinary clinical services for hearing impaired infants and children, including patient care, research in childhood deafness and educational activities. In addition, with the goal of \$350,000, the foundation will award an annual Pediatric Audiology Fellow selected from national applications. This endowment will provide a year of financial support to a practicing audiologist who desires additional clinical training and research opportunity in pediatric audiology.

Marion Downs, Professor Emerita of Otolaryngology at the University of Colorado Health Sciences Center is certainly an exemplary professional who has devoted her life to the hearing handicapped. She has pioneered, developed and evaluated techniques for her work in the area of early identification of hearing loss and in infant hearing screening. Her publications and teaching have brought worldwide attention to the importance of early habilitation for deafness and alerted the medical world to the developmental problems associated with childhood deafness.

Marion Downs is recognized as an outstanding educator, clinician, author and progressive advocate for the hearing impaired. Her professional colleagues have honored her with numerous awards and praises. The Marion Downs Children's Hearing Center Fund is just one more way of testifying to this professional's accomplishments. If you would like further information on the fund or would like to make a contribution you may contact Jerry Northern, Ph.D., Professor and Division Head of Audiology at (303) 394-7856, University of Colorado, Health Science Center, 4200 J. Ninth Ave., Box A-065, Denver, CO 80262.

Marion, AAS congratulates you!!!

Harmony Among Dispensers Urged

Numerous AAS members, including Deborah Price and Rick Pimentel (picture below), attended the Spring Conference of the Academy of Dispensing Audiologists (ADA) at Lake of the Ozarks, Missouri. A striking keynote address, entitled "What Was, What Is, and What May Be," was delivered by the Academy's president, Herbert F. McCollom, Jr. Mr. McCollom argued that the various kinds of professionals who fit and dispense hearing aids should stop denigrating each other and work together to provide optimal service to the hearing impaired public. He discussed a number of possible untoward consequences of the present "war." For example, if the dispensers are unable to work out solutions to their conflicts, the federal government may impose unacceptable solutions of its own. Another risk of continuing the battle is that disarray in the hearing aid market may attract new competitors to the scene. Mr. McCollom drew analogies between the infighting of hearing aid dispensers and similar warring among ophthalmologists, optometrists, and opticians, and among MD's, osteopaths, and chiropractors. His paper has been printed in the July, 1986 issue of *The Hearing Journal*.



Barbara Gount, Deborah Price, Rick Pimental attended ADA 1986 meeting.

Aural Rehabilitation

(continued from page 1)

yelling at her. When the letter arrived from Mr. Linkletter inviting us in for a hearing test, Mother said, 'If Art Linkletter's behind this, it must be OK. I guess I'll go and get my hearing fixed'."

For any given Special Consultation, typically 5,000 to 7,000 of these letters are mailed to senior citizens of a given community. While certain parts of the letter may violate our ethical or professional sensitivities, we must keep in mind that it tends to get results where other approaches have failed.

During the days of the promotion, respondents are seen on hourly appointments, or more frequently when the demand requires it. Each person receives a cursory otoscopic examination, a brief but intensive history is taken using a standard questionnaire, and then each person is tested for hearing loss. If significant hearing impairment is found, the prospect is introduced to the various hearing aids available from the sponsoring manufacturer and is encouraged to purchase one or two hearing instruments, depending on the loss.

Now, whether or not we agree entirely with the approach I have described, let me assure you that this type of promotional campaign is having great impact throughout the country. Currently, about 150 of these Special Consultations are being held every month by this manufacturer throughout the United States, totaling 750,000 pieces of mail monthly. This represents a rate of 9 million letters mailed to potential consumers annually, and this rate is double that of the previous year and still growing! Over the next few years it would appear that millions upon millions will receive letters from Art Linkletter encouraging them to think seriously about their hearing and to have it tested by the local dealer if they suspect a problem. And, this rather substantial campaign represents the efforts of one single company. Increasing numbers of hearing aid manufacturers, of which there are about 50, are using this or similar promotional formats to command a greater share of the market. If measured in terms of hearing aid sales, the mass mailing approach is clearly working. In the long run it may not be the best remedial service available, but such programs are going to continue to go forward at an ever-increasing tempo.

Hearing aid delivery systems in this country seem to fall generally into two categories: those which are "passive" in nature, and those which are more "active". Passive systems are those represented by agencies, clinics, and offices which have a trained staff dedicated to helping the hard of hearing, but which do very little advertising. These offices are primarily rehabilitative in intent, and their first priority

is to ameliorate the effects of hearing impairment. Most of the personnel in these agencies have received extensive technical training, including graduate degrees and special certificates awarded by national professional societies which attest to their qualifications to assist the hard of hearing better than anyone else.

The encouragement or motivation these offices are able to extend to the hard of hearing, however, is limited largely to the shingle that hangs above their office doors! It is considered improper to advertise their services to any great extent, and the term "promotion" is generally foreign to the common vernacular of the office. It seems paradoxical that this cadre of trained professionals who must sit patiently and wait for the hearing-impaired public to find the path to their door, represents, with some exceptions, a distribution system that is a mere eddy alongside the main stream of hearing aid delivery in our country. I believe it is still true today that traditional hearing aid dispensing offices, which take an active rather than passive approach to helping the hard of hearing, have the greatest influence among those with hearing loss and render the greatest assistance to the hearing impaired, if that assistance is measured by the number of units of hearing aids dispensed. Whether we like to admit it or not, a majority of the hearing impaired adults in the United States receive such assistance from hearing aid stores, staffed by personnel of varying degrees of qualifications whose background and work experience is typically in sales rather than in rehabilitative activities. In my opinion, they basically represent a business enterprise which just happens to involve hearing rehabilitation. Nevertheless, many of them are very skillful and have loyal customers who repeat purchases of hearing aids over and over again, sometimes extending to two or three generations in one family.

We must ask, "How do these offices, staffed with personnel who as a group have fewer degrees and credentials than we do, achieve such great success in reaching out to and motivating the hard of hearing?" Their formula, I believe, can be expressed rather simply in three words: promotion, promotion, and promotion! Their approach is far from passive. It is indeed active.

What do we as audiologists do about the situation? What do we do with the realization that some senior citizen in our town, whose hearing has finally dimmed to the point of awareness, will respond to some advertising impression solidly planted there over the years from hundreds of effective messages he has received from the hearing aid industry; and in all likelihood will eventually walk into the local dealer's office for assistance without even giving us a thought?

I don't have a solution, but my inclination after being associated directly with the hearing aid industry for the past three years is that we had better start using the word "promotion" in our daily communications. We need high level promotion that doesn't seriously violate our sense of ethics, but promotion nevertheless. If we ever hope to move out of the eddy into the main stream of hearing aid delivery, we must become much more visible in the public eye. We need greater direct involvement in hearing aid dispensing programs. We must not remain passive in our approach or we will forever remain in the dust of the aggressive promoters who many people think are the only source of help for their hearing problem.

References

- Radcliffe, D. and Mahon, W. (1983). Focusing on Consumers. *The Hearing Journal*. 36:2, 1-18

Society Member Honored by State

Sharon Graham, an active member of AAS for several years, was selected as Arkansas' nominee for the Louis DiCarlo Clinical Achievement Award. For the last 3 years, the American Speech-Language-Hearing Foundation has recognized an individual whose recent accomplishments in the field have been landmark contributions. These contributions may be in clinical achievement or in research.

Each state is asked to select one individual who has shown outstanding achievements in recent years in a particular area. From the individual state nominees, the Foundation chooses one as the National DiCarlo Award designee. Each individual nominee is also recognized by the Foundation with a cash award and a Certificate of Achievement.

Sharon Graham was selected as Arkansas' DiCarlo Award nominee. Ms. Graham is the Research Audiologist for the Ear and Nose-Throat Clinic in Little Rock, Arkansas. In addition, she is Co-

ordinator of the Cochlear Implant Investigation Project.

Ms. Graham was chosen for her outstanding clinical achievement in the area of deafness research. Her recent contributions include numerous studies, papers, and presentations specific to cochlear implantation. She has examined varying aspects of this relatively new procedure, including the medical, clinical, and rehabilitative variables relating to the process. Her work has been the foundation of much of the recent advancements in the assessment and audiological management of this population.

Ms. Graham is truly the total professional. Arkansas' selection of her as the state's 1986 Louis DiCarlo Clinical Achievement Award nominee was an easy one. Ms. Graham is certainly one of the field's leading contributors. Congratulations, Sharon, on this deserved recognition!!



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Cochlear Implants in Children: A Multidisciplinary Colloquium

A colloquium on cochlear implants in children, sponsored by the Cochlear Corporation, was held February 20-22, 1986, at Durango, Colorado. The colloquium's purpose was to establish guidelines for the implantation of children based on the ideas and experiences of the specialists, to discuss the many controversial issues surrounding cochlear implantation in children, and to summarize the philosophies surrounding these issues.

The meeting brought together more than 40 experts from diverse hearing health disciplines, including otology, hearing and speech sciences, audiology, speech pathology, linguistics, statistics, psychology, and psychoacoustics. The selection of the participants was based on their particular interest and expertise in dealing with the deaf child, rather than on their prior experience with cochlear implants.

Eight committees met to debate a variety of topics ranging from patient selection and pre-and postoperative evaluation procedures, to rehabilitation and the key underlying issue of the safety of implanting cochlear prostheses in children aged 2-17. Each chairperson developed a set of questions to guide discussions. Committees met independently for two days, and, on the third day, the individual committee summaries were presented to the entire group in a large plenary session. A consensus was reached based on position papers presented by the committee chairpersons.

According to colloquium participants, a team approach to cochlear implantations is of prime importance. The team should include other child specialists to enhance the well established teams already in place for adult programs. Appropriate specialists mentioned at the colloquium include school personnel, teachers, school psychologists, as well as child psychologists and social workers. Decisions would be made by the entire team.

Colloquium committees discussed speech-language considerations and many aspects of implantation: physical, audiological, intellectual, and developmental. It was agreed that two years should be the minimum age of potential implant candidates. According to colloquium surgeons, it is technically feasible to implant young children. The major limiting factor is skull maturation. The majority suggest that two years of age is the youngest age at which adequate and reliable audiologic evaluation and complete preoperative workup are possible. There was unanimous agreement that hearing loss for these young candidates should be sensorineural, bilateral, and either profound or total. Committee members also agreed that a potential surgical patient be one who has failed to benefit from appropriate conventional amplification and training. The committees worked to identify objective means for determining whether or not a child is making auditory progress. Lack of auditory development was defined as a child's inability to discriminate spectral information of the segmental aspects of speech following at least one year of effective training with appropriately fitted hearing aids. A child's inadequate progress in verbal language skill development is another hallmark of a lack of auditory development.

Colloquium participants determined that the child should have at least an average IQ through the initial stages of implant studies and be free of additional handicaps that might adversely affect potential success with the implant. The recurring theme was that children free of motor and intellectual disability are needed during the critical early stages of implant research in order to establish expectations and normative data. Other children should

be wait-listed until more is known.

Finally, strong evidence of family support for any candidate was determined to be a prime consideration. Some objective indicators that identify strong family support include: acceptance of the child's hearing loss, awareness of the child's hearing status and the child's hearing aid needs, and the existence of an effective communication system for the child and his family. In addition, family expectations should be realistic.

Most colloquium committees favored the use of standardized pre-and post-evaluation procedures. Three committees dealt with standardized test materials and made specific recommendations: consistent data collection, pre-surgical training of the child, extended post-surgical training, and the use of an oral training approach with standardized materials.

Participants suggested that the success of a cochlear implantation is influenced by three major factors: the age at which profound deafness occurred, the duration of deafness prior to implantation, and the type of educational program in which the child was placed prior to having implant surgery. The best candidates, that is, those who will perform the best on test measures with a cochlear implant, are children who lost their hearing after the development of speech and language, whose deafness is of short duration, and who are enrolled in an oral/auditory type of training program. Children at the other end of the continuum are those with congenital deafness who are enrolled in a total communication program. Colloquium participants stressed that these criteria should only serve as a guideline for professional teams who wish to evaluate a child's potential success. In general, the consensus of the colloquium was that early intervention provides a better prognosis for success with a cochlear implant and for the acquisition of speech and language skills.

The surgical-medical team considered the risks of cochlear implant surgery in children and the possibility of major side effects, and determined that the risks were minor and were no greater than for adults. Possible contraindications for children receiving multichannel cochlear implants include cochlear abnormalities, such as complete calcification, fibrosis, or congenital malformations. There were numerous comments about the role of otitis media in implanted children, and it was pointed out that, unless a child had severe recurrent otitis media, such pathology has not proven to be a significant detrimental factor to date. Because of significant differences in the electrode designs of cochlear implants, surgeons should undergo special training in the use of the device they select.

The committee on research and design weighed the relative merits of group studies

with matched control counterparts against single-subject control designs. The general consensus was that matched groups are very limiting and difficult to achieve even on a national basis because of the complexity of the variables involved for matching as well as the changing development of children over time. Thus, the committee recommended single-subject designs. Multi-center corroboration of results was considered both valuable and necessary to generate large data bases, with emphasis on data relating to speech perception.

In order to collect data, a national speech evaluation center was suggested. Speech tapes of pre- and post-implanted children could be sent to such a center and

analyzed by objective means and scored on the basis of computer-based speech analysis, automated analysis of suprasegmental sounds, objective analysis of phonology, analysis of linguistics, and other considerations related to measurement of intelligibility.

The multi-disciplinary discussions and debates at the colloquium resulted in a series of position papers which will be appearing in the September, 1986 monograph of *Seminars in Hearing*.

Dianne J. Mecklenburg, Ph.D.
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1986 AAS Program Abstracts

EFFECTS OF DELTA(t) ON THE "BI" POTENTIAL OF THE ABR

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The human cochlea was investigated using a forward masking paradigm. Positive signal part S(N) of the ABR of 0.82 msec latency and of 70 nV can be identified. The peak occurs before Wave I, hence, "BI". A tone-on-tone forward masking paradigm repeated R times along the dimensions of Delta(t) reveals decreasing Delta(t) values. The BI values, thus, follow an essentially parallel course comparable to a peripheral neural process.

THE EFFECTS OF TINNITUS ON ABR MEASURES

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The Auditory Brainstem Responses (ABR) of tinnitus patients differ morphologically from nontinnitus patients; the tinnitus ABR's are reported to have "increased" latencies which have not been statistically defined. In this study ABR latencies of tinnitus and nontinnitus patients were analyzed to determine if, (1) the ABR can be used to objectively identify tinnitus patients and, (2) the ABR can be used to monitor the efficacy of tinnitus treatment by observing latency shifts from tinnitus to nontinnitus "norms".

To control the effect of cochlear hearing loss, gender and age in the ABR latencies, the nontinnitus (n=33) and tinnitus (n=33) groups were matched for gender, age (20-55 years), and balanced for equal numbers of normal hearing and cochlear hearing loss subjects with comparable contralateral acoustic reflex thresholds at 1000 Hz, 2000 Hz, and 4000 Hz.

ABR data collected with a Nicolet CA 1000 and Compact IV clinical averagers was compared using Students' Unpaired t-test. The absolute latencies (msec) of tinnitus (T) patients were significantly longer than nontinnitus (NT) patients (Wave I: T=1.88 ± .02 msec; NT=1.76 ± .02 msec; Wave III: T=3.93 ± .03 msec; NT=3.84 ± .03 msec; Wave V: T=5.94 ± .03; NT=5.79 ± .04 msec), all values Mean ± S.E. The III-V interwave interval was significantly prolonged (T=2.01; NT=1.94) in the tinnitus group.

Comparisons between the latencies of males and females within each group

yielded significant latency differences only in the nontinnitus group:

	Wave I (msec)	Wave III (msec)	Wave V (msec)
Nontinnitus			
Male	1.83±.19	3.93±.17	5.96±.24
Female	1.69±.15	3.74±.17	5.63±.22
	p < .01	p < .01	p < .01

Tinnitus			
Male	1.86±.18	3.96±.28	6.00±.23
Female	1.90±.18	3.90±.20	5.85±.22
	ns	ns	ns

These data indicate that because of the prolonged latencies of tinnitus patients differential diagnosis of patients using ABR latency must be done with caution.

A NON-INVASIVE SYSTEM FOR CLINICAL ELECTROCOCHLEOGRAPHY

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F. Owen Black
Susan M. Doucette
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For almost two decades, electrocochleography (ECoG) measurements have held great promise for clinical audiometry. These early auditory-evoked potentials provide information about: 1) the amplitude of the D-C summing potential (SP), 2) the A-C cochlear microphonic (CM), and 3) the whole-nerve action potential (AP). Measurement of the AP can be especially useful for frequency-specific evaluation of auditory sensitivity, for estimating auditory tuning curves, and for replicating with human subjects a spectrum of experiments that originally were performed on animals. Comparison of SP and AP amplitude can be useful in the differential diagnosis of endolymphatic hydrops.

Unfortunately, the bulk of ECoG data and norms have been generated by investigators abroad using invasive (trans-tympanic) electrodes. The primary, commercial non-invasive (ear canal) electrode (Coats, 1974) is difficult and time-consuming to use. It has been judged painful by more than 60% of our patients.

This presentation will introduce a new system for generation of clinical ECoG waveforms. Specifically, our stimulus signals are transduced by a shielded, commercial, remote earphone unit (Etymotic Research TubePhone, Model ER3A) connected by its integral tubing to an aluminum coupler that was custom-designed to accept a foam ear canal electrode with a concentric sound tube (Axonics, 3M). This

(Continued on Page 5)

*Presentation of the
Beltone Distinguished
Teaching Award
In Audiology
American
Auditory Society
Annual Meeting
November 20, 1986*

Abstracts

(Continued from Page 4)

system has been used for ECoG measurements on one ear of 30 subjects with hearing normal for their age and no evidence of inner ear disease. It also has been used for ECoG measurements on 100 patients with a variety of inner ear disorders.

Following a description of the combined transducer and electrode system, we shall compare its frequency and transient response with that of a standard audiometric earphone. We also shall contrast the amplitude of ABR Wave I (AP) produced by this system relative to a standard earphone. Next, we shall compare ECoG data obtained with this system to those obtained using the traditional (trans-tympanic) electrode and the Coats (ear canal) electrode. Finally, we shall summarize amplitude and latency data for the SP and AP measured on normals and on our population of patients with inner ear disease.

INTRAOPERATIVE FACIAL ELECTROMYOGRAPHY: MECHANICAL AND ELECTRICAL RESPONSES

Paul Kileny
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One of the most distressing complications of acoustic neuroma surgery is facial nerve paralysis. The loss of facial nerve function brings about disabling functional as well as emotionally destabilizing cosmetic consequences. In spite of neurotological surgical procedures designed to maximize the likelihood of the correct identification of the facial nerve, the appearance of the course of the facial nerve can be greatly distorted by the tumor. Early monitoring methods relied on the observation of the patient's face by an assistant whose responsibility was to alert the surgeon of facial twitching. More recent versions of this monitoring technique involved photo-electric and mechanical devices that indicated facial movements. One of the drawbacks of these techniques was that relatively vigorous manipulation of the facial nerve was needed to trigger a warning. Recent advances in electrophysiology have brought about the introduction of facial nerve electroneurography (electromyography) into the operating room. The purpose of this presentation is to share our experience in intraoperative electroneurography. In addition to the standard slides, this presentation will be accompanied by a brief videotape presentation that will illustrate intraoperative manipulations and corresponding activation patterns of the facial nerve.

The electronic (EMG) activity is recorded differentially with two subcutaneous needle electrodes placed at the forehead in the midline and the naso-labial fold ipsilateral to the operative site. A ground electrode is introduced contralaterally in front of the tragus. We found that with this montage we can monitor both ipsilateral facial nerve activation as well as contralateral ABR if desired. Facial EMG monitoring usually begins upon opening the internal auditory canal or posterior fossa dura. The EMG output is monitored continuously on the oscilloscope of the evoked potential instrumentation as well as acoustically via a built-in loudspeaker. We are interested in both "mechanical" stimulation as well as responses evoked by intracranial electrical stimulation. We have learned to correlate specific activation patterns related to various intraoperative events such as irrigation and suction,

mechanical stimulation during tumor dissection in the vicinity of the nerve and electrical stimulation using a bipolar constant current stimulator. As a rule, the surgeon is warned at the onset of response activation due to mechanical stimulation, indicating proximity to the facial nerve. This event is usually followed by intracranial electrical stimulation in an attempt to map the course of the facial nerve.

BINAURAL COCHLEAR IMPLANTS: AUDIOLOGICAL RESULTS

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This report presents audiological data on one patient using binaural cochlear implants. She had used a 3M/House single-electrode implant in one ear for five years and a Nucleus multichannel implant in the other ear for three months.

Audiological tests included warble-tone thresholds and live-voice testing of speech tracking, consonant and vowel confusion studies, and AB phoneme identification. Recorded discrimination tests included the Monosyllable-Trochee-Spondee (MTS) test, HEI Environmental Sounds test, the Minimal Auditory Capabilities (MAC) battery, and the Speech Pattern Contrast (SPAC) test. Each device was tested separately with this battery. Binaural testing was done only for consonant and vowel confusions, AB phonemes, speech tracking, and the SPAC.

Comparisons between each implant alone and both together revealed better scores with the Nucleus implant for the majority of tests. Binaural results were better than the Nucleus-only results for speech tracking and consonant confusions in the auditory-visual condition, and the auditory-only presentation of open-set phoneme recognition on the SPAC test.

We will be gathering data on a second patient with binaural implants who has been using a 3M/House for five years and who has just received the Nucleus device.

RESULTS OF CLINICAL TRIALS WITH MULTIPLE COCHLEAR IMPLANT SYSTEMS

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Investigations comparing the efficacy of various cochlear implant systems have focused on post-implant comparisons of auditory perceptual skills. While these studies demonstrate gross relative strengths and weaknesses of the devices under test, they are constrained by inherent subject differences that include age, length and etiology of deafness, and perhaps most importantly, residual neural population. Additionally, environmental aspects such as program procedures and protocols or business and political decisions regarding subject selection further serve to influence the results of these investigations. The cochlear implant clinical trials program at the University of Louisville has provided several unique opportunities to evaluate various implant systems unconstrained by these variables. First, the program has been approved to implant two multi-channel systems: the Symbion 4-channel device and the Nucleus 22-channel device. This permits comparison of strengths and weaknesses of the complete implant systems, including pre-implant procedures, surgical considerations, post-surgical protocols, and patient results. To date seven patients have received the Symbion system and, three patients, the Nucleus implant. Second, two

patients had single channel implant systems replaced with one of each of these multi-channel systems respectively. This has allowed direct intra-subject comparisons of auditory skills between single and multi-channel devices. Additionally, one of these subjects has experienced three speech processing schemes: 1) the single channel implant, 2) the Nucleus F0/F1 format, and 3) the Nucleus F0/F1/F2 format.

The purpose of this presentation will be to report the results of our experiences with two multi-channel implant systems and to offer insight into the relative merits of each system. Further, the surgical and audiological results of two patients receiving multi-channel cochlear implants as replacements for single channel implants will be reported. The single patient comparison of speech processing schemes will also be presented.

COMPARATIVE RESULTS OF SPEECH DISCRIMINATION TESTING IN QUIET AND NOISE USING TWO FEATURE EXTRACTION CODING STRATEGIES FOR A MULTICHANNEL COCHLEAR IMPLANT

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The speech discrimination scores obtained from two groups of Nucleus multichannel cochlear implant recipients using different feature extraction coding strategies (F0/F2 and F0/F1/F2) were compared. Both coding strategies extracted the fundamental frequency, second formant frequency, and overall amplitude of the acoustic signal to deliver rate, place, and amount of electrical stimulation, respectively. Additionally, one of the strategies extracted the first formant frequency from the acoustic signal, with its corresponding amplitude, to choose a second more apical electrode for stimulation. The two groups of subjects were administered the Minimal Auditory Capabilities (MAC) battery and a vowel and consonant recognition task. Additionally, word per minute scores for continuous discourse speech tracking were obtained in two conditions (speechreading only and speechreading plus one of the two coding strategies). A smaller group of subjects were given the Four-Choice Spondee subtest of the MAC battery at several different signal-to-noise ratios (SNR = +10, +5) and presentation levels (60, 70, and 80 dBA) to determine the effect of noise on speech discrimination. Results revealed that in quiet and noise the subjects using the F0/F1/F2 coding strategy performed significantly better on almost all measures, with the exception of the easiest prosodic subtests of the MAC battery where ceiling effects were evident. In quiet, the largest improvements were obtained on the open-set subtests of the MAC battery with scores for spondee recognition of 13.6% for F0/F2 and 26.0% for F0/F1/F2; CID sentences = 15.9% for F0/F2 and 35.4% for F0/F1/F2; and monosyllabic words = 4.9% for F0/F2 and 12.4% for F0/F1/F2. In noise, at a +10 SNR, performance on the Four-Choice Spondee subtest was minimally degraded using the F0/F1/F2 coding strategy. These results were compared to those obtained by Gantz, Tyler, McCabe, et al, 1985, which showed significant degradation on the same task with the F0/F2 coding

strategy. These preliminary results show that the addition of the first formant in a feature extraction coding strategy provided improvement in speech discrimination both in quiet and in noise for profoundly deafened individuals using a multichannel cochlear implant.

AUDIOLOGICAL EVALUATION WITH A NEW IMPLANTABLE HEARING DEVICE: THE XOMED-AUDIANT

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Inherent problems associated with present-day bone conduction hearing aids have greatly limited their use. Yet, there is a definite need for a means of supplying amplification with good fidelity to patients with conductive hearing losses who cannot benefit from otologic surgery or conventional hearing aids. In an effort to provide better amplification to patients with external or middle ear pathologies, a new implantable hearing device has been designed and developed by two research groups, the Central Ear Research Institute in Oklahoma City and the Kresge Hearing Research Laboratory in Portland, Oregon, in conjunction with the Xomed Corporation in Jacksonville, Florida. This device, referred to as the Xomed-Audiant, utilizes an inductive coil to transmit bone-conducted sound directly to the cochlea.

The Xomed-Audiant consists of a small samarium cobalt magnet that is implanted subcutaneously in the temporal bone, an external coil wound around a second magnet, and a speech processor with a microphone to activate the coil. The external inductive coil is held firmly in place behind the patient's ear through the use of the two magnets. The coil produces an electromagnetic field that causes the internal magnet to vibrate. This vibrational pattern provides direct stimulation of both cochleae through the bone conduction pathways.

This device was initially implanted in one of the authors (RJ) who has normal hearing bilaterally, and the results were positive. To date, the device has been implanted in twenty patients with conductive hearing losses at three facilities in Oklahoma City; Portland, Oregon; and Little Rock, Arkansas. The initial results with these patients have been encouraging. Two generations of processors, both body units, have been evaluated and presently a behind-the-ear device is being developed.

Experimental data on these initial twenty patients will be discussed and compared to results obtained with conventional air conduction hearing aids and a bone conduction hearing aid.

INSERTION GAIN, HEARING AID PRESCRIPTION, AND INTELLIGIBILITY AMPLIFIED SPEECH

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Insertion gain measurements provide the means of accurately controlling the signal delivered to the hearing-impaired listener. The advantage over the functional gain measurements is that the effects of changes in hearing aid parameters can quickly and accurately be measured. The estimate of these effects requires only a passive participation of the patient. This potential ease of controlling the effects of

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various adjustments should be matched by an equally flexible clinical evaluation tool. This tool should: (1) be simple enough so that the effects of various adjustments of the hearing aid's controls can be rapidly assessed; (2) provide adequate information to the clinician in regard to the effects of these adjustments on the spectrum of the amplified speech; (3) provide for rapid and simple calculation of the predicted speech intelligibility; (4) be adequate for patients who can make various judgments of the delivered signals (e.g. LDL measurements) as well as those who cannot.

We present in this paper a complete hearing aid prescription and evaluation strategy that satisfy these requirements. The paper is divided into five parts. In the first part we present an analysis of the everyday speech spectrum and suggest the values across frequency that best characterize it (speech peaks and speech minima as opposed to the long term average). Next, we derive the HTL of these parameters. This enables us to use an ordinary audiogram for both calculating and visualizing the effects of a hearing aid.

The second part of the paper deals with the amplification goals. We discuss various approaches used for this and suggest a procedure close to the one used by Cox (1983). We position the average speech peaks between the LDL level (the level that is too loud to be listened to for any period of time) and the threshold. The LDL levels in the ear canal are either determined by direct subject's judgments or by a formula if the subject is not able to give these judgments.

The third part of the paper deals with procedures of preselecting the aid based on the manufacturer's specification and our targets. Both a simple approximative procedure for a noncomputerized clinic as well as a more accurate procedure to be used in computerized facilities will be briefly discussed.

In the fourth part of the paper a clinically acceptable articulation index procedure will be explained. Its accuracy, interpretation and applications will be discussed. The relationship between the AI and the acceptability of the aid will be examined.

In the final part of the paper we will discuss our clinical experiences with the procedure.

VARIABILITY OF PROBE MICROPHONE MEASUREMENTS OF THE EAR CANAL

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The increasing interest in the use of ear canal probe tube microphone test systems for objective measurement of hearing aid gain is widespread. The professional literature to date has focused on the design rationale and advantages of this measurement approach, comparability of probe tube to canal microphone devices, effects of sound source azimuth, probe insertion depth, effect of room acoustics, and reliability in an anechoic chamber. There are also some reports indicating that these measurement systems have been useful for individuals in the clinical practice of fitting hearing aids.

Numerous questions remain unanswered about this measurement approach. When looking at these systems for possible clinical use, even the casual observer will note that measuring the same ear twice will often yield different curves. Additionally, some test systems measure with the probe in one ear ref-

erenced to the opposite ear. This assumes that there is no difference in resonant characteristics between ears on the same subject. Beyond the variability of measurements made on an individual subject, we had questions about the range of differences in external ear canal resonance effects across a number of individuals. Do they vary greatly, minimizing the clinical usefulness of median values?

The goal of this investigation was to look at the variability of ear canal measurements using a probe tube microphone system. Test/retest was performed on both ears of forty subjects, right ears were compared to left ears for each subject, and variability was examined across all subjects. The magnitude of variability is sufficiently large in some instances that the use of single-sweep unfiltered probe measurements, tests referenced to the contralateral ear, or tests using corrections for an "average" canal effect, should be viewed conservatively.

LOUDNESS DISCOMFORT LEVELS IN CHILDREN

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Loudness discomfort levels (LDL's) traditionally have been used to set the saturation sound pressure level (SSPL) or maximum output of a hearing aid. Theoretically, these measures ensure that signals do not reach levels of intolerance for the aided listener. Since coupler measures (2-cm³ or Zwislocki) of SSPL90 do not adequately reflect levels developed in the ear canal, they must be used in conjunction with LDL's obtained for individual hearing aid users. Recently, Hawkins et al. (1985) described a procedure whereby SSPL90 2-cm³ coupler values corresponding to aided LDL's can be obtained. Preliminary data suggested that the procedure is both reliable and valid when used with adults.

Although it is believed that real-ear SPL values in children may be substantially higher than in adults, systematic and predictable differences could not be demonstrated by Nelson et al. (1986). However, they suggested that real-ear measures are necessary to define the SSPL90 of a hearing aid accurately. Although such measures do define the SSPL90 of a hearing aid more accurately, they do not ensure that the upper limit of tolerance has not been exceeded. To date, no systematic study has been conducted to determine if LDL's could be obtained in children. LDL procedures commonly used with adults are inappropriate for children due to the complexity of the listening task. In the absence of an LDL, the output of a child's hearing aid is typically set based on coupler or real-ear measures of SSPL90.

The present study measures LDL's on hearing-impaired children using a modification of the procedure described by Hawkins, et al. Data will be presented on the repeatability and validity of the procedure for children 7 to 14 years old. The LDL data obtained from this age group will be compared to similar data from hearing-impaired adults. Suggested 2-cm³ coupler values for SSPL90, derived from LDL measures as a function of frequency and hearing level, will be presented. It is anticipated that these values could be used as general guidelines for setting SSPL90 in children for whom empirical measures of LDL are not possible.

FIDELITY VS. AMPLIFICATION

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Electronic and acoustic advances in hearing instruments in the past few years

have provided clinicians with the ability to fit an expanding spectrum of the hearing impaired population.

Frequently, patients with hearing loss limited to the frequencies above 1500 Hz are not considered to be candidates for amplification. However, the introduction of the canal configuration of in-the-ear instruments (in-the-helix instruments) has changed our thinking as well as clinical approach to these patients.

This group of patients typically presents with a series of subtle symptoms of hearing loss by subjective report. Acoustic sensitivity is not often expressed as a primary complaint. Rather, these patients are extremely analytic relative to their acoustic difficulties and they describe indicators of more pronounced hearing loss. The patients usually complain of discrimination difficulties in poor listening conditions as well as a great deal of physical and emotional "strain" during occupational communicative situations. Most of these patients are involved in professional type occupations which require intense concentration and communicative accuracy.

The in-the-helix instruments in conjunction with a great deal of counseling have produced excellent patient acceptance and considerable improvement in subjective perceptions of hearing problems by our patients.

This paper will focus upon a compilation of patient data as well as details of the electronic and acoustic aspects of open canal ITE fittings. Counseling approaches for this group of patients will also be presented.

ACUSTIC AND PERCEIVED BENEFIT FROM PERSONAL ASSISTIVE LISTENING DEVICES

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A wide variety of personal assistive listening devices (PALD's) are available, yet we have not established routine recommendation of the devices to our clients because of the lack of information relative to the utility, desirability, and evaluation of PALD's. Additionally, the lack of standards to govern the construction of ALD's and the absence of regulations to enforce the provision of electroacoustic specifications for the devices further compounds the difficulty of knowing which device to recommend. The study completed by the authors has identified the acoustic and perceived qualitative benefit provided by several devices.

Thirty consecutive volunteers were solicited from clients receiving audiologic services at the Speech and Hearing Center. They satisfied the following criteria:

1. Pure tone average >25 dB HL <60 dB HL;
2. Age 45 to 75 years; and
3. Sensorineural loss of hearing sensitivity.

Each subject was evaluated with six different personal assistive listening devices. The order of presentation of the devices and the order of the evaluation measures were counterbalanced among subjects to avoid fatigue and order effects. The same device (supplied by the manufacturer) was used with all subjects. An electroacoustic analysis of the output of each device was completed at regular intervals during the course of the study to track variations in signal output.

The paper will present the results of the following measures completed with each subject without the use of the PALD and with each of the PALD's: Qualitative judgment of music and discourse in quiet and in noise (+6 dBS/N ratio) using a modification of the Adjective Rating Scale of Gabriellson and Sjorgren (1975); measures of the insertion gain; estimates of the identification of speech stimuli using the

California Consonant Test (Owens Schubert, 1976) in quiet and in noise, and an estimate of the perceived benefit of PALD's. The study was completed in a sound-treated test room with tape recorded test signals presented through a loudspeaker located at a distance of six feet from the subjects. Remote microphones were located at a distance of one foot from the loudspeaker transducing the test signals.

ACUTE AND LONGTERM AUDITORY DEFICITS IN SEVERELY BURNED CHILDREN TREATED WITH OTOTOXIC DRUGS

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The burn population often requires potentially ototoxic drugs in treatment of infection. Cochlear damage may be a unfortunate consequence of this life-saving medical therapy. Prediction of ototoxicity in the acute burn patient is extremely difficult as there are numerous factors that may influence the risk of cochlear damage. Yet, prompt identification and aggressive management of hearing impairment is especially important for burned children. The objectives of this investigation were: 1) to assess the usefulness of the auditory brainstem response (ABR) in early detection of auditory deficit in a pediatric population during the acute period following a severe burn, 2) to correlate ABR findings with physiologic parameters, drug profiles and hospital course and 3) to describe the longer term auditory deficits resulting from ototoxic medical therapy.

Over 250 separate ABR assessments were carried out for a series of 75 children (aged 3 months to 17 years) with greater than 40 total body surface area burned (mean 65%). None of the patients had a known history of hearing impairment or aminoglycoside therapy. All ABR testing was completed at bedside in an intensive care unit with commercially-available equipment. Drug data and details of the patients' hospital course were abstracted from medical records. Serial follow-up behavioral audiometry within the first year after hospital discharge was performed for over 75% of the survivors.

All patients yielded a normal ABR at baseline intensity levels down to 40 dB at the baseline assessment immediately after hospital admission. Upon final ABR assessment before discharge, however, one-out-of-ten patients had an absent or abnormal ABR at this intensity level. None showed brainstem transmission time abnormalities. Followup audiometry revealed pure tone hearing loss for 20% of the series. Fifteen patients with ABR evidence of auditory deficit were matched on the basis of percentage of burn with 15 patients with a normal ABR at discharge and normal followup audiometric findings. Although each group received multiple potentially ototoxic drugs (gentamicin, amikacin, vancomycin, amphotericin B, lasix), there were significant differences between groups in dosage and duration of medical therapy. Complex interactions were found among drug profiles and characteristics of hospital course (eg length of stay), which confounded the prediction of ototoxicity in individual patients.

The ABR test protocol used in the acute period, and the audiometric configuration revealed in followup testing, are of particular interest to the clinical audiologist. Delayed onset and progression of sensor-

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neural impairment after discontinuance of ototoxic drugs was documented with pure tone, immittance and speech audiometry. Drug-related auditory impairment was characterized by unusually poor speech understanding. We conclude that the audiologist can play an important role in the acute and longterm management of severely burned children.

CLINICAL USE OF THE AUDITORY BEHAVIOR INDEX IN INFANTS:

A CAUTIONARY NOTE

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The Auditory Behavior Index (ABI) developed by Northern and Downs (1978) as a model for estimating auditory threshold in infants is useful, but has limitations: it is based on behavioral observation audiometry (BOA) techniques; there is substantial response variability at each age level; and the methods used to collect the data are not reported. Although Northern and Downs cautioned clinicians to use the ABI only as a model, experience suggests that the Index is often used inappropriately in clinical settings. In this paper, we discuss the effects of methodology on hearing threshold estimates in infants, present data emphasizing some limitations of the ABI, and suggest some appropriate uses of this instrument.

METHODS

Audiometric data were obtained from a total of 16 normal infants ranging in age from 7 to 13 months, using speech and FM pure-tone stimuli. A visual reinforcement audiometry (VRA) paradigm was utilized under typical audiometric test conditions. The subject/observer room arrangement is presented in the paper.

RESULTS AND DISCUSSION

The audiometric findings were similar to those of Wilson and Moore (1978) for infants of similar age. Direct comparison of these data with those of Northern and Downs is difficult (their data were reported in hearing threshold levels, their warbled-tone frequencies are unknown, etc.). In general, however, threshold data for speech and pure-tone stimuli were nearly 30dB more sensitive than predicted by the ABI. Abuses of the ABI fall into three major categories, and these are discussed with reference to the present findings. We support the use of the ABI as a model but discourage its indiscriminate clinical use in profiling absolute hearing sensitivity in infants. The importance of methodological considerations in the interpretation of infant audiometric data for diagnostic as well as (re)habilitative planning is detailed.

CENTRAL AUDITORY PROCESSING DISORDER: DIAGNOSIS AND INTERVENTION

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Critics of the concept of central auditory processing disorder (CAPD) in children characteristically cite two major problems. First, opponents of the specifically auditory nature of the disorder cite a lack of "hard" evidence to support the diagnosis and often conclude that this lack of evidence denies the reality of the problem. Second, identification of CAPD has often been considered irrelevant due to the lack of a rational intervention strategy. In the present paper, we address these two issues based on our recent experience with a comprehensive identification strategy and

with intervention based primarily on enhancement of the auditory figure/ground relation.

Fourteen children, ranging in age from 3 to 12 years, were identified as having CAPD. Diagnosis was based on a test battery including pure-tone, immittance, speech, and auditory evoked potential audiometry. Speech audiometry included use of the Synthetic Sentence Identification (SSI) test or the Pediatric Speech Intelligibility (PSI) test. Auditory evoked potential audiometry included measurement of early latency (ABR), middle latency (MLR), and late V (LVR) responses.

Results showed an array of abnormalities. Of the 11 children from whom auditory evoked potentials were carried out, all had normal ABR's. However, 8 had abnormal MLR's and 7 had abnormal LVR's. Only 1 of the 11 children showed normal evoked potentials across the entire array of measures. Speech audiometry was abnormal in all but 2 of 13 children. All children showed abnormal results on speech audiometry, evoked potential audiometry, or both.

Since the major symptom of these children and complaints from their parents were inattentiveness and distractibility in difficult listening situations, rehabilitative management was directed toward improvement in signal-to-noise ratio (S/N). Intervention consisted of either the use of a personal FM assistive listening device, or classroom and household strategies for improving S/N ratio. As a result of these intervention strategies, both parents and teachers reported marked improvement in the children's performance.

Case studies will be presented showing that "hard" evidence of CAPD can be provided through a comprehensive audiological evaluation and that intervention to improve auditory figure/ground can be successful.

THE INFLUENCE OF CONCENTRATION ON VESTIBULAR INDUCED NYSTAGMIC ACTIVITY

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This study examined the effects of four mental alerting tasks on the slow phase velocity (SPV) and beat frequency (BF) of caloric-induced nystagmic activity to determine the effect of each task (i.e. concentration) on the degree of nystagmic suppression release. Forty subjects were randomly divided into four groups (10/group) and stimulated four times (2/ear) in a counterbalancing order according to test ear, stimulating temperature (30° and 44°C) and alerting task.

Nystagmic activity was induced by a closed loop caloric system (150cc/min) and monitored for 60 seconds following stimulation. Each of the two active participation tasks (AT-mathematical calculations and reflexive questioning) and two passive listening tasks (PT-classical music and a story) were presented separately for 60 seconds following stimulation with an eight minute rest interval employed between stimulations.

Results demonstrated a greater SPV composite mean value for the "mathematical calculations" (21.4°) followed in order by the "reflexive questioning" (19.9°), "story" (15.3°) and "music" (10.0°) task conditions. Approximately 65% of the subjects exposed to the AT stimulations yielded a greater average SPV than the same subjects did to the PT's. In addition, stimulations yielding mean SPV's of 5° and less occurred in 37.5% of the PT's and in only 2.5% of the AT's. Comparisons of the composite mean BF data also showed a decrease as the degree of concentrated effort decreased from an active to a more passive mental state (e.g. mathematical calculations (12.1), reflexive questioning (10.9), story (9.3) and music (8.6).

Analysis of variance and post hoc testing revealed that the AT's and PT's differed significantly with respect to both SPV and BF activity.

Our results suggest that the use of passive listening tasks result in a significant suppression of induced nystagmic activity which make them inadequate as alerting stimuli. We suggest that either one of the active participation tasks utilized in this study adequately controls the alertness factor and the subsequent release from nystagmic suppression during clinical electronystagmography testing.

BOBBING OSCILOPSIA AS A RESULT OF GENTAMICIN INDUCED VESTIBULAR TOXICITY

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When the peripheral vestibular mechanisms are disabled or destroyed bilaterally, there is a disruption of sensory input to the cerebellum, the vestibulo-vegetative reflex arc, and the vestibulo-ocular reflex arc. The effects are loss of information to control muscles for body orientation, absence of nausea with changes in head position, and a shifting visual image of the environment with head movement. As a result, it is difficult to walk even with support, and rapid motion of visual images has a completely disorienting effect. The most prominent patient complaint with this condition is the illusion of movement of the horizon when walking. This phenomenon is called bobbing oscillopsia.

We are reporting on two cases of bobbing oscillopsia due to gentamicin ototoxicity (Case 1, 61 year old female; Case 2, 41 year old male). Both were treated for bacterial endocarditis with gentamicin. In the literature on gentamicin ototoxicity, the auditory system is affected less frequently than the vestibular system, and the vestibular damage is usually irreversible.

For both patients, the first complaints were of whirling vertigo, nausea, and vomiting 30 days after the initiation of gentamicin therapy. Neither complained of decreased hearing. From that time forward, the patients were monitored with electronystagmography and audiometry. Two days later the vertigo was replaced by bobbing oscillopsia.

In Case 1, the bobbing oscillopsia was markedly reduced after 5 months. Recovery of vestibular function was documented with the emergence of caloric responses bilaterally. Hearing remained stable throughout this time period.

In Case 2, there were no measurable caloric responses at 8 months and no recovery from bobbing oscillopsia at 19 months after the onset of the problem. The patient continues to use a walker. He is still disoriented by surroundings with complex patterns and is unable to look at the horizon when riding in an automobile. We will present a videotape illustrating his difficulties standing and walking. For this patient, there may have been some loss of hearing and slight recovery.

GLYCERIN TEST: METHOD FOR ANALYSIS OF PURE TONE THRESHOLD SHIFTS

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A variety of pure tone threshold shift criteria have been used with the glycerin test. Typically, the investigators who recommended a particular method have not provided a rationale for using the method to the exclusion of other methods. We developed a rationale for selecting a shift criterion and used the rationale to develop a new method for specifying the

significance of threshold shifts in the glycerin test.

The experimental data were results from one author's (J.M.S.) first 173 glycerin test patients. The mean data indicated that glycerin systematically improves hearing at 250, 500, 1000, and 2000 Hz and has no significant effect at 4000 and 8000 Hz for Meniere's ears. For non-Meniere's ears, glycerin worsens the hearing slightly at 500 Hz and has no significant effect at other frequencies.

The method we used to measure threshold shift was the average shift at 250, 500, 1000, and 2000 Hz. A shift of 6.25 or more was considered significant (p < .01 based on non-Meniere's ears). This method includes sensitive frequencies, excludes non-contributory frequencies, and reduces variability with averaging. The method is capable of detecting small changes for ears with nearly normal hearing and for Meniere's ears that are nearly "burnt out." The method requires no special equipment, signals, or procedures.

We compared our method to other methods and found it to be slightly better than the second best method (15dB shift at any one frequency). For our method, the specificity was 1.00 and the sensitivity was 0.56. It is clear from our data that this test is not appropriate to diagnose Meniere's disease. It does, however, appear to separate reactive Meniere's ears from all others. The identification of the Meniere's reactive ear may be important in its own right.

RELATIONS BETWEEN PSYCHOPHYSICAL TUNING CURVES AND AGE, WORD RECOGNITION SCORES, AND DEGREE OF HEARING LOSS

Lisa Hunter Smolak

Gary P. Jacobson

Laura W. Kretschmer

The purpose of this study was to investigate relationships between frequency resolution as measured by Psychophysical Tuning Curves (PTC's) and age, degree of hearing loss, and word recognition scores for three groups of subjects. Fourteen elderly subjects with mild to moderately severe sloping sensorineural hearing loss, seven elderly subjects with normal hearing, and ten young subjects with normal hearing were used. The means and ranges of pure tone thresholds for the 3 groups are presented.

Psychophysical tuning curves were analyzed digitally for Q (10) and tip-to-tail distance. A simultaneous tone-on-tone sweep-frequency masking method (McDonald, 1983) which was subject-controlled was used to obtain PTC's. PTC's were measured at 500 and 2000 Hz, at both equal sensation levels, and equal sound pressure levels for all subjects.

Correlation coefficients were determined for relationships between frequency resolution data and maximum word recognition score in quiet (PB Max.), frequency resolution data and age, frequency resolution data and degree of hearing loss.

The results indicated that PB Max. was not significantly related to frequency resolution data. This finding is consistent with previous literature, which has not uncovered any consistent relation between word recognition scores measured in quiet and frequency resolution ability. A significant, negative relationship at the same frequency was found. This finding is consistent with that reported by Pick, Evans, and Wilson (1977) and suggests that frequency resolution of the peripheral auditory system may be affected by degree of hearing loss. A significant negative relationship was also found between frequency resolution ability and age. A conclusion of loss of frequency resolution as a function of age is premature, however. Differences in performance due to age on the psychophysical task required to measure frequency resolution must be investigated before such a conclusion may be reached.

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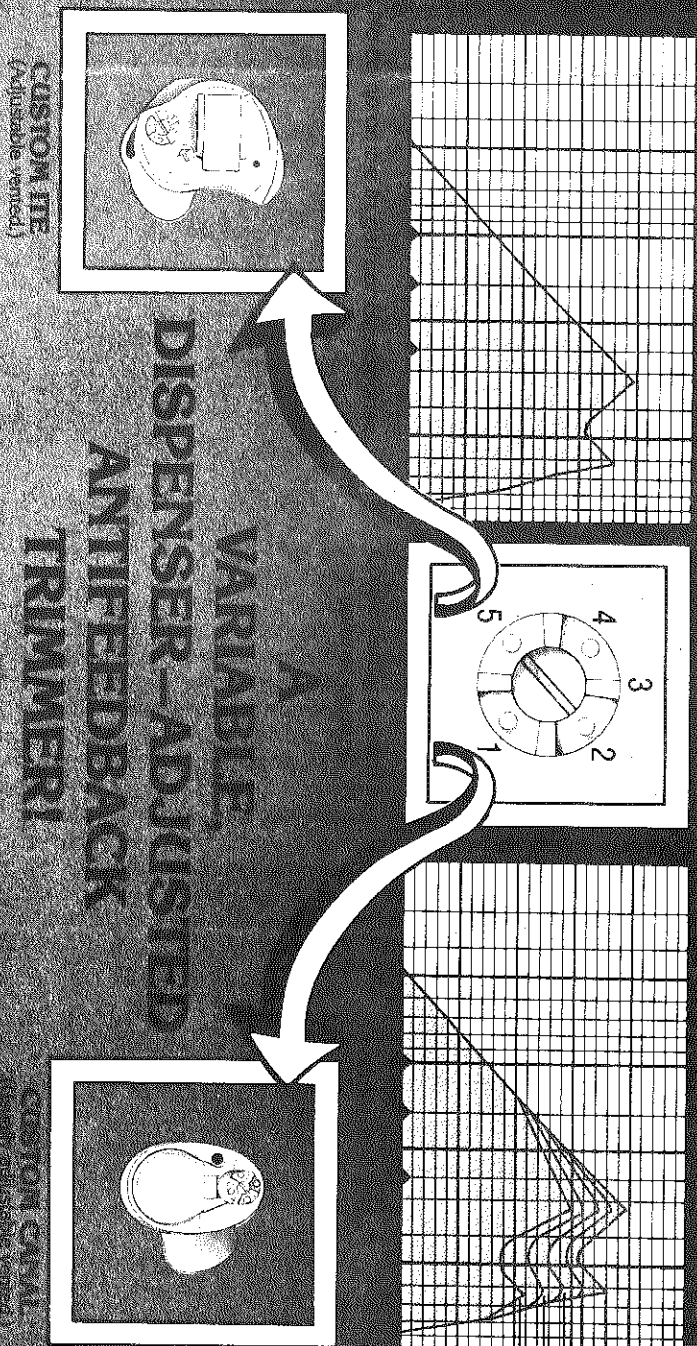
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Marion Downs and Jerry Northern enjoying her tribute.

Tribute to AAS Member

The famous Brown Palace Hotel in Denver, Colorado, was the scene of a fabulous gala fund raising event in tribute to Marion Downs. Attended by more than one hundred friends and associates, the Gala was the kick-off for the National Symposium on Hearing in Infants held September 25-26, 1986, honoring Marion Downs for her pioneering work in the early identification of hearing loss in children. All proceeds from the National Symposium were presented to the Marion Downs Children's Hearing Fund, and a check for \$10,000 was presented in her behalf at the Gala Tribute party.

During the Gala Tribute, a plaque was unveiled with the names of eighteen individual benefactors who contributed substantially to the Marion P. Downs Children's Hearing Fund. The plaque will be permanently mounted in the Otolaryngology-Audiology Clinic of University Hospital at the University of Colorado Health Sciences Center. The award cites Marion Downs as an outstanding clinician, teacher, and advocate.

The University of Colorado Health Sciences Center is collecting donations which will be put into endowment in appreciation for the excellent contributions of Marion Downs and her lifetime efforts on behalf of children with hearing impairment. The name of Marion Downs is, of course, synonymous with pediatric audiology, and the purpose of the endowment fund is to award an annual Pediatric Audiology Fellowship to a practicing audiologist who desires additional specialty training and research opportunity in some aspect of pediatric audiology.

During her outstanding career at the University of Colorado Health Sciences Center, Mar-

ion Downs pioneered, developed, and evaluated techniques for testing hearing in children. She is noted internationally for her work in the area of early identification of hearing loss and in infant hearing screening. Her publications and teaching have brought worldwide attention to the importance of early habilitation for deafness, and have alerted the medical world to the developmental problems associated with childhood deafness.

Mrs. Downs is an excellent teacher and prolific writer; no student of hearing disorders has passed through course work without being profoundly influenced by her. Thousands of patients, especially grateful for her concern and wisdom, have benefitted from her devoted effort to better their lives.

Dr. Downs is recognized as an important educator, clinician, author, and progressive advocate for the hearing-impaired. Her professional colleagues have honored her with numerous awards; among them are the Outstanding Achievement Award of the University of Minnesota, the Gold Medal from the University of Colorado, an Honorary Doctorate of Human Services from the University of Northern Colorado, the Honors of the American Speech-Language-Hearing Association, and the Service Recognition Award of the American Medical Association.

To date, nearly \$50,000 has been generated for the Marion Downs Children's Hearing Clinic on the way to a projected goal of \$300,000. All donations are tax exempt and may be sent to the University of Colorado Foundation, Campus Box A065, 4200 East Ninth Avenue, Denver, CO 80262.

Aural Rehabilitation Forum

Panel Discussion - Hearing Health Care for the Elderly

Editor's Note: This panel discussion represents the third article in a series of three that kicked off our Aural Rehabilitation Forum. These papers composed the proceedings of a conference on aural rehabilitation held in 1983 in Winter Park, Colorado. The discussion that follows was organized under the direction of Ronald L. Schow, with the general theme of AR concerns for aging adults.

Panel discussion members included Schow, moderator (Idaho State University), and Thayne Smedley (Nu Ear Electronics), along with the following: Miriam Henoeh (North Texas State University), Katherine Gerkin (Audiotone), John Cooper (University of Texas Health Science Center, San Antonio), Robert McLaughlin (Central Michigan University), Victor Garwood (University of Southern California), Robert Traynor (Colorado State University and private practice), Elmer Owens (University of California Medical Center), and Laura Wilber (Northwestern University). While all those participating in the discussion are audiologists, they represent a wide range of experiences and viewpoints. Some do and some do not dispense hearing aids. Some work for the hearing aid industry, while others work in university or private practice settings.

Panel Discussion

Ron Schow: I'd like to ask first for Miriam and Katherine to offer any responses that they may have at this point.

Miriam Henoeh: First I want to respond to the Art Linkletter thing. I agree that somehow or another audiologists, if we are to promote ourselves as better providers of hear-

ing health care than some other groups, have to become more visible. But, I'm not convinced that the approach that was discussed, a promotional approach, is the best way to go. Promotional techniques are to me questionable, especially if those who respond to the promotion are not treated ethically, which I have witnessed in my area.

Ron Schow: Dr. Smedley do you want to comment on that?

Thayne Smedley: Yes, if I were you, I would be just as concerned. I feel strongly that one reason there is room for audiologists in hearing aid promotions is because the right people aren't necessarily providing the follow-up. This letter does a good job in getting people into the office but some dealers have less than a completely ethical orientation, and this can be a problem. If a dispenser is primarily bent on selling numbers, without looking at the quality of the product, or the fitting, or the quality of the follow-up, then it represents abuse of a system that is effective in getting people in. The manufacturers might argue that there is apt to be some falling by the wayside, but if you get a hundred people in and lose five or ten, that's better than the ninety successful users who wouldn't have been reached with an ineffective method. The best combination is an effective tool for reaching hearing aid candidates, and responsible, qualified persons doing the fitting and follow-up. This is where the dispensing audiologists can get involved.

Ron Schow: Miriam, I'm wondering how you would feel about an audiologist lining up with this kind of a promotion?

Miriam Henoeh: Well, it's hard for me to even think like that because I come from an Ivory Tower background. So it's very difficult for

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Over 230 Attend 1986 Annual Meeting

The 13th annual meeting of the American Auditory Society was held November 20, 1986, in Detroit, Michigan, prior to the American Speech-Language-Hearing Association meeting. Members of the Program Committee and its Chairman, Bill Rintelmann, are to be congratulated for a job well done! The meeting was the perfect blend of stimulating papers, outstanding professional interchange, and great fun!

More than 230 participants, representing the disciplines of audiology, otolaryngology, otology, research, and hearing and speech science, took part in this year's meeting. All in attendance agreed that this was one of the Society's best annual meetings ever!!

The one-day meeting, held in cooperation with Wayne State University School of Medicine and Children's Hospital of Michigan, assembled a faculty of presenters involved with state-of-the-art procedures and research. The topics of electro-physiologic measures, implantable hearing devices, amplification and rehabilitation, pediatrics, and vestibular testing filled the day's agenda. Each paper offered information critical to contemporary clinical perspectives.

The highlight of every AAS meeting is the

Carhart Memorial Lecture. This tradition is presented each year by an outstanding member, whose career has been distinguished by contributions to the field of human hearing. This year's Carhart Memorial Lecturer was Dr. Joseph E. Hawkins. His presentation, entitled "Traces of Age in the Ear and the Eye," is available on videotape.

A new feature of this year's program was the availability of continuing education credits from three different sources, illustrating the diversity of the disciplines that make up the Society. This year's meeting was accredited for continuing education units by the American Medical Association, ASHA, and the National Hearing Aid Society. Thanks goes to Deborah Hayes of the AAS Executive Committee for making this possible.

Special events in this year's meeting included presentation of the Beltone Distinguished Audiology Teacher of the Year award to Roger Kasten. Recognition was given by the Editors of *Ear and Hearing* to the authors of three outstanding articles in Volume 6 of this journal. A very special presentation was made to Susanne Kos, Assistant Secretary of the Society. Presi-

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**Dear AAS Members
and Corti's readers,**

Share

You will be interested to hear that SHARE (Speech and Hearing Alliance for Resource Exchange) is making progress. I first introduced SHARE to AAS members at the 1985 annual meeting, and provided some updated information in the last issue of *Corti's Organ*. Individuals who are not familiar with the purposes of SHARE can find a description elsewhere in this issue of *Corti's Organ*. During the past 12 months we have received donations of many text books and journals. We have provided four different programs with materials, including the Speech Pathology and Audiology program at the Catholic University and the Department of Otolaryngology at the Escola Paulista de Medicina in Sao Paulo, Brazil; and to the Charles University Post-Graduate Medical Institute in Prague, Czechoslovakia. In addition, we have provided Dr. Aruegodore (John) Oyiborhoro of Port Harcourt University, Port Harcourt, Nigeria with 15 years of JSRR, JSHD, DSH Abstracts, and 40 or so text books. John will use those materials to help start up an Audiology training program at his university. I can assure you that individuals who have received materials are grateful for your contributions.

At the recent ASHA convention I met with the executive board of the National Student Speech Language Hearing Association (NSSLHA) to ask their support of SHARE. It appears that they will include SHARE as one of their service projects in the coming year. We will get more information from NSSLHA in the near future and communicate with AAS members through the next *Corti's Organ*. NSSLHA's help with SHARE is deeply appreciated.

In the meantime we are continuing to solicit text books in Audiology, Speech Pathology, Otolaryngology, and related fields. We would also appreciate some journals. It would be best to write and let me know what you have to donate before sending them on. Any cash donations that can be used to offset shipping costs are equally welcome. Finally, if you know of any training program or professional group in countries where resources and finances are limited that would benefit from SHARE materials please let me know.

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From The Editor

As my first year as Editor for *Corti's Organ* comes to a close, I can't help but reflect on the changes that have taken place in my life since I accepted this "prestigious" post. I have learned what galley proofs are; how to compute column length; how to paste-up; and — how to beg. The begging part came easy.

With each issue of *Corti's*, it has been necessary for the Editorial Board to actively recruit papers and articles for inclusion. Rather than preach or beg for material to be printed, I'll simply remind you of subject areas that need your attention and input. Consider submitting to the Clinical Section (case studies, assessment overviews, etc.); the Equipment Review Section; the Aural Rehabilitation Forum; the Name That Lesion Column; the Audiology/AAS Trivia Column; or the Special Edition, "*Corti's* 10th Anniversary."

Now, if none of those spark your typewriter, I

have a new idea to get those creative juices flowing. A new column will be added to *Corti's Organ* that will allow you to "get it off your chest." The "What's Bugging You?" column can serve as your soap box. Do you have a pet issue, philosophy or concern that you want to discuss? Send it to *Corti's*. Controversies such as live voice vs. taped presentations for speech audiometry always prompt discussion. I'm sure each of you has his own thoughts on this issue as well as on others.

The Editorial Board would like to thank all who have assisted with articles over the past year. We couldn't have done it without you. And thanks also, in advance, to those who are now inspired to submit.

Virginia Berry
Editor

The President's Corner

Editor's Note: From time to time this special feature, contributed by the AAS President, will appear in *Corti's Organ*.

**Prelinguistic Deafness
vs. Prelingual Deafness**

Back when I was a resident, "congenital deafness" was used to describe children born deaf or hard of hearing. We soon learned that some babies had normal hearing at birth, followed by rapid degeneration of hearing before speech began. In an attempt to coin a term that encompassed both of these terms, "prelingual deafness" came into use. It is a semantic disaster. "Prelingual" does not appear in *Dorland's Illustrated Medical Dictionary* or in *Webster's New World Dictionary*. It does appear in the *Oxford Dictionary*, but it is an anomaly.

"Prelingual" is, in fact, a non-word, but if it were a word, it might mean "in front of the tongue," or "before the tongue (was formed)." This is nonsense as applied to hearing loss. However, Northern and Downs, in their first edition of *Hearing in Children*, refer to "auditory behavior as prelinguistic behavior." I quote

from that section: "The invariable presence of the babbling responses in both the deaf and the hearing infant seems to us to represent reflexive, pre-adaptive behavior unique to the human infant.... Its importance in the prelinguistic sequence of activities may be that it reinforces vocalizations by means of rewards.... The beginnings of language learning occur at birth and — who knows? — possibly before birth."

I urge members of the AAS to consider using the term "prelinguistic" deafness or hearing loss. Down with "prelingual"!

Over 230 Attend

Continued from Page 1

Dent Worthington surprised Susanne with a plaque, given as a tribute to all her years of service and dedication to AAS. Bill Rintelmann, 1986 Program Chair, and his Program Committee also received well-deserved recognition. (Members of this committee are listed elsewhere on this page. LaVonne Bergstrom, President for the coming term, presented outgoing chief, Don Worthington, with a plaque honoring his years of leadership.

The evening's entertainment planned by local arrangement liaisons, Frances Eldis and Sabina Schwan, was the biggest treat! Dinner and show were enjoyed by all at Mykonos Supper Club in Detroit's Greek Town. The food was exceptional, but as may be seen in the picture included in this issue, the entertainment was second to none. The night was the perfect conclusion to a full day!

Next year's meeting will be held in conjunction with AAO in Chicago. Lazlo Stein, Program Chair, has already begun his plans to insure that 1987's meeting is another hard act to follow. Bill Rintelmann and the 1986 Program Committee have made 1986's conference just that. See you in Chicago.

See pictures on page 1

**Spring Issue
of Corti's Organ
will contain...
Membership
Directory**

**Be sure we have your
correct name & address.**

1986 AAS Meeting Available on Video Tape

The entire proceedings of the 1986 convention of the American Auditory Society are now available on video tape. The video tape is approximately six hours in duration. It includes the Carhart Memorial Lecture by Dr. Joseph Hawkins entitled:

"TRACES OF AGE IN THE EAR AND THE EYE"

This year the video tape is accompanied by a complete set of documents representing the visual aids used by the presenters. The video tape is available in VHS format only. The cost is \$35.00. Please allow 4-6 weeks for delivery.

Please make check payable to:

AMERICAN AUDITORY SOCIETY

Send order to:

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Joachim Hearing & Speech Center
Eye, Ear, Nose & Throat Hospital
145 Elk Place
New Orleans, LA 70112

The video tape should be sent to:

1986 Editors' Awards Announced

Each year, the *Ear and Hearing* Editorial Board acknowledges outstanding contributions to this publication through the presentation of the Editors' Award. The purpose of this award is to recognize manuscripts that exemplify the standard of quality that the *Ear and Hearing* Editorial Board strives to achieve.

Manuscripts were selected on the basis of these criteria:

- the interest and timeliness of the research question.
- the appropriateness of the research design and methodology
- the appropriateness of the analysis
- the clarity of the writing
- the appropriateness to the purpose of the journal

Selection of the three most outstanding articles in a volume of *Ear and Hearing* is not easy, as there were many worthy papers among the

60 published. Nevertheless we were able to choose three articles which admirably represent the standards we wish to maintain.

In order of their appearance in the journal, the three articles chosen as outstanding contributions for Volume 6, 1986, are:

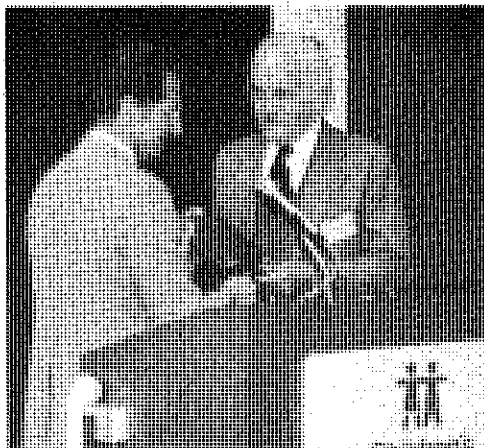
The Crib-O-Gram in the NICU: An Evaluation Based on Brain Stem Electric Response Audiometry; Andree Durieux-Smith, Terence Picton, Christopher Edwards, John T. Goodman, and Brock MacMurray; Vol. 6, No. 1.

Cochlear Summating Potential to Broadband Clicks Detected from the Human External Auditory Meatus: A Study of Subjects with Normal Hearing for Age; Gian-Emilio Chatrian, Adelina L. Wirch, Kyoko H. Edwards; Giorgio S. Turella, Mark A. Kaufman, and Jack M. Snyder; Vol. 6, No. 3.

Hearing Loss in the Elderly: An Epidemio-

logic Study of the Framingham Heart Study Cohort; Eve K. Moscicki, Earleen F. Elkins, Herbert M. Baum, and Patricia M. McNamara; Vol. 6, No. 4.

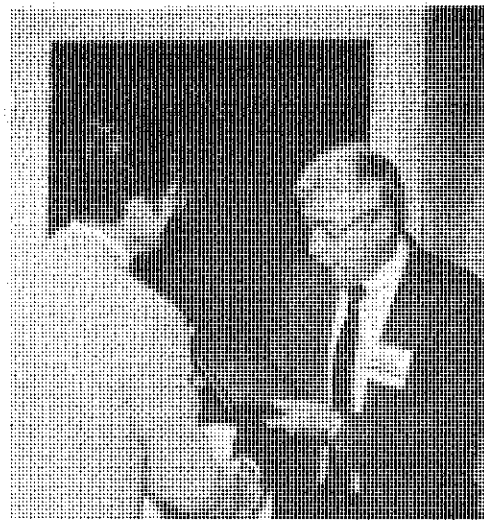
The awards were presented at this year's annual AAS meeting in Detroit. Plaques were given to the authors, honoring their significant contributions.



President Worthington makes presentation to Carhart speaker, Joseph E. Hawkins.



Eve Moscicki accepts award.



Rintelmann receives acknowledgement.



Fran Eldis accepts certificate of appreciation for local Arrangements Committee.



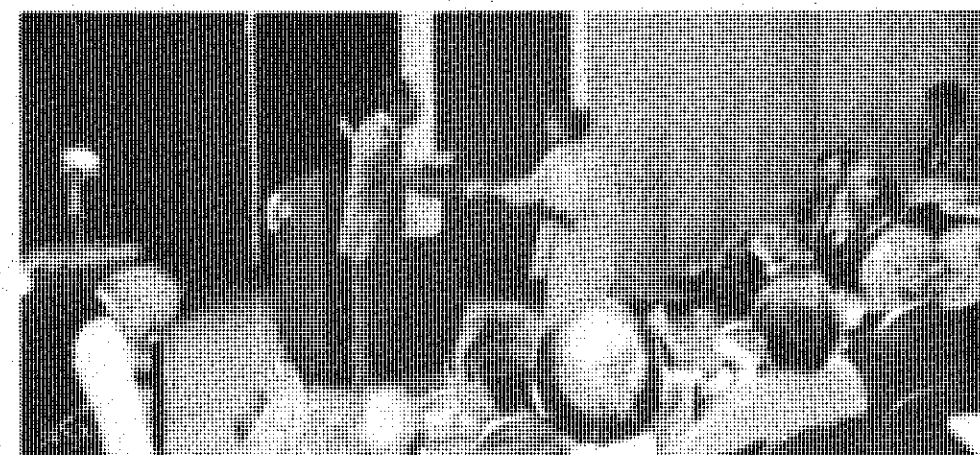
Editors' Award granted to Andree Durieux-Smith.



Corti's editors looking for news.



Bob Keith presents Editors' Award.



Society honors Susanne Kos.



Local Arrangements Committee - still smiling!

19th International Congress Scheduled

The International Society of Audiology will hold its 19th INTERNATIONAL CONGRESS OF AUDIOLOGY in Jerusalem, Israel, June 5-9, 1988. Topics of the Round Tables are: Hearing Dysfunction Associated with Systemic Diseases, Methods for Evaluation of Benefits of Hearing Aids, and Auditory Deprivation from Middle Ear Disease (in children). Free paper sessions on a variety of topics in audiology will be held throughout the four-day congress. For further information please contact: 19th International Congress of Audiology, P.O. Box 50006, Tel-Aviv 61500, Israel.

Aural Rehabilitation

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me to say "stick an audiologist in there, and that makes it ethical." I have former students who have now gone into dispensing hearing aids. I have friends who are audiologists that have gone into dispensing hearing aids. If you start looking at their sales practices versus the hearing aid dealer sales practices, you begin to see that there's not much difference. By putting an audiologist in that system, I don't know that that's going to satisfy me as to the ethical approach to dispensing hearing aids that is violated by this kind of promotion.

Ron Schow: I agree with you. One of my concerns is that I see audiologists going out saying "Well, it would be nice to have a little extra money; let's sell some hearing aids." And they do. Then next year they've changed jobs, or they've moved to another university

and they've put their shingle out to sell hearing aids there. What happened to their clients to whom they have an ethical responsibility in the place where they formerly practiced. I believe audiologists are coming into these ethical problems maybe in a little different way, but they are, and we in training programs have an obligation to begin raising their consciousness, their awareness of their ethical responsibilities. But, at the same time, if we have promotional techniques that can be linked with good, appropriate follow-through, that seems to me perhaps to be the best of both worlds.

John Cooper: You know, there is a mentality that says "more is better, and hustle-hustle-hustle; and let's all go out and sell jewelry, or cosmetics, and get a pink Cadillac." Detroit and the auto industry used that craziness, if

I may call it that, and Detroit is in deep trouble. For a concrete example, the Japanese came over here and had a decent product, and people bought Japanese cars because they were really better. And macho ads of a Ford Mustang racing along down the road are not going to help Ford products. What'll help Ford products is an automobile that stays together, was fit properly to begin with. I have some real problems with numbers for their own sake. I think the people who are bent on that, in the long run, will be in deep trouble.

Thayne Smedley: That, I think, is a good statement, and it reflects your orientation. However, if you were president of some hearing aid corporation, the matter of numbers would be a critical issue.

John Cooper: That's not so, and the Japanese have proved it, and Detroit lost their hide on it.

Ron Schow: But, you see, the quality brought the numbers. It's just a different way of going after the numbers.

Thayne Smedley: That, I think, is a good statement, and it reflects your orientation. Granted they must have the quality, but they are tied very closely together. If you get involved in retailing, get involved in the hearing aid industry, the mentality may be crazy, but it reflects the fact that what they eat and what they wear and what they drive, and how they house themselves are

all tied to income. And if they don't make the income, they don't have a certain standard of living. Sales units and money are tied just that closely. We're very much aware that hearing aid offices are first businesses, and if they don't succeed businesswise, they can't think of helping the hard-of-hearing. But, if you're in a university setting where your income isn't necessarily determined by the growth of the product you turn out, sitting in some other office where it's not tied directly to sales, then it's easier to think in a more broad context of rehabilitation and quality as opposed to quantity. It's a major conflict, and I honestly don't know how you get around that.

Ron Schow: I apologize in a way for bringing the numbers up. But, I heard Gwen Vaughn the other day talk about 900 letters from persons who need help with assistive listening devices and saying that they weighed on her conscience. It seems to me that we have some appropriate concerns in aural rehabilitation about small groups of people: the multiply handicapped, the blind hearing impaired, for example, and the cochlear implant group, the elderly in nursing homes. And while I wholeheartedly support our concern with these small individual groups, I'm amazed that we don't have the seven million elderly hearing impaired out there.

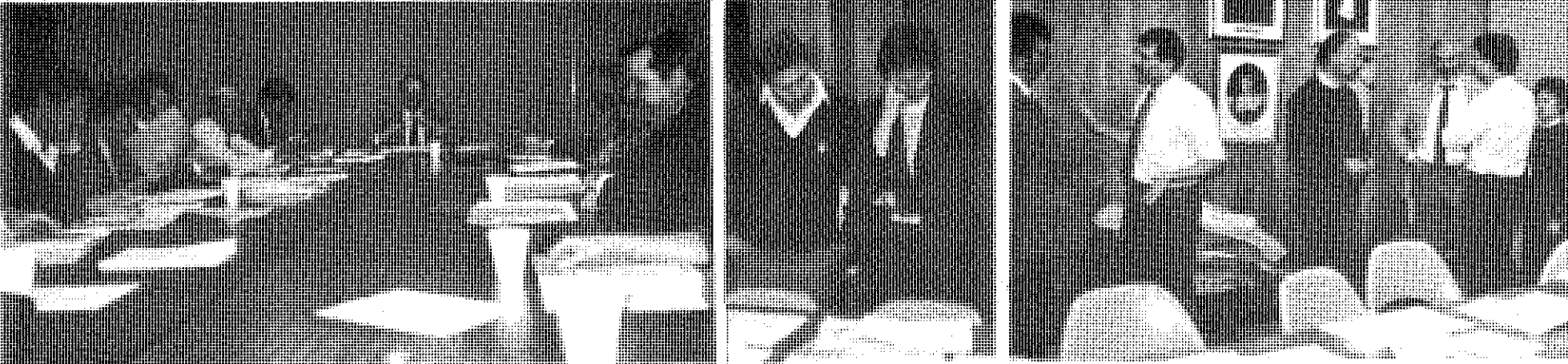
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Executive Committee at Work and Play

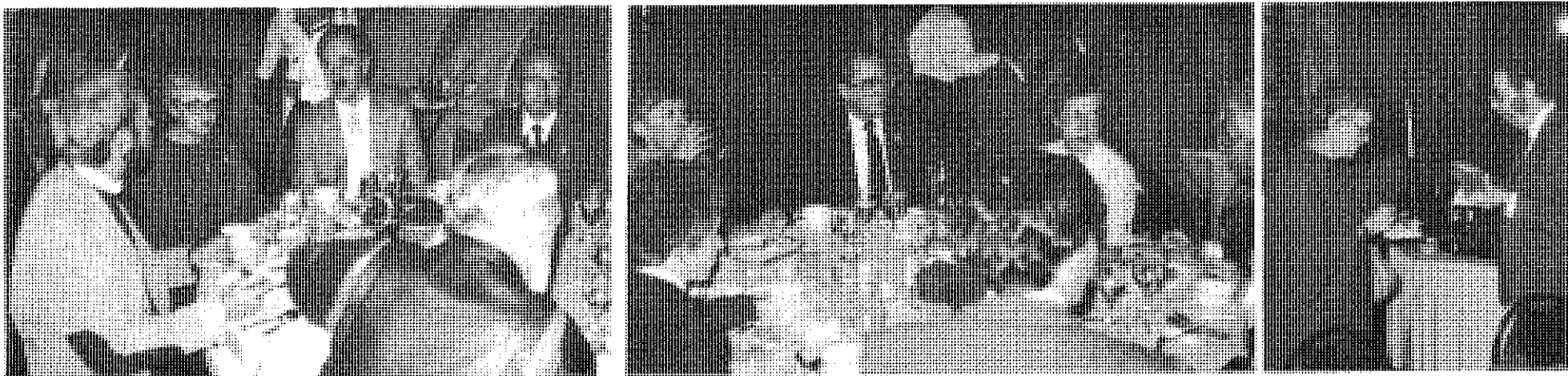
The 1986 Executive Committee had their work cut out for them as they attempted to "beat the clock" and address 20 agenda items in a record four hours. As veteran committee members know, their hard day's efforts are rewarded by a splendid evening of wining and dining. This year was no exception. (Proceedings of the Executive Committee meeting are included so that you can be aware of the work

accomplished.)

The evening at the Lands Down Restaurant on the Detroit River began with a delightful array of tempting hors d'oeuvres and cocktails. A fine dinner followed, complete with prime rib, wine, and a sparkling view of Canada. The entire evening was just the relaxation needed by the Executive Committee after a long and productive day.

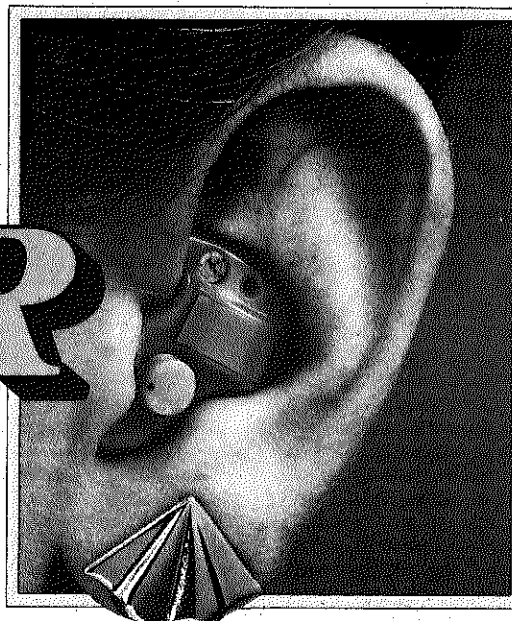


Executive Committee at Work



Executive Committee at Play

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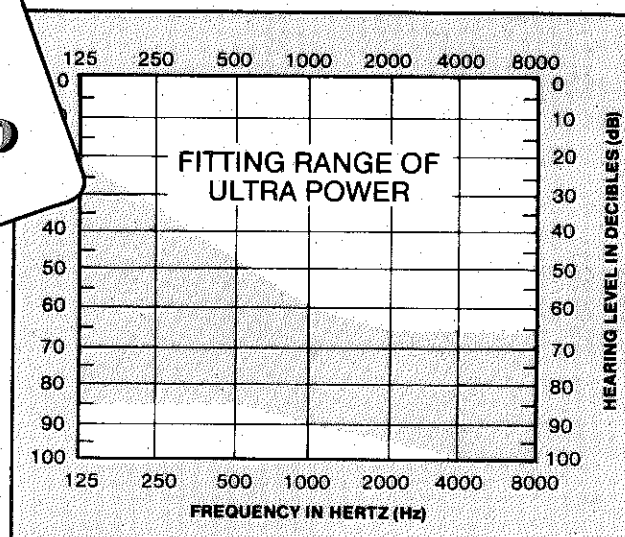
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Aural Rehabilitation

Continued from Page 4

weighing on our conscience. It seems to me that there is a big group that we ought to be doing something about, and I don't hear us talking about that very much.

John Cooper: The issue is not if they're there. The issue is what is the best, long-term strategy for attracting them. And hustling them, I submit, is going to burn this group of audiologists and eventually this group of hearing aid manufacturers.

Katherin Gerkin: To address the whole point of professional ethics and dispensing, some may say it's a dilemma. Really, I don't think it's a dilemma. I don't see that. I think it's very naive of you to think that you don't deal with numbers from a manufacturing point of view. My company does not promote sales in the way that Thayne's company does; but the bottom line is that we certainly look at numbers. If we didn't sell hearing aids we wouldn't be in business. I think to get these people in we need public awareness, but I don't think we do a very good job of that. You look around and you see spots for hearing impaired people on television or whatever. First maybe they can't hear them, and if it doesn't hurt the person you're not going to get them in. I don't care how many of those hearing impaired elderly people are out there, if it doesn't in some way impinge upon their functioning, it's not going to get them in.

Other things come into play, whether we like it or not. Things like in-the-ear hearing aids. Those are the aids that draw people from a marketing standpoint. When you see ads for eyeglasses do they tell you how great they're going to correct your vision? No, they tell you how sexy and wonderful and beautiful you're going to look. These are not things that I as an audiologist like to look at,

but certainly as a marketing or manufacturing representative you have to look at it. Now, once you get that person in, certainly as a professional you fit him the best way that you can. But, I think what Ron Schow is concerned about is how you get the awareness out to the people.

Ron Schow: The question of ethics, it seems to me, does not really hinge on whether you advertise or don't. It's how you advertise, and it's how you follow through. And to John and those who feel as he does, I would say "What is unethical about advertising?" It's interesting to me to look and see that audiologists are now advertising just as much in phone directories as the hearing aid dispensers are. Five years ago we were not. It may be that we can stand back on our principles and say we won't go after those seven million people, but I am saying to you, because of our principles that require us to help the hearing impaired, we ought to be concerned and trying to do something about the plight of these people. And maybe promotion of this sort, followed with good, responsible, audiological help is what we need.

Bob McLauchlin: Two issues came up today that I'd like to address. First of all, I'd like to preface my remarks by saying I'm a strong advocate of audiologists who are involved in dispensing hearing aids. By dispensing I mean purchasing aids from manufacturers and selling them to clients. By selling I mean something more than just hanging them on ears. The first issue is offering free audiological service in promotional advertising; and the other issue is tying audiologists to selling a single manufacturer's hearing aid. I feel very strongly as an audiologist, in terms of the Justice Department's deci-

sion in relation to fair practices, that manufacturers should concentrate on promotions which would not minimize the services provided by audiologists. I think that the provision of free services isn't consistent with our principles. I would like to see manufacturers moving in the direction of promoting the need for amplification, referral for professional services, and a de-emphasis on high-pressure sales.

The second issue that has existed for many years is the concept of a dealer selling a single manufacturer's aids. As you know, the Justice Department said a long time ago that manufacturers can't own the dealers. The dealer is an independent practicing business person who can sell any product he or she wants to sell. Obviously, manufacturers are going to try to sell their own products. I think that when audiologists sell for a single manufacturer, it does pose some real problems in terms of how they make decisions for their clients, and raises ethical problems. So I would urge manufacturers who understandably attempt to sell their aids through dispensing audiologists to be sensitive to these two issues.

Thayne Smedley: I would like to respond to that. I agree with both points. However, the latter point is not a problem throughout the country. In my experience there is virtually no dispensing office now that feels committed particularly to any one manufacturer.

Victor Garwood: I certainly agree with John's remarks about quality and so on, but the present number of hearing aids being used is nothing but a drop in the bucket compared with all of these millions of people who are not getting hearing aids. What will happen to the cost of hearing aids for the consumer public if we go high volume and

reach greater numbers of the hard of hearing? Will the price go down?

Thayne Smedley: I think all of us here are aware that the manufacturing costs of hearing aids have gradually crept up, but substantially.

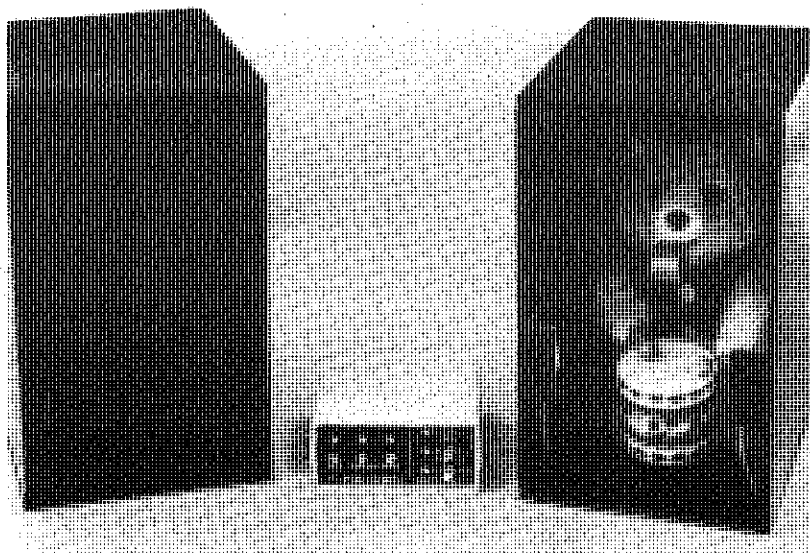
Victor Garwood: No, I mean the economic has been going down, hasn't it?

Thayne Smedley: That's correct, and a lot of the people we work with say how come are more expensive this year than last year because things are more stable and the economy of some things is reversing like real estate and so on. The thing that makes the business viable is the bottom line on profit and loss statement. And he is going to be selling hearing aids cheaper next year than he did last year. The manufacturing cost may actually ease up, although a significant reduction is not likely. Further, since the actual wholesale cost of a hearing aid represents a relatively small proportion of the retail cost of the aid, I don't anticipate that if the volume picks up, the price will be reduced. Let me cite an example. You are aware that you can buy hearing aids at various levels, at different prices, and so retailers will sell them at a different price. I am aware of a dispenser who sells hearing aids for \$269.00, and he advertises them regularly. Those who compete against him don't know how he can stay in business. It happens to know he doesn't depend entirely on his hearing aid business to support his family. One of his competitors approached him as a member of the industry with this question: "How do I combat that? I'm selling them \$495.00, and how do I combat him \$269.00?" You'd be amazed at the answer.

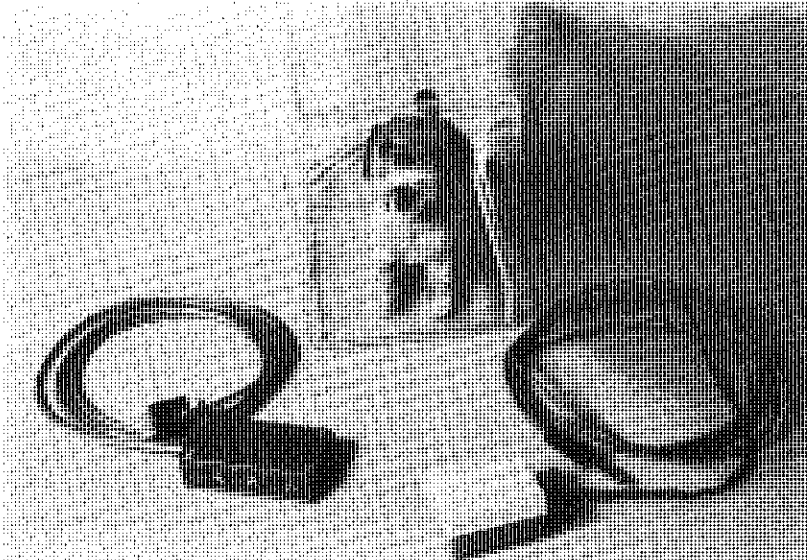
See Aural Rehabilitation, Page 4

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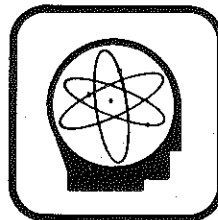
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Aural Rehabilitation

Continued from Page 6

"Raise your price \$100.00." And that's exactly what he did. The philosophy being, my product and my service is worth every dime that I charge. If you want to charge half the price, that must indicate what you think yours is worth. The public tends to respond to the kind of thinking, whether it's right or wrong.

The whole matter of the pricing structure of hearing aids has always been a curious thing to me. When I was with the VA I was aware of what the government paid for hearing aids, and it used to grate on me considerably when I heard what they were charging downtown. I don't feel that way about it now. I believe quite strongly like a friend of mine who dispenses hearing aids and has for 25 years. I asked him, "What do you charge for your hearing aids?" I charge \$600.00, period." This was about a year ago. I said, "It seems a little high. Don't you think that's excessive? Why do your people pay it?" He said, "They pay it for one reason: I look them right in the eye and I say, I am worth \$600.00. You're not buying a piece of plastic with electronics. You're buying services, you're buying me for as long as you use the hearing aid, and I will be there when you need help." If that means driving two or three hours from where he lives to give this client service, that's what he does. He feels like he's worth it.

In answer to your question, I don't think the price is going down, I think it's going to be commensurate generally, with the cost of living, and will continue to move up proportionately.

Ron Schow: I think that's what several have been saying, that people need to charge appropriately for their services.

Thayne Smedley: The price of hearing aids is a very tough issue. There is a segment of our population that cannot afford better hearing because of the price. We need to make a provision for them. But, there is another major segment of senior citizens who have expendable cash, and the price of hearing aids doesn't seem to bother them. To cite an example, I was involved in a promotion in a small community recently; we promoted the sale of 24 hearing aids at a total cost of something like \$14,000.00 I collected \$12,000.00 of that amount up front! The money's right there.

Bob Traynor: I just want to respond to a couple of things. As to the idea of someone going out and selling hearing aids and leaving: I think that's a bit far fetched, simply because most audiologists don't do that. I have had somewhat of a schizophrenic orientation towards the field for about five years now, sitting under one hat at the university, and then the other hat in private practice in the late afternoon and evenings, and Saturdays and summers. The interesting part of that is if I were to leave, I would sell my practice as a physician would sell a family practice or as another type of dealer would sell a business of some kind. I think most of us who deal in this way would tend to do that, and very much consider our clients who are out there using our devices, who have paid us their fees, and so on.

Another concern is, I also think that we as a group deal from two extreme ends of a continuum. In other words, we have one side with the manufacturers telling us that we have to promote, promote, promote, selling numbers, numbers, numbers, and then we have our own conscience based on our training and so on that says, "Oh, you can't do that, you have to be ethical and professional, and all these things. As I see it, we're training our students with one side of this, and they go out in the world and find they're way on this side. What's really coming out of this is something in between. The way I make it in my practice is not high visibility promotional materials, but I do use quite a bit of print media with a professional announcement type ad. I also do columns in things like *The Senior Voice*, which is paper for marketing things for senior citizens. I see us moving toward this, but until we get to the point where there are more of us living in the real world and living in the academic world at the same time, we're not going to have the kind of experience that's necessary to train students to live in a private practice situation.

Elmer Owens: To get back to Miriam, it seems

to me that as audiologists we are not practicing our right to making a good living. Our clinic is always in the red. Audiologists are out of work. I'm wondering what your actual communication is with those dealers in town who are making more than you are. You're doing all the work, and you're doing the follow-up, and you're listening to all these grievance. I can see that the wave of the future that Thayne has described so well is coming. How can we work together in the marketplace and still provide professional experience. I'm wondering how you go about it in your small town?

Miriam Henoeh: I wish I could answer your question. I wish there was a way that we could do something like you are alluding to. When I first came to Denton about five years ago there was only one other dealer there. I make an effort to work with dealers in a number of ways. For example, in terms of referrals. Also, possibly sending students to them for practicum experience. But I could not continue to do that because this dealer wanted me to refer all the patients that we see for hearing aid evaluations back to him. I would not do that. So, communication between us broke down. I really don't know how to bridge the gap.

Katherine Gerkin: After having gone into it from industry's side of the profession, I see more and more audiologists who want to go out and dispense; and their biggest thing is to undercut the dealer in price. I always sit back in amazement when they've said, "I'm professional, and I have a master's degree or a Ph.D. degree, and I'm better, and I'm going to do a better job. So I'm going to charge less!" It's always such a dilemma to me. If we are willing to offer patients better service, better fittings, rehabilitation, why are we cutting our throats? What is wrong with making a dollar as an audiologist? I just have problems with that.

Miriam Henoeh: I don't think there is anything wrong with that.

Ron Schow: I'd like to report something Thayne told me that is really interesting. The complaints we hear often depend on what office we're sitting in. We as audiologists have been sitting in the audiology offices and having the unhappy clients come in and complain about what's been happening to them in the hearing aid dealer's office. But the reverse is true also, and we just haven't been hearing the other side of it.

Katherine Gerkin: There are good dealers and bad dealers. There are good audiologists and bad audiologists.

Thayne Smedley: I worked recently with an audiologist who wears two hats: he does some clinical testing, but primarily he dispenses hearing aids. The comment he made to me was, and I hear it a lot, "the biggest problem I have as a dispenser is working with naive audiologists who don't know straight up about amplification systems. And some of the biggest fiascos are those that are recommended by the university audiologists." I think this statement relates a little bit to Ron's comment earlier that sometimes we can abuse the power we may have as audiologists if we really attract the people because of some professional image, but lack the specific skills to properly fit the aids. We may say that we think this client should have "thus and so," but perhaps we haven't had the experience with different instruments that may be available at the moment, or with filters and dremel tools, and all of the physical and acoustic modifications that the dealer has learned to use over 10 or 15 years of experience. The successful dealer really does help hearing problems, and he does it very well; if didn't he would not continue to be successful. The word gets around very rapidly.

I would like to make a further comment about cost. If the hard-of-hearing person would be more inclined to step forward, say, like the visually impaired, the price of aids could be cheaper. It's a real quandary to me why people with hearing loss behave so differently from those with visual problems. The visually impaired are not nearly so promoted and exploited. They seem to go and take care of their problems. The hearing impaired, for a variety of reasons, do not. If they would step forward, the cost of hearing aids would easily be one-third less because

we would not be involved in the great advertising and promotional schemes which are expensive. But having said that, it doesn't change the matter. We can sit back in our office and say we're the professionals. We need to get these people coming in, but they don't come, and they get picked up in the mainstream of these other people who promote.

One final comment related to John's concern about "promoters." I was in a western community not too long ago, a town of 12 to 14 thousand people near two larger metropolitan areas; there were five traditional dealers in that town, and, incidentally, no audiologists. I asked one lady who came in response to our invitation, "How many times does the mail bring some advertisement about hearing aids?" She said "once or twice a month." I asked her what she did with those ads. She said, "I just throw them away." Did you ever study them? "No, I hardly ever read them." I asked why she didn't do that with the Linkletter letter. I was curious. "Well," she said, "I really don't know why, it's just after you get hit so many times you feel like, well, maybe this is the time." Some people in the hearing aid industry say there is a five year lapse between the time a person becomes aware of a hearing problem and the time he does something about it, and that in the meantime, they have received some twelve different advertising impressions. These are tendencies in human behavior we have to deal with.

Laura Wilbur: A couple of things. One, we started dispensing at Northwestern, and one of the reasons we did, was so we could hang on to our clients. We realized for years that people who were unhappy with their hearing aids do not come back to our clinic no matter how many free services we gave them. We always told them that they could

have a free clinic visit after they got their hearing aids and all those wonderful things. It didn't work. If we think of it, we can understand why they never come back. They went to the hearing aid dispensers. So we started dispensing. We've been with it less than two years, and we've learned a great deal about hearing aids. Number one, we're fitting more in-the-ear aids than we thought we ever would, because we found the elderly had less trouble manipulating them. And they don't like behind-the-ears, which doesn't make any logical sense to me. But it's the truth. The second thing we found out is that we do charge, and we charge an equivalent price to our local dispensers, which shocked them because they were sure we were out to put them all out of business. The reason we charge more for the product is that we put a dispenser fee on it, and put it out front. We say "This is what we're charging for our dispensing fee, and we charge that to you because we're good, and we know what we're doing. We're also going to give you additional services, and we have rehabilitation possibilities, and some counseling." They don't seem to complain. The only time we've had a problem was recently when a patient said, "Look, this is going to cost us \$350, and I was told by an audiologist who came out to our senior citizen's center that we should never pay more than \$300 for a hearing aid." So we did ourselves in. We have not promoted, because we get all kinds of referrals coming in, but we have no problem with the idea of promotion. The problem is what's said in direct mailing. If the thing that's said is true, I see no problem with direct mailing. I think it's the wording and what follow-up services we can provide afterward; that's really the issue, and we have to individually, ethically deal with it.

Ron Schow: I thank you all very much for your comments.



Richard Thomas accepts BHI Achievement Award from Executive Director, Joe Rizzo.

Richard Thomas Honored for Hearing Information Efforts

Better Hearing Institute has presented its 1986 Better Hearing Achievement Award to actor Richard Thomas for his "outstanding public education efforts on behalf of Americans with hearing problems."

The award was presented by BHI executive director, Joe Rizzo, who said: "Richard Thomas' efforts for the cause of better hearing have been extraordinary and much appreciated by those who serve people with hearing loss. His television and magazine public service messages have been especially effective in spreading encouragement about available hearing help."

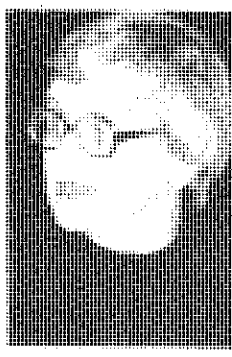
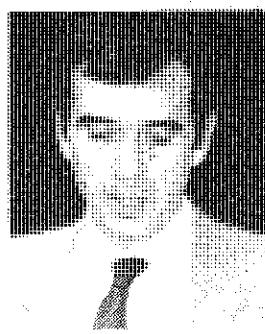
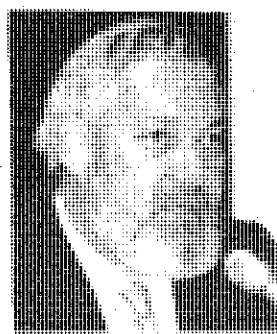
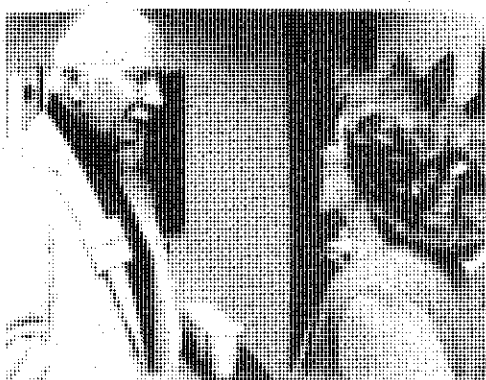
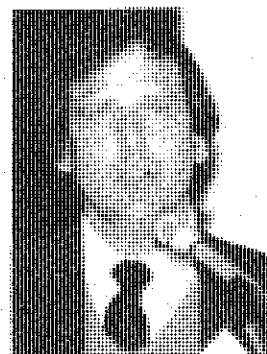
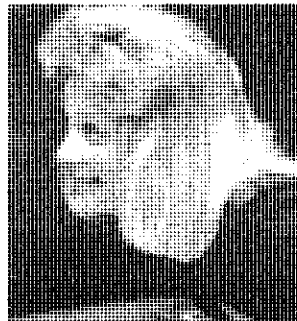
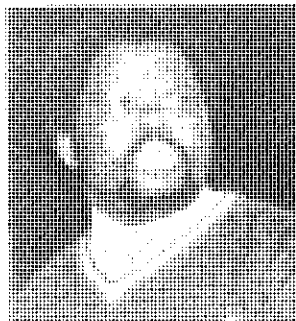
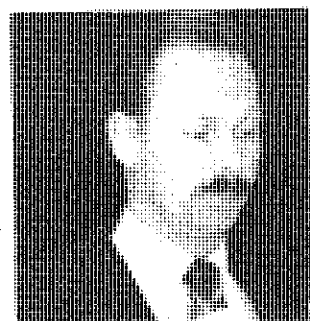
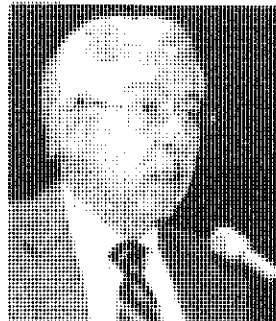
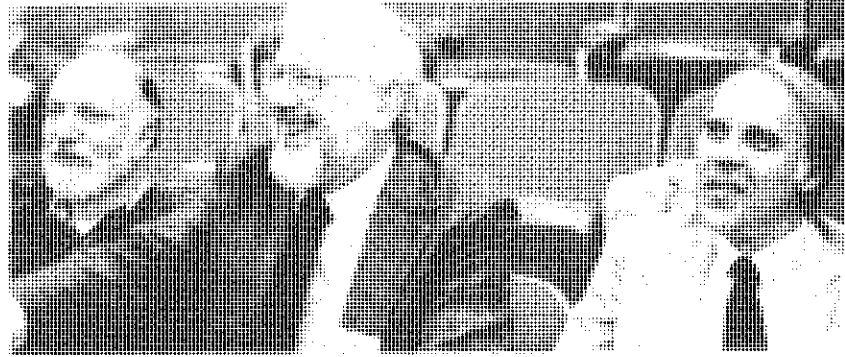
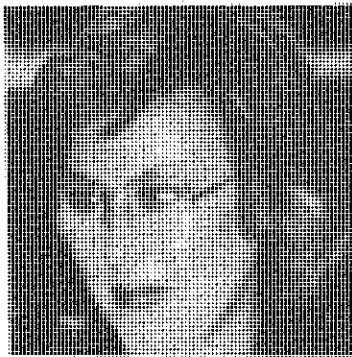
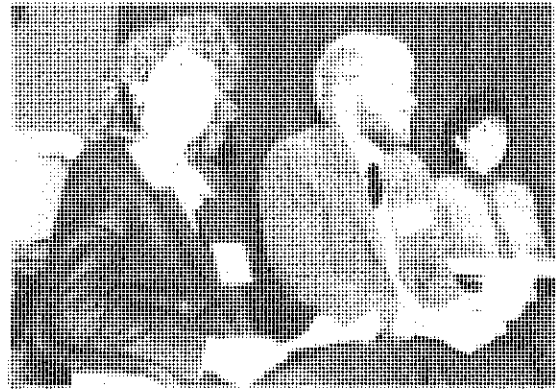
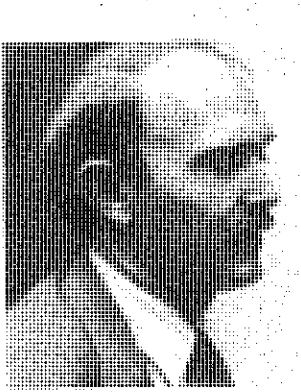
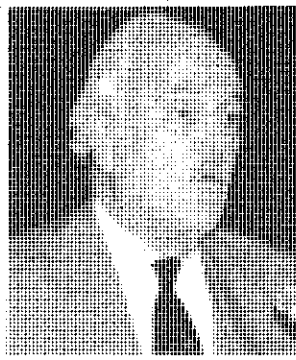
Thomas corrects his own hearing loss with canal hearing aids. Magazines donating space to his BHI public service advertisement in 1986 included *Time*, *People*, *Family Circle*, *U.S. News and World Report*, *Money*, and *New York*. His television public service announcement for BHI has been granted generous time by hundreds of stations promoted by the Delta Zeta Sorority, a national sorority with 121,000 members committed to better hearing. Thomas

recently joined other famous Americans in the latest edition of BHI's *We Overcame Hearing Loss* celebrity booklet, made possible by a Delta Zeta grant.

Thomas, known to many for his Emmy Award-winning role as "John Boy" in the popular television series, "The Waltons," will lead the Council for Better Hearing and Speech Month's 1987 campaign on behalf of 22 million Americans with communicative disorders. He was elected National Chairman of the May campaign at the consortium's recent annual meeting in Washington, D.C.

Thomas will act as chief media spokesman for the Council's national public information effort. He personally overcame a mild hearing loss caused by cochlear otosclerosis. Thomas will launch the Council campaign during early May kickoff ceremonies in Washington, D.C., where he will release a special message from President Reagan, introduce the 1987 poster child, and make a series of national media appearances.

AAS



MEETING

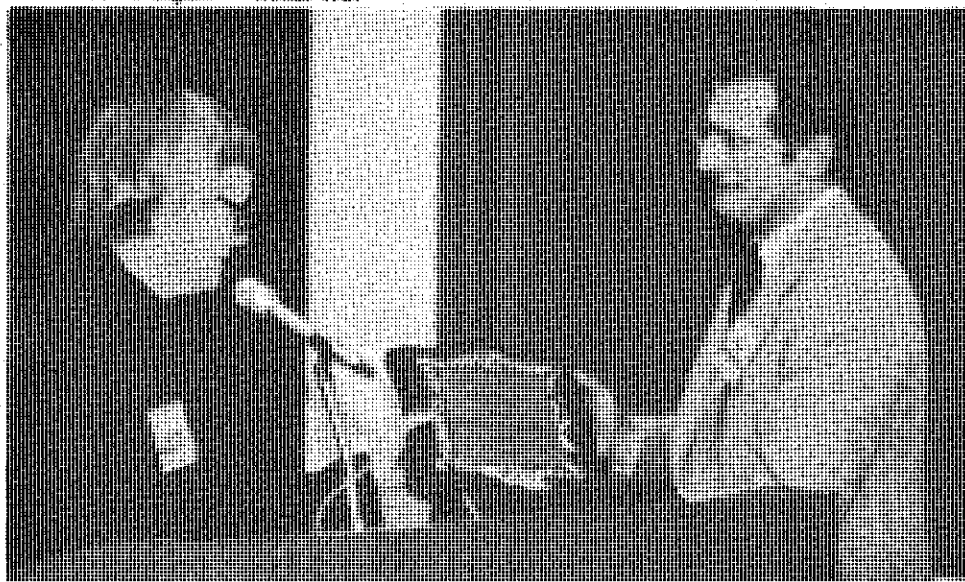


GREEK TOWN WE



LCOMES SOCIETY





Incoming President LaVonne Bergstrom expresses Society's appreciation to Worthington.

Society Says Thank You to President

Don Worthington, Past-President of AAS, was honored in style at this year's annual meeting held in Detroit in November. For the past two years, Don has given to the Society his time and energy. He has consistently worked "above and beyond the call of duty." As President, Don has led AAS to its highest membership and helped in the development of many new Society projects. The Society has been lucky to have his leadership.

In attempts to show Don how much AAS appreciated his dedication and blood, sweat, and tears, Ross Roeser, Secretary/Treasurer, presented Don with a special award at the conclusion of the annual meeting. This award was certainly a symbol of the Society's gratitude, but the "piece de resistance" was the tribute read by Ross. Entitled "Ode to Worthington," this masterpiece of verse was written by Steve Blum, husband of Susanne Kos. Although not an "official" AAS member, Steve has assisted and supported the Society in various ways.

Just so *Coda's* readers can have the sense of being present at this tribute to Past-President Worthington, the Ode follows. All that's left to say is - Thank you, Don, for a great two years!!!

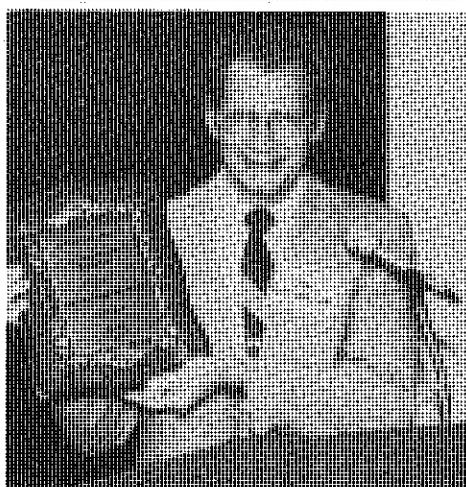
Retired Hearing Professional Offers "Hearing Loss Basics"

Alec Combs, former owner of Allied Hearing Aid Service of Santa Monica, California, puts his years of experience to good use. Mr. Combs has dealt with hearing health care from both sides. Not only is Mr. Combs a hearing impaired adult who has used amplification for many years, he also has been an active hearing professional serving the needs of this population.

Following these years of experience, Mr. Combs recognized the frustrations of hearing impaired persons and realized that the answer to many problems could be found in educating people. Such education can produce changes in speech and listening skills which can prompt dramatic improvements in relationships troubled by hearing loss.

In his attempts to address the concerns of public education, Mr. Combs has developed a series of pamphlets entitled "Hearing Loss Basics." Each pamphlet presents basic information on selected topics, ranging from signs of beginning hearing loss to communication methods. One primary focus of the series is to develop an effective means of helping those with mild losses whom Mr. Combs feels are often by-passed in today's hearing care system.

The information contained in these pamphlets may be of use to you, the professional, or to your patients. For more information contact: Alec Combs, P.O. Box 1841, Santa Monica, California 93456.



An Ode to Worthington

With candor and, I hope, with tact
I'll tell you this surprising fact:
Don's many gifts to me and you
Relate to things he likes to do.

With rich and tender morsels he
Has nourished our Society.
Perhaps this gastronomic feat
Relates to how Don loves to eat.

Look carefully around this room
And you'll not find a hint of gloom.
This happy state reflects the style
Of Don, a man who likes to smile.

The AAS has moved ahead
With speed and energy. It's said
Our honored president is one
Who stays in shape and likes to run.

With clever steps and grace galore
He's waltzed around the legal floor,
Our chosen causes to advance.
And don't we know — Don loves to dance.

Concerning membership, I've heard
Proliferation is the word.
Again Don's likes come into play:
With all those kids, what can I say?

My premise, which I hope is true,
Is that in serving me and you,
Don's liked his work and had some fun.
We thank you, Doctor Worthington!

— S. Blum

Infant Workshop Scheduled

On March 27, 1987, Lutheran General Hospital, Neonatology Section, will sponsor a medical symposium entitled "Continuing Care of the High Risk Infant." This one-day seminar will cover topics relevant to the total management of the high risk infants. Early intervention strategies, parent involvement, augmentative communication, and orthopedic management are just a few of the areas to be covered. Guest faculty include: T. Berry Brazelton, M.D. of Children's Hospital of Boston; David Yoder, Ph.D. of the University of North Carolina; and Beverly Sills, Chairman of the March of Dimes Media Council.

This conference will certainly offer those in attendance an outstanding educational experience. For additional information contact: Kim Walkup, Newborn ICU office, Lutheran General Hospital, 1775 W. Dempster, Park Ridge, IL 60068, (312) 696-5313.

Speech and Hearing Alliance For Resource Exchange

Share

The primary purpose of SHARE is to assist in the international development of Audiology and Speech/Language Pathology training programs and services through the sharing of surplus textbooks, journals, reprints, or other materials and resources.

A secondary purpose is to share experiences and information among persons with a common interest in helping the communicatively impaired.

The primary recipients of these resources will be training or clinical programs in developing nations which do not have the means to purchase journals and textbooks necessary for the development of professionals, and which will serve the communicatively handicapped in their countries.

Books, journals, and other materials will be obtained through donations from individuals and libraries. Although more recent editions of textbooks are most useful, any edition can provide background information for beginning scholars or serve as a reference for more advanced professionals. In addition, all volumes of professional journals would serve as valuable resources.

The conduit for distributing these materials will be the Communicative Disorders Founda-

tion, a non-profit tax-exempt foundation. The president of this foundation is Donald A. Shumrick, M.D., and the vice president is Robert W. Keith, Ph.D. The Communicative Disorders Foundation has obtained a start-up donation to cover the expense of forwarding materials to recipients. Additional grants and donations will be solicited.

Tax deductible gifts of books, journals, materials, or cash will be acknowledged in writing by the Communication Disorders Foundation. The acknowledgment will contain an itemized listing of books, journals, or materials donated for distribution.

Suitable recipients will be forwarded materials appropriate to their needs. A stipulation of the exchange is that materials will be placed in libraries where they will be generally available to scholars.

Any donations of resources or letters of inquiry should be addressed to:

Robert W. Keith, Ph.D.
Div. of Audiology and Speech Center
Dept. of Otolaryngology
Room 6009
Univ. of Cincinnati Medical Center
Cincinnati, Ohio 45267-0528
Telephone: (513) 872-4893

Minutes of the American Auditory Society Executive Committee Meeting

Date: November 19, 1986

Place: The Children's Hospital, Detroit, MI
Time: 1:30 p.m.

Members Present: Virginia Berry, LaVonne Bergstrom, Patrick E. Brookhouser, Alison M. Grimes, Deborah Hayes, Robert W. Keith, Susanne Kos, David J. Lilly, David M. Lipscomb, David Preves, William F. Rintelmann, Ross J. Roeser, Michael F. Seidemann, Wayne J. Staab, Laszlo K. Stein, Don W. Worthington.

Members Absent: F. Owen Black, Richard T. Miyamoto, James J. Pappas.

Guests: Steve Blum, Irvin Gerling, Susan Jerger, Ralph Naunton (Chair, long-range planning), Ken Startt.

1. President Worthington opened the meeting at 1:37 p.m. He thanked the members of the Executive Committee for their attendance and recognized the guests that were present. He then read a memorial to George Lynn, an AAS member of long standing who had recently passed away.
2. The minutes of the 1985 AAS Executive Committee meeting were reviewed and approved.
3. The treasurer's report for the period 1/86 through 10/86 was reviewed by Ross Roeser. The overall financial status of the American Auditory Society was reported to be in excellent condition. Based on this, no increase in dues was recommended.
4. Ross Roeser gave a report on membership. As of 11-1-86, there were 1903 members. This represents 217 more members than in 1985. Of the 1903 members, 1537 (82%) are audiologists, 6 are engineers/industry representatives, 46 (2%) are hearing aid specialists, 192 (10%) are physicians, 28 (1%) are associates, and 58 (3%) are student members.
5. Ross Roeser was appointed as Secretary/Treasurer for 1987/88. President Worthington discussed the Secretary/Treasurer's allowance and indicated that an increase had been requested. He recommended that the compensation be set at \$300.00 per month (\$3,600.00 per year). After discussion a motion was made to increase the Secretary/Treasurer's allowance to this amount beginning in 1987, and the motion was passed.
6. Susanne Kos was appointed as Assistant Secretary/Treasurer for 1987/88.

7. Bill Rintelmann reported on the 1986 meeting. He indicated that the program committee had functioned effectively throughout the year, and all indications were that the 1987 meeting would be well attended. He gave special thanks to Sabina Schwann and Francis Eldis, who served as the local arrangements committee.

8. Laszlo Stein gave a report on the 1987 meeting. He indicated that he has been in contact with the Academy of Otolaryngology-Head and Neck Surgery, and has received a favorable response. Our meeting will be held in either the Hyatt - Chicago or the Marriott - Chicago hotel. The committee members have not been selected, although David Hill has accepted the position as local arrangements chairman.

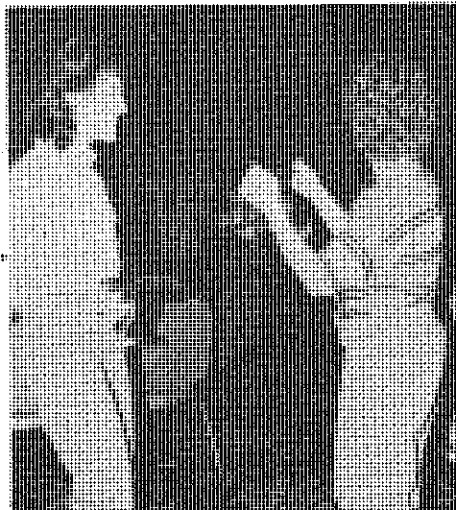
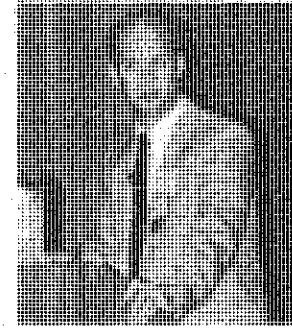
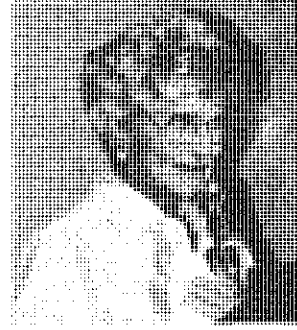
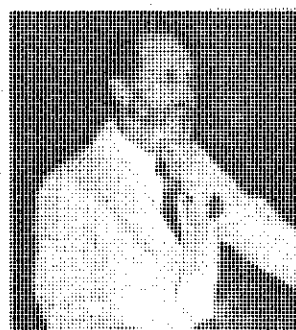
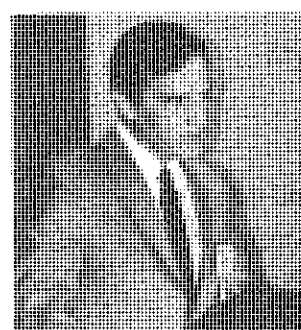
Considerable discussion was held on how to expand the meeting. Two possibilities included having concurrent sessions and/or extending the meeting beyond one day. In addition, the possibility of having the American Auditory Society meet separately from other organizations was discussed. No specific motions were made, but it was concluded that the members be surveyed informally to attempt to find out their preferences.

President Worthington discussed a letter he had received from Derald E. Brackmann, Chairman of the Hearing and Equilibrium Committee of AAO-HNS. In the letter, Dr. Brackmann discussed the "possibility of a cross-registration for the American Academy of Otolaryngology, the American Auditory Society, and the Association for Research in Otolaryngology (ARO) when the three meet together." This would have the advantage of not requiring an extra registration fee for the members of each group to attend the other two meetings. This was discussed by the board and will be pursued further with both AAO-HNS and ARO. The task of investigating these issues was assigned to the Long Range Planning Committee.

The names of several individuals were discussed as 1988 Carhart speakers. LaVonne Bergstrom, as Chairman of the Nominations Committee, was charged with developing a slate of individuals. At a later point in the meeting four individuals were presented and voted upon. One individual was identified, and Dr. Bergstrom will be in con-

See Executive Committee Minutes, Page 14

International Symposium Exhibits Tennessee Hospitality



International Symposium Huge Success

July 28-30, 1986, marked the Third International Symposium on Childhood Deafness, sponsored by the Bill Wilkerson Hearing and Speech Center and by the Division of Hearing and Speech Sciences, Vanderbilt University School of Medicine. For the last three decades this event has become a landmark in continuing education. Hosted once every ten years, this Symposium brings together a faculty of distinguished speakers in the fields of audiology and deafness.

This year's conference, held in Nashville, dealt with the hearing impaired child and with the etiology, identification, and management of auditory disorders. Presentations on genetics, syndromes that deafen, ototoxic hazards, viral/bacterial agents, and epidemiology of otitis media were among the Symposium's interesting topics. Papers discussing high risk infant assessment, behavioral evaluation techniques, acoustic immittance measurement, cochlear implant evaluation techniques, hearing aids and assistive devices, and neuromaturational considerations in electro-physiologic audiometry each enhanced the conference's exploration of contemporary assessment. Discussions on communication development, cognitive training, psychosocial issues, parent involvement, and language intervention strategies were only some of the topics presented which were related to management of the hearing impaired child.

The Symposium was "kicked-off" with the W.W. Wilkerson Memorial Lecture given by Feature Speaker, Dr. Bettye Caldwell of the University of Arkansas at Little Rock. Dr. Caldwell's papers "You've Come a Long Way, Baby" traced changes that have occurred in the field of early childhood growth and development.

Marion Downs, a professional who needs no introduction, served as the Banquet Speaker. Her presentation, entitled "Stalking the Hearing Guru," was an entertaining, light look at our profession and some of its elite. No description of the impact of this address could do it justice.

The three days in Nashville brought together over 300 participants who left enlightened, inspired, and exhausted. The 3rd International Symposium on Childhood Deafness was the perfect mixture of intellectual stimulation and social interaction, such as only the Bill Wilkerson Hearing and Speech Center and Vanderbilt University can provide. The Symposium was one of this decade's most impressive events and will long be remembered by those who attended. The Planning and Steering Committee is to be congratulated on a job well done!

(The proceedings of the Symposium will be published in text form in the near future. For information on this excellent culmination of papers contact Fred Bess, Director of Bill Wilkerson.)



A Professional Celebration

On July 26, 1986, prior to the start of the 3rd International Symposium on Childhood Deafness, a very special event took place in Nashville. A professional tribute honoring Jay W. Sanders, Ph.D., was sponsored by the Bill Wilkerson Hearing and Speech Center and by Vanderbilt University. In celebration of Dr. Sanders' completion of his 25th year of formidable contributions to diagnostic audiology, a one-day conference was hosted, entitled "Diagnostic Audiology: A Golden Anniversary." This event was a series of lectures focusing on state-of-the-art practices in the field of audiology.

The faculty of notable contributors to our

field, who were both colleagues and friends of Dr. Sanders, presented papers covering such topics as neurodiagnostic audiometry, audiologic manifestations of acoustic tumors, acoustic reflex measurement, central auditory assessment, medical audiology controversies, and many more.

The day was topped off with a gala banquet and tribute to Dr. Sanders. Letters video-taped presentations, and personal commentaries provided the opportunity to honor this respected mentor, colleague, and friend. It was truly a special day for a very special man.

Executive Committee Minutes

Continued from Page 12

- tact with this person to verify his acceptance of the award.
9. Boston was chosen as the site of the 1988 meeting. Frank Musiak was selected as program Chairman for that meeting.
 10. Robert Keith gave a report on *Ear and Hearing*. He indicated that Deborah Hayes was resigning from the Editorial Board, and that Susan Jerger will be her replacement. Based on 1986 figures, he estimated that 100 manuscripts would be submitted to the journal in 1987. The average time for acceptance of manuscripts for the past six years ranged between 4 to 6 months, and the average time

for publication ranged from 9 to 13 months; he indicated that he has encouraged the Editorial Board to review manuscripts as expeditiously as possible, in order to keep the review time within these limits.

The selection process for the editorial award was reviewed. For 1986 (Volume VII) editors will be asked to recommend manuscripts only from the sections they review. This list will then be sent to all Editorial Board members for voting.

Future plans include publication late in 1987 of a supplement on the Vanderbilt symposium. A second supplement will be

guest edited by Dr. Lu Beck on current hearing aid fitting techniques.

Mr. Ken Startt, Vice President for Periodicals at The Williams and Wilkins Co., the publisher of *Ear and Hearing*, reported that there are currently 3500 subscribers to the journal. This represents an increase of 400 subscribers from 1985. He indicated that the profits for 1986 will be approximately \$8,000-10,000. He anticipates that for 1987 the profits will be between \$18,000-20,000. Overall, he indicated that the publisher was pleased with the progress *Ear and Hearing* has made.

The Executive Committee discussed an honorarium for the Editor of *Ear and Hearing*. After discussion, it was agreed that \$1,000.00 per year should be provided, beginning in 1987.

11. Virginia Berry reported on *Corti's Organ*. She reviewed the new features that had been added to the publication in the past year. In addition, she outlined several new activities that would be covered in forthcoming issues. She indicated that with her co-editor, Susanne Kos, the flow of material is now established and is smooth.

12. Ralph Naunton gave a report on the Long Range Planning Committee. Dr. Naunton had requested a mail response to three questions that were sent to the Long Range Planning Committee members. Included in these questions were: 1) are we adequately serving the needs of our fields and our membership; 2) how should we plan to use additional monies; 3) do we need to strengthen our audiological representation and/or representation of other components. The responses to each of these three questions were reviewed and discussed. Two specific recommendations came from these discussions. The first was to establish an ad hoc committee on otolaryngological relations. The second was to poll the membership through *Corti's Organ* to ask questions about how the Society should function. In addition, it was suggested that the membership of each committee be listed in *Corti's Organ*, along with a brief statement on the purpose and scope of each committee.

13. Michael Seidemann reported on the Membership/Promotion Committee. He indicated that two promotional activities had taken place during 1986. First, a letter was sent to each audiology Program Director encouraging student membership. Second, letters were sent to manufacturers to encourage their membership. In an effort to promote otolaryngology membership, a letter campaign was suggested to selected Academy of Otolaryngology groups. The letters would be written and signed by the AAS Otolaryngology Executive Committee members and sent out as directed. Dr. Seidemann indicated that he would follow up on this activity.

A suggestion was made that the American Auditory Society develop a comprehensive membership directory. Ross Roeser indicated that he would prepare sample information and obtain an estimate on costs to be presented to the Executive Committee.

14. Deborah Hayes reported on the Continuing Education Committee. In her report she reviewed the steps that were followed to obtain continuing education from the American Speech-Language & Hearing Association, the National Hearing Aid Society's National Institute for Hearing Instrument Studies, and the American Medical Association. She recommended that AAS review critically membership needs/desires for these credits before committing to a policy of continuing education.

Accreditation will be available from all three organizations at the next two meetings; then a decision will be made as to the importance of each.

15. Susanne Kos presented the names of 396 individuals who had applied for membership since the last Executive Committee meeting. A number of these individuals still required sponsorship, and members of the Executive Committee were asked to sponsor those whom they knew. After reviewing the list, all 396 were approved for membership.
16. Michael Seidemann reviewed the videotaping activities. He indicated that he had between 30 to 35 requests for videotapes from the 1985 meeting. Several procedures

were changed this year to make the videotaping more effective, and he anticipated that there would be additional requests for the tape of the 1986 meeting. He estimated that the videotaping activities would generate a profit for the Society.

17. Seven members of the Executive Committee were up for election during 1987. Bill Stemann was asked to be the new Chairman of the Nominations Committee. Other members on this Committee are Pat Brookhoff, E. Robert Libby, Wayne Staab, and Worthington. They were asked to submit nominations for the Executive Committee within the next 2-3 weeks, prior to January 1, 1987. Two positions will represent audiology, two otolaryngology, two manufacturing, and one hearing science.

18. Wayne Staab was appointed as Vice President/President elect 1987-89.

19. A report was given by President Worthington on the council for Better Hearing Speech Month. In 1985, the American Auditory Society voted to join the Council. Lloyd Bowling was appointed as the American Auditory Society representative. Formal reports were received from him, Dr. Worthington indicated that he would contact Bowling to find out what had occurred up to this point. It was decided that AAS should rejoin the Council for 1988.

20. President Worthington reported on the International Congress of Audiology. In 1985 AAS had received a communication from Moe Bergman requesting that the annual meeting be held with the International Congress in Jerusalem, Israel. Worthington contacted Bergman to indicate that we would not meet with them formally but would help promote their meeting. In addition, Dr. Worthington requested that a special session be held at the International Congress devoted to papers presented by members of the American Auditory Society. No reply from Dr. Bergman has been received to date.

21. President Worthington indicated that the Better Hearing Institute had requested that the American Auditory Society help sponsor an informational pamphlet. For \$3,000 the American Auditory Society could be listed on the back page as a co-sponsor of such BHI brochures. After discussion, a motion was made that the American Auditory Society not fund this activity, and the motion passed.

22. President Worthington requested direct action on having the American Auditory Society contribute to other non-profit organizations. Specifically, a request was received to contribute to the KAM fund. In reviewing by-laws, President Worthington did not see contributions of any type could be given without specific authorization by the Executive Committee. After discussion, it was unanimously decided that the American Auditory Society not contribute to other non-profit organizations unless the contribution is approved by the Executive Committee first.

23. President Worthington suggested that the Society continue to present the Beltone Distinguished Teaching Award in Audiology at its meeting. In the future, Beltone's presentation to the recipient will receive pre-approval by the AAS, and will be presented by AAS President or by his delegate.

24. President Worthington read a letter dated June 30, 1986, which he had received from Dr. Nancy G. Becker, Vice President of Professional and Governmental Affairs of ASHA concerning AAS's request for membership on the Joint Committee on Information Hearing. According to the letter, AAS, along with several other organizations, was given consulting, non-voting membership. To date no notification or invitation has been received by the AAS.

25. Ross Roeser indicated that plans were being made to incorporate the American Auditory Society. This is a high priority at the present time and will occur within the near future.
26. There being no further business, the meeting was adjourned at 6:12 p.m.

Don W. Worthington, Ph.D.
President

Ross J. Roeser, Ph.D.
Secretary/Treasurer

See Editorial Board Minutes, Page



Professor Roger N. Kasten Receives Teaching Award

The fifth annual Beltone Distinguished Teaching Award in Audiology was presented to Roger N. Kasten of Wichita State University. This award was established by Beltone Electronics Corporation in 1981 to recognize exceptional teaching in audiology. This is the only teaching award given in our field. It is significant because, by its nature, it recognizes the future of our profession — honoring, as it does, those among us who excel in educating and guiding the next generation of audiologists.

To be eligible for this award, an educator must be nominated by a student and must have at least five years' experience in teaching audiology. Judging is done by a panel of ten professionals from major research and educational institutions and by one student, representing the National Student Speech-Language-Hearing Association. These eleven judges have a difficult task evaluating the nominations and making the final selection.

It was obvious from the list of nominees that the quality of educators nominated this year, as in past years, is outstanding.

Roger Kasten has been affiliated with the Wichita State University since 1971. He is currently organizing and developing the V. Jerry Blue Hearing Aid Research Laboratory at the University. He has also served as visiting Research Fellow at the Western Australian Institute of Technology, as President of the Academy of Rehabilitative Audiology, and as Director of Speech and Hearing Services for the

Institute of Logopedics. Dr. Kasten has taught at Howard and Purdue Universities, and has spent several years with the Veterans Administration's Central Auditory Research Laboratory. He received his bachelor's and master's degrees in speech and hearing therapy from Bowling Green State University, Ohio, and his doctorate in audiology from Northwestern University, Chicago. Since 1982, he has been Chairman of the National Council on Communicative Disorders.

Dr. Kasten is known for the many workshops and seminars he has conducted across the country. His teaching has been described by his students as creative, stimulating, rigorous, and human.

But perhaps the best summation of both the award and the recipient comes from J. Keith Graham, Chairman of the department of Communicative Disorders and Sciences at The Wichita State University. In Dr. Graham's words: "Distinguished teaching encompasses more than what transpires in the classroom: It is the enthusiasm, scholarship, professional leadership, humor, judgment, and sensitivity that pervade all of one's personal and professional life; that become distilled in the classroom, the clinic, the hallways, and the byways; that influence students... often for a lifetime."

The Distinguished Teaching Award in audiology was presented to Dr. Kasten at the AAS annual meeting in Detroit by Society President Don Worthington. Congratulations, Roger, for such a well-deserved honor.

JOB OPPORTUNITY

Ph.D. audiologist with research
experience needed
to direct cochlear implant program.

Call Ear International, 213/482-4444

Editorial Board Minutes

of November 30, 1986
Continued from Page 14

Board Transition:

Deborah Hayes recently announced her resignation from the board. Deborah has served as section editor for four years. The board thanks her for her contributions to the development of our journal. As editor I want to especially thank her for her help, and to acknowledge Deborah's high standards of editorial excellence.

Susan Jerger was introduced as the newest member of the editorial board. She will assume the role of section editor of Speech Audiometry beginning with Volume 8. We are fortunate to find a replacement for Deborah who has such outstanding credentials. Beginning with the next issue the section "Speech Audiometry" will be retitled "Behavioral Techniques in Audiology and Otology." In the late 80's the title "Speech Audiometry" does not recognize

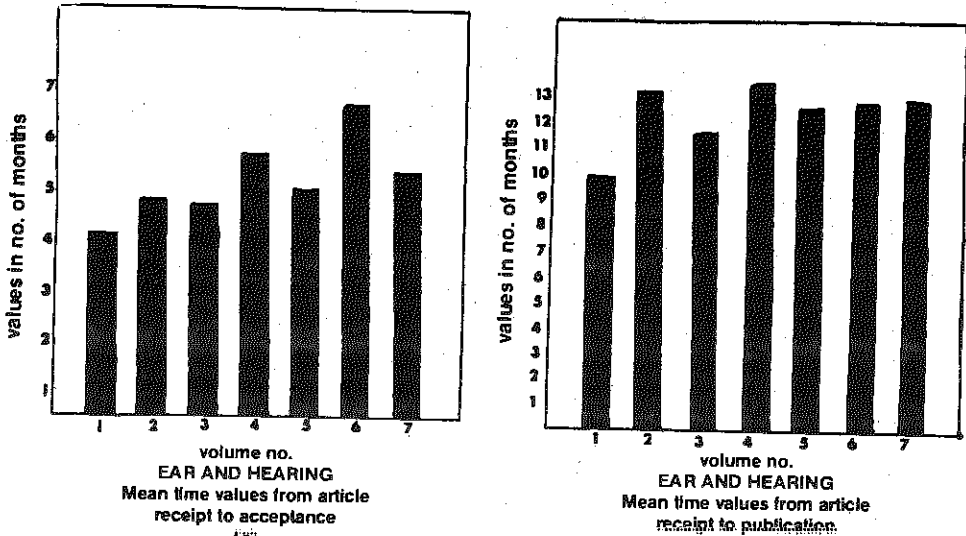
the broad possibilities that exist for this section, and we hope that this expanded title acknowledges those possibilities.

Editor's Report

We expect to receive approximately 100 manuscripts this year. Our acceptance/rejection rate is approximately 60/40. We are currently scheduling manuscripts for publication in Number 3 (May/June) of Volume 8, 1987.

For your information I have tallied the average time between receipt of manuscripts and acceptance, and also the average time between receipt and publication of those accepted for the first 7 volumes of the journal. That summary information is shown on the figure, and the breakdown of manuscripts by general subject category is shown on the table.

Figure 1. Average time in months between receipt of manuscripts by the Editor-in-Chief and (a) acceptance and (b) publication.



Lorne Greene takes PSA filming break with AAO's Dr. Jerome Goldstein and BHI's Joe Rizzo.

AAO-HNS and BHI Jointly Produce TV Messages Based on Marketing Studies

Actor Lorne Greene and his wife, Nancy, co-star in a new television public service announcement — jointly produced by the American Academy of Otolaryngology-Head and Neck Surgery and the better Hearing Institute — which will be targeted to spouses of hard-of-hearing persons.

"Our messages are based on the results of recent BHI focus group studies and the Hearing Industries Association marketing survey showing the spouse as the major motivating force behind the hard-of-hearing person," said Richard T. Burger, BHI president. "Surveyed hard-of-hearing persons also ranked Lorne Greene among the highest in sincerity and popularity of the many celebrities in BHI's award-winning program."

Jerome C. Goldstein, M.D., executive vice president of the Academy and a member of BHI's advisory board, noted that this was the second Greene PSA co-sponsored by AAO and BHI, the first having been produced in 1980. "We believe this new PSA is a wonderful way to cooperatively further the hearing field's public information and marketing goals," he said.

Based on the real-life experience of Lorne Greene, who was persuaded by Nancy to do something about his hearing problem, the PSA features a situation that spouses of hard-of-hearing persons can identify with, and one that might encourage them to persuade their spouses to similarly seek hearing help. Videotaped in 60-second and 30-second segments, the PSA is set on the Greene's home tennis court, where Nancy broke her racquet in frustration when Lorne had trouble hearing her. "She urged me to get my hearing checked," said Lorne. "Fortunately, I did. My hearing problem was corrected with hearing aids. Others might be helped medically or surgically. The important thing is that most people with hearing problems can now be helped."

Another new BHI PSA starring Arnold Palmer, made possible by a grant from Knowles Electronics, was the first to benefit from the recent marketing studies. Designed to appeal both to the family doctor and the hearing impaired person, the Palmer PSA is scheduled for November release, followed by the Greene PSA in February.

NUMBER OF ARTICLES PUBLISHED BY CATEGORY (JANUARY 1980 - PRESENT)

Vol.	Anatomy/Phys.	ABR	Hearing Aids/Aural Rehab.	Clinical Notes	Basic Sci.	Speech Dx	Med. Dx	ψ	Misc.
1		4	18	3	6	21	4	2	3
2		9	11	8	1	14	3		4
3		4	17	6	3	13	3	4	
4	1	5	11	8		23	1	2	2
5		9	5	4	1	22	1	3	6
6		9	25	4	3	16	3		4
7	3	9	9	7		23	2		
TOTAL	4	49	96	38	14	132	17	11	19

In Volume 7 No. 6 (December) 1986 issue of *Ear and Hearing* we will acknowledge the approximately 135 individuals who served as reviewers of manuscripts during 1986. We are grateful for their efforts. The peer review process is critical to the success of *Ear and Hearing*. The editorial board is continually seeking other persons who are interested in serving as peer reviewers. In order to qualify as a reviewer, individuals are required to have the highest professional ethics. They serve in a privileged status, in a position of trust. They must be willing to render thoughtful, objective judgements of other professionals' work. Their opinions guide what eventually appears in the refereed literature. In addition they must be willing to return their reviews in three weeks, in order to minimize review time to contributors. If you are interested in contributing to the journal in this important way, please fill in the "Reviewer's Form" found below and return it to the office of the Editor-in-Chief.

Editor's Award for Outstanding Articles

The executive committee of AAS has approved the issue of an Editors' award for outstanding articles that appear in *Ear and Hearing*. The purpose of the Editor's award is to acknowledge manuscripts that exemplify the standard of quality that the *Ear and Hearing* editorial board strives to achieve. The scientific standard to which we subscribe, and the basis on which manuscripts are evaluated include:

- an interesting and well thought out research question
- appropriateness of research design and methodology used in gathering data
- appropriate analysis
- clarity of writing
- timeliness of the subject
- appropriateness to the purpose of the journal

The editorial board recognizes that the decision to award a particular manuscript is a difficult one. In fact, how do you determine THE outstanding article among 60 published in a given volume? Nevertheless we feel that the three articles selected this year represent a high

level of excellence. They represent the quality of article that sets the standard that we are attempting to maintain.

In order of their appearance in the journal, the three articles chosen as outstanding contributions for Volume 6, 1986 are:

The Crib-O-Gram in the NICU: An Evaluation Based on Brain Stem Electric Response Audiometry; Andree Durieux-Smith, Terence Picton, Christopher Edwards, John T. Goodman, and Brock MacMurray; Vol. 6, No. 1.

Cochlear Summating Potential to Broadband Clicks Detected from the Human External Auditory Meatus: A Study of Subjects with Normal Hearing for Age; Gian-Emilio Chatrian, Adelina L. Wirch, Kyoko H. Edwards, Giorgio S. Turella, Mark A. Kaufman, and Jack M. Snyder; Vol. 6, No. 3.

Hearing Loss in the Elderly: An Epidemiologic Study of the Framingham Heart Study Cohort; Eve K. Mosnicki, Earleen F. Elkins, Herbert M. Baum, and Patricia M. McNamara; Vol. 6, No. 4.

Future Plans

Late in '87, *Ear and Hearing* will publish a paid supplement called "Diagnostic Audiology: A Golden Anniversary." This supplement is published in recognition of Jay Sanders' contribution to the audiology profession. It is the proceedings of a symposium held at the Bill Wilkerson Speech and Hearing Center, Vanderbilt University, held during the summer of 1986.

A second supplement in 1987 will be edited by Lu Beck. It will be on the subject of current hearing aid fitting techniques, and will include information on real ear measurements. This timely issue is made possible by a willingness on the part of the publisher to increase our page allowance. This will be the first supplement "on our own" without external funding.

As this year ends I would like to thank the membership for their support of the journal. I also want to thank the editorial board for their help with the editorial process. It is fun to work with the best.

REVIEWER'S FORM

I am interested in serving as a peer reviewer for the journal, *Ear and Hearing*. I understand the need to render thoughtful, objective reviews in a timely fashion.

Name: _____

Address: _____

Telephone: () _____

Area(s) of professional interest and expertise: _____

Probe Microphones

Continued from Page 16

The IGO-1000 is recommended as the system of choice for clinical usage.

Acoustimed HA-2000
\$6350 including Epson printer, one disk drive, color CRT; word proc. software; Impedance probe option \$2500; distributed by And/Or Corp.

This is one of the most flexible of the systems discussed, as it is built around a general purpose computer (BBC Acorn). Unlike the dedicated ROM-based probe microphone systems discussed previously, the Acorn system comes with its own word processor, waveform synthesizer, and speech synthesizer software, and one or two disk drives. The disk drives allow patient data storage and retrieval, and upgrades are made by replacing floppy disks with new software rather than by replacing internal ROMs. Unfortunately, the disk format of the Acorn micro-computer is not compatible with other commonly used personal computers and it appears that the large base of software developed for CP/M and MSDOS type computers will not run on the Acorn. The Acorn computer utilizes a standard alphanumeric type-writer keyboard and special function keys. Commands are initiated with menus and with the special function keys. Applications are limited only by the amount of software provided, and the company is upgrading programs frequently. Speech rehabilitation software has been added, as well as the company's own hearing aid prescription program. Hard copy is produced on a standard dot matrix printer. Liberal comments may be added on the CRT and printed for each set of data in the patient record.

The probe-tube of the HA-2000 is quite soft, so repeated testing of the same patient is possible without much discomfort. Unlike the other systems, the HA-2000 uses only one microphone (with probe-tube) for both reference and measurement purposes. Electroacoustic tests with the HA-2000 are based on a fast Fourier transform (FFT) in which time domain data are displayed and converted to frequency response data. Virtually any input waveform may be synthesized, but the standard stimulus is a click. The spectrum of the click is similar to that of speech-weighted noise but differs in phase. Proponents of this system are quick to point out that, compared to pure tones, clicks are much more like the stimuli hearing aids encounter in real world usage. Only a few repeated clicks are needed to almost totally average out noise in the test environment. With the click stimulus and time domain response, the operator can assess the temporal processing capability of a hearing aid fitting, an area of considerable importance that has previously been almost ignored because of the difficulties of measurement. The operator must be aware that too high a level of click input can easily overdrive the hearing aid circuitry and create nonlinearities. All of the raw time domain data, as well as their associated frequency responses, may be stored for a patient on disk for later analysis, recall, and updating.

In spite of the user-friendly features included, the HA-2000 has been surprisingly lacking in a few basic features. Initially the HA-2000 had no means of hanging the probe tube assembly, so tape was recommended to hold it to the patient's head. The tape method was recently replaced with an ear-hanger wire to hold the probe-tube microphone assembly. Initially, the 250 Hz resolution of frequency responses was inadequate, resulting in jagged curves, especially in the low frequencies. With an FFT-based system, both the lowest measurement frequency and low frequency resolution are inversely proportional to test time. Later software versions have resolved this problem, although longer FFT conversion time still goes hand-in-hand with acceptable frequency resolution. Possibly the greatest drawback of the HA-2000 is that there is no input level autoranging, so the operator has to manually set the preamp gain for the level of unaided or aided signals sensed by the probe-tube microphone. The system then asks the operator to enter this gain setting manually via the key board. This procedure must be repeated each time the signal level changes.

A most powerful feature of the HA-2000 system is the acoustic impedance option. If one knows the acoustic impedance over frequency of a middle ear, given an adequate electroacoustic model of hearing aid circuitry and transducers, the SPL delivered by a hearing aid

in an individual ear canal across the frequency range may be predicted. Thus, when ordering a custom ITE hearing aid, if a dispenser supplies this acoustic impedance data with the normally provided audiogram and patient history data, the hearing aid manufacturer essentially will be better able to predict what frequency response the aid will produce in the patient's ear.

The HA-2000 is recommended as the system of choice for research applications.

Frye 6500

\$8750 complete with ANSI, IEC, multi-curve, plus \$1695 for probe system.

The 6500 is an FFT-based hearing aid analyzer with an optional real ear testing package. The probe-tube microphone system utilized is from Etymotic Research, which incorporates the twin stub tube resonance elimination approach of Elmer Carlson. Actually, the complete 6500 system essentially includes the pure tone testing capability of the popular Frye Fonix 5500Z hearing aid analyzer. Added for testing signal processing hearing aids is a CRT and a pseudo-random noise input signal with either a flat spectrum or a high frequency rolloff like that of speech. For real time observation of the effect of adjusting hearing aid trimmer potentiometers *in situ*, when using the noise input mode, the frequency response is updated every one-half second on the CRT. Hard copy is available on a built-in strip chart recorder. The 6500 uses one microphone for both reference and measurement functions. Required values of speaker drive voltage are stored during the leveling sequence by the computer for later use, resulting in the substitution method of equalization. Although the niceties of data storage on disk, and patient labeling with an alphanumeric typewriter keyboard are absent in the initial 6500 system, this instrument is a pleasure to use.

Bruel and Kjaer 2118/WH 1823

\$9995 complete

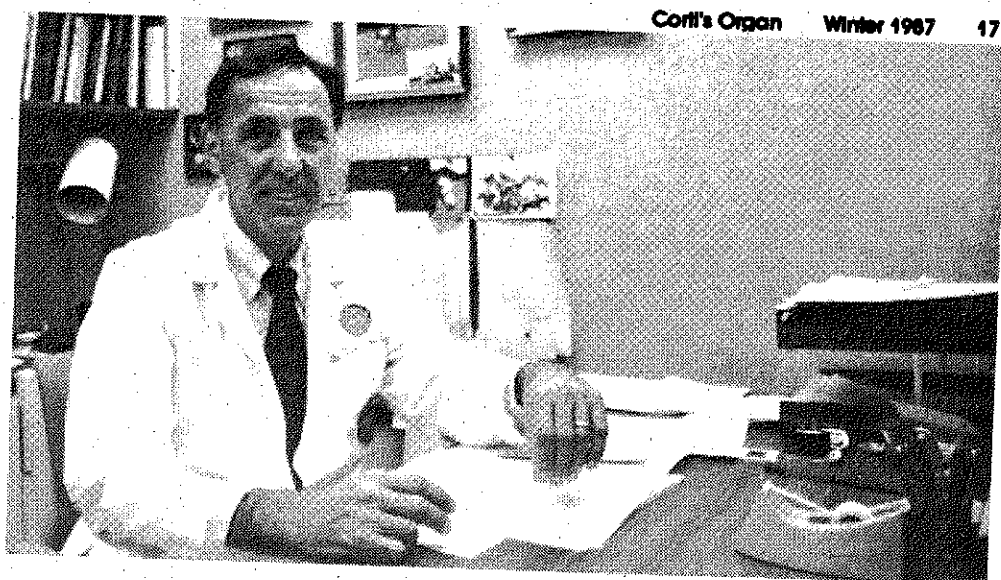
This device is basically a modified 2118 hearing aid analyzer, having a Bruel and Kjaer 1/4" microphone with a probe-tube fitting set up on an ear-hanger. It utilizes a warble or pure tone for input stimulus. A built-in X-Y recorder plots in five colors. This is a one microphone system with stored correction curve (substitution equalization method). In fact, the correction curve is stored with battery backup, and thus is retained even after power to the machine is turned off. Computer subtraction of curves allows display of either *in situ* response or insertion gain. Unlike the other systems mentioned in this article, an adaptor (DP 0181) is available to interface the probe microphone to a 4230 sound level calibrator, or to a 4220 pistonphone for calibration. A switch permits the operator to use 1/2" or 1" Bruel and Kjaer microphones for traditional 2cc coupler or ear simulator hearing aid analysis in a test chamber. As with many of the other systems, an output monitor is available for the hearing aid fitter to listen to the sound being delivered in the patient's ear canal. There is no CRT with which to view data as it is developed and no data storage capability.

Horag Earton Invivo

\$5600 Complete with HA-1, HA2 2cc couplers. Dist. by Robert Bosch Corp.

This system uses two microphones and has no computer subtraction of insertion gain. Consequently, a direct measurement of insertion gain is not possible without utilizing the reference microphone in real time to perform a pseudo-subtraction of unaided ear response. To accomplish this, Bosch recommends placing the reference microphone in the unaided ear during the measurement. The validity of this equalization approach is highly dependent on 1) physiological symmetry of the patient's two ear canals and middle ears; 2) symmetry of the loudspeaker radiation pattern at the two ears; 3) equal depth of insertion of the probe-tubes in each ear canal; and, 4) matching of the probe tube microphone frequency responses. It is likely that one or more of these criteria will not be met in everyday use of the device. If the reference microphone is not placed in the opposite ear, the unaided curve will not approximate a flat line. This substantial difference will have to be subtracted from an aided curve manually by the operator. There is no CRT monitor to observe the test data as it is developed. Other than these limitations, the machine contains a

See Probe Microphones, Page 18



George E. Lynn

In Memory of Dr. George Lynn

Dr. George E. Lynn, a long-time active member of the American Auditory Society, passed away on October 9, 1986, after a prolonged illness of nearly a year. He was a member of the Faculty of the Department of Audiology at Wayne State University School of Medicine for 21 years. Also, for the past 15 years he held an Associate's appointment in the Department of Neurology. Prior to joining the faculty at Wayne State University, he held faculty appointments at the University of Colorado in Boulder, at Colorado State University in Fort Collins, and at Duke University in the division of Otolaryngology. George Lynn received his Ph.D. in 1962 at Northwestern University where Raymond Carhart served as his mentor and major professor.

During George Lynn's academic career, which spanned nearly three decades, he made numerous contributions to the clinical audiology literature, and he published several tutorial chapters in various textbooks. His best known work was focused in the area of neuro-audiology. Along with John Gilroy, M.D., Chairman of the Department of Neurology, George Lynn published numerous articles concerning disorders of the central auditory pathways. His well-documented clinical case studies are regarded as pioneering research concerning central auditory disorders.

His final endeavor, which he initiated about the time of the beginning of his illness, was the establishment of a neonatal testing program

using auditory evoked potentials for newborns who are at high-risk. As a result of his thoughtful planning and dedicated efforts, this needed program was established at one of the hospitals in the Detroit Medical Center, and it has become an important service program for the Detroit Metropolitan community.

George Lynn was enthusiastic about both his work and his leisure activities. He was an active individual who enjoyed several different outdoor sports, especially skiing and horse-back riding. He was also a dedicated family man and is survived by his wife Jan and their four young-adult children — three sons and a daughter.

In recognition of George Lynn's contributions to the field of Audiology, the American Speech-Language-Hearing Foundation has established the George E. Lynn Memorial Research Award in Audiology. This fund will provide small research grants on a competitive basis to young investigators including graduate students. All gifts should be sent to the American Speech-Language-Hearing Foundation specifying the George Lynn Memorial fund. Gifts of \$100 or more qualify the donor to become a Foundation Founder. Mail contributions to: ASHF at 10801 Rockville Pike, Rockville, MD 20852-9979.

George Lynn will be long remembered by many people whose lives he touched, and especially by his friends, his students, and his colleagues.

Reger Conference Produces Text

The proceedings of the Scott N. Reger Memorial Conference have been organized into a text edited by M. J. Collins, T. J. Glatke, and L. A. Harker. This volume contains 22 papers presented at the Reger Conference held in Iowa City, Iowa.

The topics were chosen with a view toward Scott Reger's interest in hearing loss, and they included anatomy, physiology, and psychoacoustic correlates of hearing loss; innovative approaches to the medical and non-medical treatment of hearing loss; and some new looks at old data. It is anticipated that this book will be a valuable resource for advanced students and researchers, providing them with an

update in key areas of inquiry related to sensorineural hearing loss.

The proceeds from the sale of the book will go toward the Scott N. Reger Scholarship Fund for support of research by residents in Otolaryngology and graduate students in Speech Pathology and Audiology at the University of Iowa. Copies of the book are available at a price of \$25.00 (including shipping and handling charges) from:

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Probe Microphones

Continued from Page 17

headband assembly for retaining the microphones, tracking filters for eliminating noise in order to test in an open environment, a built-in strip chart recorder with four-color plots, a warble tone stimulus, and speech-weighted noise for biasing AGC and other signal processing aids during swept-frequency response measurements. Curves may be super-imposed on the strip chart recorder drawing one at a time. A battery simulator provides readings of hearing aid current drain. There is an electrical correction network for drawing a curve of the estimated insertion gain from the 2cc coupler response. It is not known how these correction values were derived or whether they apply to ITE, body, eyeglass, BTE or ITC types of hearing aids.

The following systems are in the process of being introduced during the writing of this article and only limited information is available:

Bio-logic Systems Corp.

Approx. \$2000 for probe mic add-on to evoked potential system.

Both an add-on and a stand-alone system will be available within six months. The add-on system incorporates the two channel traveler LT and Navigator evoked potential systems, which already have FFT capability. The stand-alone system will revolve around a lap-top IBM PC compatible computer with a wireless keyboard. Consequently, with either type of system data may be stored on floppy disk. The FFT algorithm will result in 125 Hz resolution, and there will be "zoom" capability to expand desired sections of the response curves. Two microphones will be used, but the reference microphone may be turned off optionally to permit the substitution method of equalization. Additionally, the reference microphone may be physically separated from the test microphone. Either a pseudo-random noise or a click is used for input stimuli, with external inputs being accepted as well. Hard copy will be available with either a color ink jet printer or with a four color plotter. Like most of the other systems except for the Acoustimed HA-2000, there will be automatic ranging for varying input levels from the probe-tube microphone. Computer subtraction of curves will produce either the in situ response or insertion gain.

Phonic Ear PE1800

\$1000-1200 add-on to the PE2800 hearing aid analyzer.

The PE1800 add-on probe-tube microphone module is now in field test and is expected to be available soon. The PE2800 analyzer utilizes a swept pure tone with 50, 60, 70, and 80 dB SPL input levels. Like the Bruel and Kjaer and Bosch systems, there is no CRT for displaying curves, but there is an X-Y plotter for hard copy. This is a two microphone system which cannot subtract two response curves to determine insertion gain. However, a mylar overlay will be provided for the operator to hand draw the insertion gain after manually subtracting the unaided response from the aided response. The probe microphone will be held in place by means of tape. There is no data storage capabilities.

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Sachs, R. and Burkhard, M.: Earphone pressure response in ears and couplers, Report No. 20021-2, Industrial Research Products, Inc., June, 1971.

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Madsen ICO 1000	Y	Y	Y	N	N	N
Acoustimed HA-2000	Y	Y	Y	Y	Y	Y
Frye 6500	Y	Y	Y	N	N	Y
Bosch Eartron	N	N	N	N	N	N
Bruel and Kjaer	N	Y	Y	N	N	N
Bio-logic Systems	Y	Y	Y	Y	Y	Y
Phonic Ear	N	N	N	N	N	N

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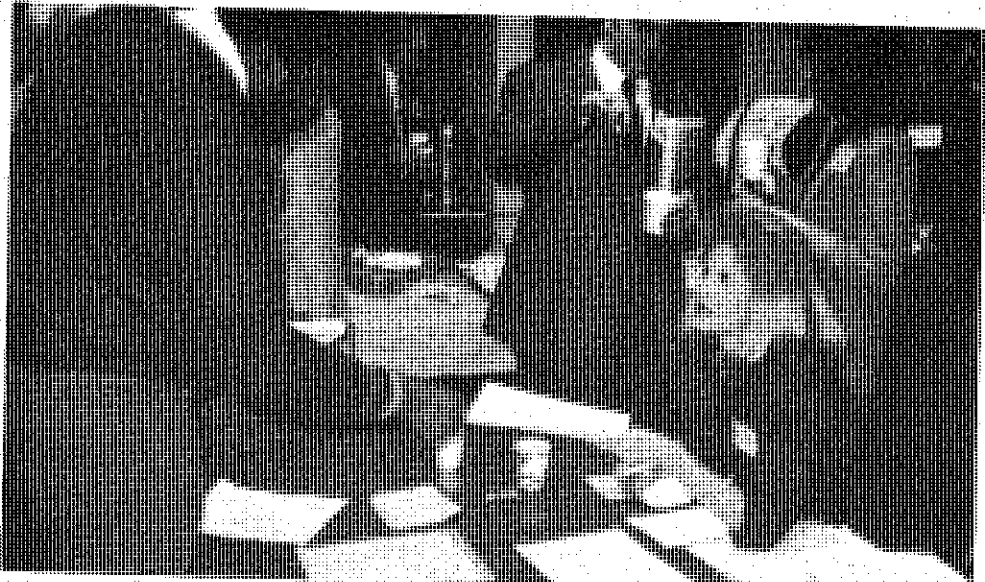
Clinical Audiologist

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Asheville, N.C.

(704) 254-3517



Registrants check in at conference.



Society hosts 230 attendees at annual meeting.



President Worthington says good-bye.



LaVonne Bergstrom takes over as President.

S.A.S. Goes to Sea

The 1987 Southern Audiological Society Convention will be held aboard the cruise ship, "Mardi Gras," from September 10-13. The convention will offer ten (10) hours of continuing education presentations. Your participation in this convention can be a relevant professional update as well as a real travel bargain for you and your significant others.

The "Mardi Gras" is a 27,250 ton ship that is registered in Panama and has an international crew and service staff. She is air-conditioned throughout with private facilities in each state-room. Inclusions for this meeting will be a Welcome Aboard Party for SAS registrants; full range of entertainment, including nightclub-type show; duty free shopping; all meals and snacks, including sumptuous late nite buffets; gala Captain's Cocktail Party and Dinner; complimentary deck chairs; children's activities; Casino and full run of the ship's pools, spas, and deck sports. The ship will sail from Ft. Lauderdale, Florida, on Thursday, September 10 to Nassau, Bahamas, and return on Sunday, September 13, 1987.

The Southern Audiological Society's ship rate for the cruise will be \$260.00 per person/double occupancy for inside cabins with twin beds or \$295.00 per person/double occupancy for outside cabins. The customary "rack rates"

for this cruise are \$495.00 and \$545.00. A third or fourth person in the cabin will add \$190.00 per person. These rates do not include a \$22.00 port tax.

Special air fares have been negotiated for us with Eastern Airlines. Our official SAS travel agency, ABOUT TRAVEL, Inc., 1A South Semoran Blvd., Orlando, Florida, (305) 275-7494, gets credit for this. SAS attendees will receive a 65% discount off roundtrip "Y" fares or the lowest applicable fare with available seats. To receive the discount you must call Eastern's toll-free Convention Central Hotline and request EZ9P10 rates, and you must be ticketed by ABOUT TRAVEL. The Convention Central phone number is (800) 468-7022 (in Florida, (800) 282-0244).

Ernie Edwards is organizing a top-notch Professional/Technical Program to meet continuing education requirements for licensure and certification. Topics will include electrophysiological techniques for assessment of hearing and hearing aid fitting, and digital hearing aids.

For further cruise information, contact: Bob Harrison, University of Miami, P.O. Box 016960 (R56), Miami, Florida 33101. (305) 549-6451. One must be an SAS member in order to obtain these special rates.

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September 3-5, 1987
Carle Clinic Association
Urbana, IL

Topics: Cochlear Implant Candidacy, Assistive Listening Devices, Diagnosis, Rehabilitation, and Relations with the Medical Community.

Speakers: Robert Fifer, James Jerger, Susan Jerger, H. Gustav Mueller, Frank Musiek, Michael Novak.

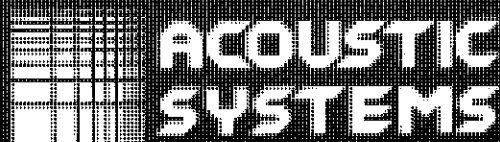
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AAS Membership Directory Inside!!

CORTI'S ORGAN

The Official House Organ of The American Auditory Society

Volume 12, No. 2

Spring '89

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1989 AAS Meets and Eats In New Orleans

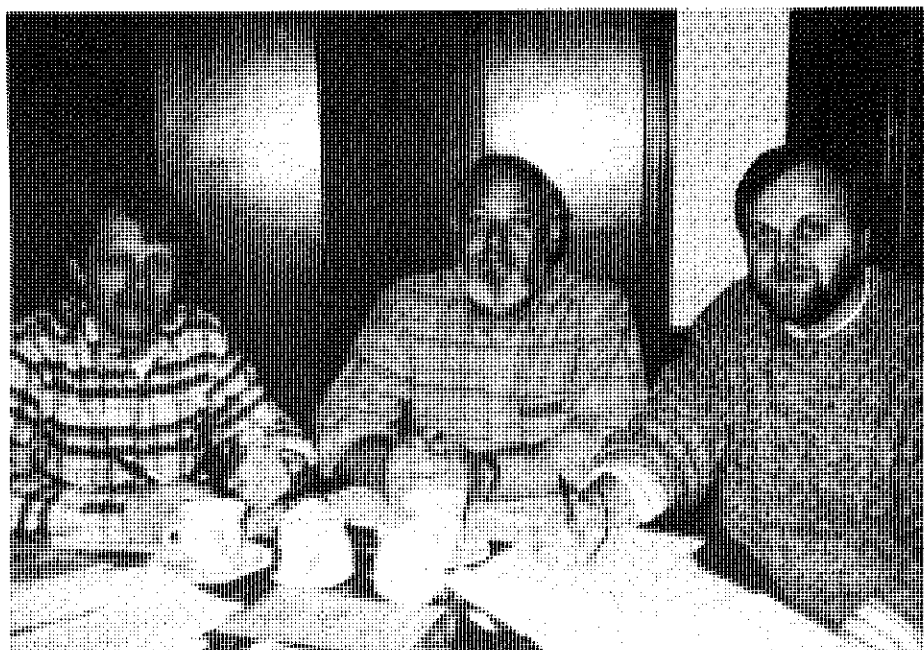
The 1989 AAS Annual Meeting will be held on Sunday, September 24th, in New Orleans, Louisiana, in conjunction with the American Academy of Otolaryngology Head and Neck Surgery. The meeting site is a spacious and well equipped auditorium at Tulane School of Medicine, located several blocks from the major hotel district and the infamous Bourbon Street.

The scientific program will begin at 8:30 a.m. with a round table discussion entitled "Newborn Auditory Screening: Then What?". Jay Hall, Program Chairman, will moderate a panel discussion by well recognized clinicians and researchers in the area of early identification of infant hearing impairment. Each panelist will present viewpoints on the challenges and problems of implementing hearing screening and audiologic follow-up programs. Special emphasis will be given to the potential impact of federal mandates on early identification and management of hearing impaired children. Questions from the audience will be welcomed.

The remainder of the day will be amply filled with informative and stimulating papers presented by an international collection of hearing clinicians. A highlight of the program will be the Carhart Memorial Lecture delivered by Dr. Ira Hirsh of Central Institute for the Deaf. The Beltone Distinguished Teacher of the Year Award will also be presented.

To top off the meeting day, Chairman of Local Arrangements, Mike Seidemann, has planned an evening of eating, drinking, and dancing that could only take place in New Orleans! Since the site of this debauchery is in the center of the French quarter, there will be no curfew on festivities.

Hotels in the area include the New Orleans Hilton, Marriott, and Sheraton, which are hosting the AAO-HNS convention. You are encouraged to make reservations early to assure a room. And plan to travel to the Crescent City to take part in an exciting meeting and enjoy some real Southern hospitality.



1989 Program Committee members make plans for the New Orleans meeting. Left to right J. W. Hall (chair), Mike Seidemann, and John Rizzi.

Football Great Mike Singletary Stars in New Television PSA

Chicago Bears' football star Mike Singletary, selected to six straight National Football League Pro Bowls, stars in a new Better Hearing Institute television public service announcement made possible by a special grant from Knowles Electronics, Inc., international manufacturer of acoustic transducers.

Singletary, who personally overcame his hearing loss with hearing aids, appears in a scenario with his wife, Kim, who persuaded him to do something about his hearing problem.

"This PSA ties in with results of Institute focus group studies and the Hearing Industries Association marketing survey showing the spouse as the major motivating force behind the hard-of-hearing person," said Richard T. Burger, BHI president. "So our new message features a situation that spouses of hard-of-hearing persons can identify with, and one that may motivate them to encourage their spouses to similar corrective action. We sincerely appreciate Knowles' sponsorship of this important project."

Nancy Knowles, Knowles Electronics board chairman, described the new PSA as "a wonderful way to cooperatively further the hearing field's public information and marketing goals."

Videotaped in 60-second and 30-second segments, the PSA will be issued to the major television networks and 711 stations in all U.S. markets. It is scheduled for fall release, timed with the 1989 NFL football season.

Mike Singletary led the Bears with a career-high 170 tackles in 1988 enroute to his sixth straight Pro Bowl appearance. Singletary was voted AP NFL Defensive Player of the Year, the same honor he received following the 1985 season. Only Walter Payton (nine times) has been to more Pro Bowls in Bear history.

Knowles has funded many other BHI public information projects, including previous television PSAs—one starring Arnold Palmer and another in BHI's special PSA series featuring typical Americans who benefit from available hearing help.



Program Committee members arrange for the main dinner at Arnaud's. All agree that the dining arrangements this year will be spectacular.

Earleen Elkins Honored

Dr. Earleen Elkins was honored by the Association for Research in Otolaryngology at its annual meeting in St. Petersburg Beach in February. The ARO is a scientific organization whose members are scientists and scientist-clinicians dedicated to the study of the ear and the normal hearing process, and of deafness and related communication disorders. The interests of the membership and their scientific papers range widely from those dealing with the normal anatomy, biochemistry, and physiology of the hearing mechanism and the perception of sound, to those dealing with the causes of deafness, disorders of balance, and genetic, drug-induced, and noise-induced hearing loss. In recent years, since its inception, the study and further development of the bionic ear, or cochlear implant, has been an important research topic for discussion at these annual meetings. Much of the research funded at these meetings has been supported by the National Institute of Neurological Communicative Disorders and Stroke. Research funding for hearing science will now be assumed by the new Institute of Deafness and Communication Disorders, just founded by President Reagan in his last months in office, and devoted explicitly to the support of research in normal and impaired hearing.

Dr. Elkins, who has a Ph.D. in speech and hearing science from the University of Maryland,

served as head of the hearing program in the National Institute of Neurological and Communicative Disorders and Stroke. More recently, she was chief of the Neurosciences and Behavioral Research Branch at the National Institute of Alcohol Abuse and Alcoholism. She has now joined the new Institute of Deafness and Communication Disorders, and is expected to play a major role in the development of that Institute's program.

At the most recent meetings of the Association for Research in Otolaryngology, Dr. Elkins was honored with a ceremony and bronze plaque for her outstanding service to the scientific community, particularly in the field of hearing and communication. In the award presentation she was mentioned as someone who has been "especially helpful and supportive, not only to the members of the Association for Research in Otolaryngology, but to the broader scientific community in hearing and communication disorders, and in the process has enormously improved the bureaucratic image." The organization particularly applauded "her kindness, her support, and her advice," and honored her "for those special virtues and for her achievements, of which her new position is just the latest in a long, extended series."

Carhart Lecture To Feature Leader In Our Field

This year's Carhart memorial lecture will be one of the society's most outstanding. Ira Hirsh, Ph.D., has been selected as this year's distinguished speaker. He will address the topic of "The Audiogram and Speech Perception."

Dr. Hirsh is professor Emeritus at Washington University and Central Institute of the Deaf in St.

Louis. He has authored numerous articles and texts in the field of audiology and hearing science. Dr. Hirsh is internationally recognized for his research with the deaf and their acquisition of speech. His lecture will certainly be one of the highlights of this year's meeting.

The President's Corner

CHANGING TIMES

by
Wayne J. Staab

The AAS is in the process of completing its most extensive membership mailing ever. Under the guidance of Jim Curran, Membership Committee member, an impressive mailer has been generated and is being sent to an all-inclusive list of potential members from a variety of disciplines having an interest in the area of hearing. The enthusiasm within the Organization is very high, and membership rolls are expected to be the highest in the history of AAS.

Increased membership is also reflected in a wider diversity of interests. Consequently this must be reflected in the annual meeting scientific program content. Historically, AAS has held an independent one day meeting just prior to or concurrent with either the American Academy of Otolaryngology or with the American Speech-Language-Hearing Association. The program has been of the highest caliber, but has also, by necessity, been intensive and of short duration for each presenter. The papers selected for inclusion in the program are the best of those submitted. However, what happens when we have more good papers to list than the program time frame allows for? This is not necessarily the situation as it exists

now, but could become a reality with membership increasing and reflecting a wider range of interests. Additionally, will the papers offered be of the content areas to continue to attract the broad interests of this anticipated membership increase? The question therefore that must be addressed is: should a change in the format be considered?

AAS membership occupations tend to fall into two distinct areas; technical and clinical. Our Organization should provide presentations applicable to both - and this has been the history of AAS. However, with membership increases (and corresponding increases in attendance at the annual meeting), the demands on the Program Committee become greater. Will the accepted papers match the interest areas of the membership, or do the accepted papers dictate the type of members belonging to AAS? How can we meet the demands of the attendees? How do we resolve the issue of having to sit through two or three

papers to get to the one we have a real interest in? How do we find a facility large enough and equipped properly to seat the 300 plus attendees? How can we provide more extensive papers in certain areas of interest?

Perhaps AAS needs to provide concurrent presentations. Perhaps AAS should consider invited papers on selected topics to reflect the interest areas of its membership. A stand-alone meeting is a topic of conversation to suggest.

My purpose is not to yield a particular format, or even to insist that a change be made. However, with the AAS Long Range Plan about to be formulated, and with the strong possibility of AAS having its largest membership enrollment, this issue could have a significant impact on the future direction of AAS. As in my request in the last issue of *Corti's Organ*, let your Executive Board members know your thoughts. Remember, it's your Organization - you make AAS what it is and what it will be!

From The Editor

As can be seen from this issue, it's time once again to elect members to AAS' Executive Committee. Like our Annual Meeting, this election is a particularly important event for our membership.

As in previous years, some of our most outstanding members are nominees this year for Executive Committee positions. It was so exciting to me to read each nominee's statement regarding their affiliation with AAS and their impressions concerning the Society's accomplishments and role.

A consistent theme was evident throughout the nominees' statements. AAS is one of the most viable and respected professional organizations representing our field. The cross discipline make-up of our membership brings a complexion to the

Society that few other groups can offer. Our diversity allows for varying perspectives on the challenges and issues facing AAS.

If you've forgotten or begun to doubt the significance of your AAS membership, you will certainly want to read all nominees' statements. Our brief history can boast of many accomplishments, not the least of which is the development of one of the most respected journals in our field. What the Executive Committee candidates have written is a great reminder of our strength as an organization. Do what you can to insure that our strength continues: support the Society and the Executive Committee. Vote for the candidates of your choice and help make AAS the dynamic group of choice in the 1990's.

Letter to the Editor

I would like to bring to your attention a letter I recently received from John Oyiborhoro. John is a native Nigerian. He received his audiology training in the United States and returned to Nigeria in approximately 1983 to establish a training program at the University of Port Harcourt. He has problems that would seem overwhelming to those of us practicing in the United States. They have over 100 million people with few professionals to provide care for the hearing impaired. Perhaps one of your readers has equipment or books to assist John in establishing his training and service programs. If so, I would encourage them to write to him directly.

Robert W. Keith, Ph.D.
Professor
University of Cincinnati

Faculty of Education
Univ. of Port Harcourt
Port Harcourt
Nigeria

Dear Dr. Keith,

I delayed writing because I thought that I would be able to acknowledge (at the time of writing) the receipt of the donated books. It appears they may take a little longer before arriving this way. Thank you very much for your invaluable assistance

through SHARE. Please, help express our profound gratitude to all those who make SHARE work.

A major problem that is facing us currently is that of lack of instruments to conduct research. It may sound incredible but it is true that we lack a basic impedance bridge and a dependable clinical audiometer. There are, as you will expect, a lot of research areas to be explored. We are over one hundred million in my country. Much of the data often taken for granted in the U.S. are not available here. We do not have any hearing instrument manufacturers or distributors in Nigeria from whom we can readily request donations of hearing evaluation equipment. The field is relatively new. I have been unable to assist those who have come to receive my service here or conduct any meaningful research that can be shared with other professionals, principally due to lack of instrumentation. Even though you may not be in a position to do any more than the much valued and appreciated assistance that you have offered to us already, I am reporting all this to indicate the direction of our greatest need.

Once again, thank you very much for your time and efforts.

Sincerely,

John M. A. Oyiborhoro, Ed.D., CCC

Ake Flock Presented Award of Merit

Dr. Ake Flock, Professor and Chairman of the Department of Physiology, Karolinska Institute, Stockholm, Sweden, has been named the 1989 recipient of the Award of Merit, the highest award offered by the Association for Research in Otolaryngology for research and scholarly leadership in otolaryngology and the communication disorders. Honored for his contributions to knowledge about the way inner ear cells translate sound energy into encoded neural impulses in the brain, Professor Flock's past work has explored the mechanisms by which acoustic signals can be encoded by the nervous system's inner ear receptor. He has been largely responsible for describing the muscle-like proteins in the inner ear that give

the ear its remarkable sensitivity, dynamic range, and tuning characteristics. His work has advanced our theoretical understanding of the active processes of the inner ear which are capable of tuning and focusing energy in selected bands to permit us to understand complex signals like speech in noisy environments. These advances are the first steps leading to improved methods for helping the hearing handicapped.

Born in Gotenburg, Sweden, Professor Flock attended medical school and received his Ph.D. at the Karolinska Institute, Stockholm in 1965. He then studied at the Bell Laboratories in New Jersey in 1965-1967 before returning to Sweden to continue his research.

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CLINICAL EXCHANGE

Editor's Note:

The following article is reprinted by permission of Gerson H. Aronovitz, M.D. of Atlanta and the *Southern Medical Journal*. This manuscript originally appeared in the *Southern Medical Journal*, Vol. 81, August, 1988, pages 978-980. It is the hope of *Corti's Editorial Board* that this article provides information of benefit to our readers in the management of their clients with otitis media.

Treatment of Otitis Media With Cefuroxime Axetil

GERSON H. ARONOVITZ, MD, Atlanta, Ga.

ABSTRACT: Cefuroxime axetil and cefaclor were compared for efficacy in the treatment of acute otitis media with effusion. Sixty-four pediatric outpatients had tympanocentesis for culture, and then were randomized to a ten-day course of treatment with cefuroxime axetil or cefaclor. *Streptococcus pneumoniae* and *Haemophilus influenzae* were isolated from 25 (39%) patients, respectively. Treatment was beneficial in 26 (90%) of the patients. Treatment failed in five (24%) of the cefaclor-treated patients, and in only three (10%) patients who received Cefuroxime axetil. *Haemophilus influenzae* was the initial causative pathogen in a disproportionate number of treatment failures. This study demonstrates the efficacy of cefuroxime axetil in the treatment of otitis media.

ACUTE OTITIS MEDIA with effusion (acute OME) is a very common illness among children. In a prospective study of 2,565 children followed up from birth until 3 years of age, 47% and 71% of children had their first episode of acute OME by 1 and 3 years of age, respectively.¹ Many children have multiple episodes of acute OME during the preschool years, a fact that warrants particular concern in view of the insidious complications of acute OME, ie, impaired development of language, learning disabilities, and speech impairment.^{2,4}

From the Department of Pediatrics, Emory University Medical School, Atlanta, GA.
Supported in part by a grant from Glaxo Inc.
Reprint requests to Gerson H. Aronovitz, MD, 2714 Clairmont Rd NE, Atlanta, GA 30329.

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A variety of antibiotics are used in the treatment of acute OME,⁵ all directed toward coverage of the major pathogens *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Branhamella catarrhalis*. Since approximately 75% of *B. catarrhalis* isolates⁶ and 14% to 20% of *H. influenzae* isolates^{7,9} produce beta-lactamase, it is important that the antibiotic have relative stability toward betalactamases, as cefuroxime does. Cefuroxime axetil, an ester prodrug of cefuroxime used for oral administration,^{10,11} is rapidly de-esterified to release its parent antibacterial agent.

This study was designed to compare the safety and efficacy of cefuroxime axetil and cefaclor in the treatment of acute OME. Cefaclor was chosen because of its widely reported efficacy in patients with acute OME¹²⁻¹⁸ and its known safety profile.¹⁹

METHODS

Candidates for enrollment in the study were pediatric outpatients with acute OME, diagnosis of which was based on erythema or opacification of the tympanic membrane by pneumatic otoscopy, and the usual signs and symptoms, ie, fever, otalgia, and irritability. The presence of effusion was assessed by diminished mobility of the tympanic membrane on pneumatic otoscopy and indicative findings on tympanometry.

Patients were excluded from the study if they had a history of hypersensitivity to any cephalosporin, anaphylactic reaction to a penicillin, use of an antibacterial drug within the past 48 hours, or any gastrointestinal illness that could interfere with absorption of orally administered antibiotics.

Informed consent was obtained from the parents after discussing the purpose of the study and the potential benefits and risks of participation.

Procedures

After the auditory canal was debrided of cerumen and cleansed with aqueous benzalkonium chloride, tympanocentesis was done with an 18 gauge spinal needle connected to a DeLee suction catheter with a mucus trap. Aliquots of the effusion were removed from the trap with a sterile loop, streaked on 5% sheep blood agar and chocolate agar, and incubated in 5% CO₂ for a maximum of 48 hours. Susceptibilities of isolates to cefuroxime, cephalothin, and ampicillin were determined by the Kirby-Bauer method using NCCLS susceptibility criteria.²⁰

Patients were reevaluated between the third and fifth days of treatment, two to four days after treatment, and two weeks after treatment. Clinical laboratory tests before and after treatment consisted of a complete blood count with differential, determination of BUN and SGOT values, and urinalysis with microscopic examination.

Treatments

Patients were randomly allocated to treatment for ten days with cefuroxime axetil or cefaclor. Cefuroxime axetil (Ceftin) was administered as 125

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1989 Editorial Board

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Clinical Exchange (Continued from Page 2)

mg bid for patients less than 2 years old and as 250 mg bid for patients 2 or more years of age. These dosages were selected to achieve an average daily dose of 30 mg/kg. Parents were instructed to crush the tablets and mix the powder with a small amount of food for administration.

Cefaclor (Ceclor) was administered as 40 mg/kg/day (to a maximum of 1 gm per day) divided into three equal doses. This drug was dispensed as a suspension with a pediatric dosing spoon.

Assessment of Outcome

Response to treatment for each patient was assessed as cure, improvement, or failure. Cure was defined as resolution of symptoms during treatment, with absence of middle ear effusion two weeks after treatment. Improvement was defined as resolution of symptoms during treatment, but with persistence of middle ear effusion for two weeks after treatment. Failure was defined as inadequate response to a minimum of three days of treatment. Repeat tympanocentesis was considered only for patients in whom treatment failed.

Results

Sixty-four patients were enrolled in the study. The distribution of patients by treatment group according to age, sex, and location of infection is shown in Table 1. Composition of the two treatment groups was comparable, except that the cefaclor group had a greater proportion of infants between 6 and 11 months of age.

The profile of bacterial isolates from these patients was consistent with that of previous reports (Table 2). One or two types of bacteria were isolated from specimens of effusion from 52 patients (81%), while samples from the remaining 12 patients (19%) yielded no growth by aerobic culture procedures. The predominant isolates were *S pneumoniae* (25 patients; 39%) and *H influenzae* (23 patients; 36%). *Branhamella catarrhalis* and *Streptococcus pyogenes* were each isolated from three (approximately 5%) patients. Nine of the 23 isolates (39%) of *H influenzae* were resistant to ampicillin in vitro. Since the results from my practice in 1980 showed *S pneumoniae* in 43% of patients, *H influenzae* in 27% of patients, and

no growth in 20% of patients,¹⁴ there has been little change in the profile of pathogens of acute OME.

Of the 29 patients with bilateral acute OME, 19 patients had bilateral tympanocentesis before treatment. The same bacteria were isolated from both ears in 15 patients (79%); in the other four patients (21%), one organism was isolated from one ear and effusion from the opposite ear was sterile.

Beneficial response was achieved in 26 of 29 evaluable patients treated with cefuroxime axetil (90%) and in 16 of 21 evaluable cefaclor-treated patients (76%). Treatment failed in five (24%) of the cefaclor-treated patients, compared with three (10%) of those treated with cefuroxime axetil (Table 3). Each patient who had treatment failure was young, ie, 7 to 16 months old in the cefuroxime axetil group and 7 to 24 months old in the cefaclor group. In addition, *H influenzae* was the initial isolate from four of the five patients who had treatment failure with cefaclor. One of the three patients who had treatment failure with cefuroxime axetil had *H influenzae* infection, while the other two had both *H influenzae* and *S pneumoniae* isolated before treatment. Repeat tympanocentesis was done for three of the five patients with cefaclor treatment failure and two of the three patients with cefuroxime axetil treatment failure, and specimens from each confirmed persistent bacterial infection; therefore, although *H influenzae* was responsible for the infection in 23 patients (36%) at presentation, it contributed to seven of the eight failures (88%).

DISCUSSION

Cefuroxime axetil was at least as effective as cefaclor in treating acute OME. No adverse effects were noted with either drug.

The incidence of ampicillin-resistant *H influenzae* in acute OME continues to increase nationwide, as well as in my own area. In this study, nine (39%) isolates of *H influenzae* were resistant to ampicillin. Resistant *H influenzae* along with *B catarrhalis* accounted for 11 (11%) of the 64 cases of acute OME evaluated.

Given these observations, the availability of beta-lactamase-resistant antibiotics becomes increasingly important. This study has demonstrated the efficacy and safety of cefuroxime axetil in acute OME. The bid dosage schedule is advantageous in that it eliminates the need for a dose during day care or school attendance, thus enhancing the ease of use and compliance. Future studies are needed to explore the utility of cefuroxime axetil as an additional option for prophylaxis of recurrent otitis media with effusion.

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TABLE 3. Outcome of Treatment, by Group

Outcome*	Cefuroxime Axetil	Cefaclor
Cure	14 (48%)	5 (24%)
Improvement	12 (41%)	11 (52%)
Failure	3 (10%)	5 (24%)
Total evaluable	29	21
Unevaluable	8†	6**
Total patients	37	27

*Outcomes are not statistically significantly different ($.10 < P < .25$) between treatments by chi-square test.

†No bacterial growth before treatment ($n = 5$), treated for less than three days ($n = 2$), and concurrent antibiotic administration ($n = 1$).

**No bacterial growth before treatment ($n = 5$) and concurrent antibiotic administration ($n = 1$).

TABLE 1. Patient Characteristics by Treatment Group

	Cefuroxime Axetil	Cefaclor
Total No. of Patients	37	27
Age		
6-11 months	4 (11%)	7 (26%)
12-23 months	10 (27%)	8 (30%)
2-4 years	12 (32%)	7 (26%)
5-7 years	10 (27%)	4 (15%)
8-12 years	1 (3%)	1 (4%)
Sex		
Male	15 (41%)	12 (44%)
Female	22 (59%)	15 (56%)
Distribution of Infection		
Unilateral	20 (54%)	15 (56%)
Bilateral	17 (46%)	12 (44%)

TABLE 2. Bacterial Isolates From Patients With Acute OME*

Bacterial Isolate	No. of Patients		
	Cefuroxime Axetil	Cefaclor	Total
<i>S pneumoniae</i>	14	8	22
plus <i>H influenzae</i> (ampicillin resistant)	2	0	2
plus <i>B catarrhalis</i>	1	0	1
<i>H influenzae</i> (ampicillin sensitive)	7	7	14
<i>H influenzae</i> (ampicillin resistant)	3	3	6
plus <i>B catarrhalis</i>	0	1	1
<i>B catarrhalis</i>	2	0	2
<i>S pyogenes</i>	1	2	3
<i>S epidermidis</i>	0	1	1
No growth	7	5	12 (19%)

Total Patients: 64

*Isolates obtained from both ears in a patient are counted once in this table.

ARO Meets in St. Petersburg Beach

The 12th Annual Midwinter Meeting of the Association for Research in Otolaryngology (ARO) was held February 5-9, 1989, in St. Petersburg Beach, Florida. The meeting was attended by more than 725 people who heard over 430 papers and viewed posters on a wide range of research topics. The meeting was highlighted by Symposia on the Cochlear Nucleus, Nasal Response to Illness and Animal Psychophysics. Invited papers were presented on a number of topics: Sound Localization, Auditory Processing of Complex Sounds, The Efferent Systems and Vestibular Function. Beautiful weather, exciting new research developments, and the excellent presentations made this one of the best ARO Midwinter Meetings ever.

A full report on the status of the new Institute on Deafness and Other Communication Disorders (NIDCD) at the National Institutes of Health (NIH) was presented by Dr. Jay Moskowitz, the interim director of NIDCD. The ARO continues to work with the NIH in establishing the NIDCD.

The ARO's Award of Merit went to Dr. Ake Flock of the Karolinska Institute of Stockholm, Sweden. Dr. Flock was honored for his pioneering research in several fields. In recent years Dr. Flock's research has revealed a number of fundamental facts concerning the function of many structures within the inner ear, especially structures of the hair cell. This work has paved the way for a new understanding of how the inner ear transduces the vibrations of sound. A certificate and the traditional gold tie clasp symbolizing the inner ear were presented to Dr. Flock on behalf of the ARO and its members.

In addition to honoring Dr. Flock, the ARO presented special awards to Mrs. Geraldine Dietz-Fox and Dr. Earlene Elkins. Mrs. Fox was honored for her efforts in initiating and sustaining the movement to establish a new NIH institute for deafness and other communication disorders. Dr. Elkins was recognized for her many years of

work at the NIH as the chief program officer for researchers in hearing. Mrs. Fox and Dr. Elkins were presented plaques from the ARO Council and Members.

Dr. William A. Yost of the Parmlly Hearing Institute of Loyola University of Chicago presided over the meeting as the fifteenth President of the ARO. Dr. Nadol of the Boston Ear and Eye Infirmary assumed the presidency of the ARO at the Business Meeting at which Dr. Ilsa Schwartz of Yale University was elected President-Elect and Dr. Robert Dobie of the University of Washington was voted in as the new ARO Council Member. The other members of the ARO Council for 1989-90 are: Dr. David Lim of Ohio State University, Dr. Charles Parkins of Louisiana State University, Dr. Allen Ryan of the University of California at San Diego, and Dr. James Saunders of the University of Pennsylvania.

Seventy-two new members were approved as Active, Associate, or Corresponding Members at the Business Meeting. The membership of the ARO is now approximately 1000 members. The members represent all areas of research in Otolaryngology from all over the world, including members from over twenty foreign countries. In addition to the Midwinter Meeting the ARO co-sponsors the Research Forum which will take place September 25th and 26th, 1989, in New Orleans as part of the Annual Meeting of the American Academy of Otolaryngology-Head and Neck Surgery. A newsletter and other informational publications are also provided to the members each year.

The 1990 Midwinter Meeting will take place February 4-8, 1990, in St. Petersburg Beach at the Tradewinds Hotel. For additional information about the ARO, please contact the ARO Office, 6525 N. Sheridan, Chicago, IL 60626, (312) 508-2706 [FAX - (312) 508-2719].

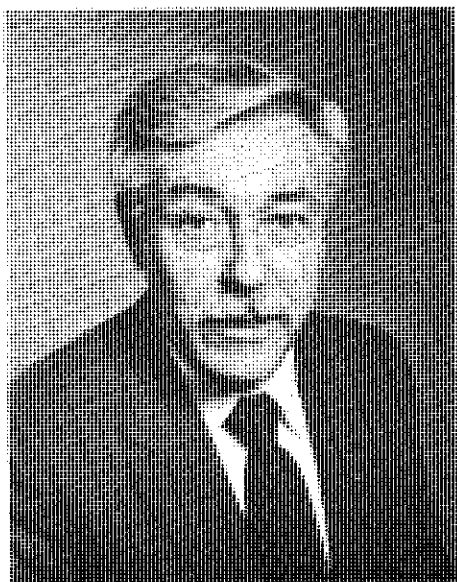
Nominees For Audiology



James W. Hall, III
Ph.D.

Dr. Hall holds his Ph.D. in Audiology from Baylor College of Medicine. He is currently Associate Professor and Director of Audiology, Division of Hearing and Speech Sciences and Department of Otolaryngology at the School of Medicine of Vanderbilt University.

According to Dr. Hall: "The American Auditory Society and *Ear and Hearing* provide valuable services to hearing health care professionals in general, and to audiologists in particular. *Ear and Hearing* is the primary scientific journal for clinical audiologists. The annual meeting of the Society regularly provides a forum for exchange of current clinical information on hearing, hearing impairment, and management of the hearing impaired. Finally, and uniquely, membership of the American Auditory Society and its executive committee consists of persons from varied hearing health care professions, including audiology, hearing science, industry, and otolaryngology. There are other organizations representing professional and political interests for each of these sectors, but the American Auditory Society alone attempts to unite them 'to increase knowledge of human hearing, to promote conservation of hearing, and to foster habilitation and rehabilitation of the hearing impaired.' While each of the three services just noted is important to American Auditory Society members, the final characteristic—ecumenical membership—sets it apart from other organizations and provides the foundation for an exciting future."



William F. Rintelmann,
Ph.D.

Dr. Rintelmann holds his Ph.D. from Indiana University. He completed a post-doctoral fellowship at Northwestern University. Dr. Rintelmann is currently Professor and Chairman of the Department of Audiology at Wayne State University School of Medicine in Detroit.

According to Dr. Rintelmann: "A unique feature and major strength of the American Auditory Society is that the membership is composed of a broad spectrum of individuals with varying backgrounds, interests, and activities related to hearing impairment, hearing conservation, and aural rehabilitation. The range of activities of the membership encompasses: (1) teaching; (2) research; (3) clinical evaluation/patient management; (4) aural rehabilitation including hearing aid selection, fitting, sales, and counseling; and (5) product (i.e., hearing aids, audiometers, etc.) development, engineering, manufacturing, and sales. No other organization has such a broad scope of activities related to serving the hearing impaired. Because the membership of the American Auditory Society deals with nearly every aspect of serving the needs of hearing handi-

capped persons, the Society has a unique opportunity to serve as a catalyst for technological development of amplification devices and also for advancement in patient evaluation/management skills. The leadership of the American Auditory Society should strive to find the best possible ways to maximize open communication among all of its members in order to foster "state-of-the-art" advances in education, research, patient care, and product development."



Jean H. Lovrinic,
Ph.D.

Dr. Lovrinic is currently a Professor in the Department of Speech, Language and Hearing at Temple University of Philadelphia. She holds her Ph.D. from the University of Pittsburgh in Audiology.

According to Dr. Lovrinic: "The interdisciplinary structure of the American Auditory Society and its focus on both normal and disordered hearing mark it as unique. In this era of a proliferating number of professional special interest groups, the lack of political focus or intent in the function of the Society constitutes still another of its novel features. Our journal, *Ear and Hearing*, has earned a reputation for excellence and serves a vital role. It is my opinion that if it isn't broken, you don't fix it. If you have something which works like a charm, you treat it with care and respect. Thus, the nature of the Society and its goals must not change. Our journal must be maintained and strengthened in any reasonable manner. In short, our Society merits our contributions to its continued viability."



Laszlo K. Stein,
Ph.D.

Dr. Stein holds his Ph.D. from Northwestern University. He is currently Director of the David T. Siegel Institute for Communicative Disorders, Michael Reese Hospital and Medical Center in Chicago and Associate Professor for the Department of Surgery (Otolaryngology) at the University of Chicago.

Dr. Stein states: "The American Auditory Society was founded to increase the knowledge and understanding of the auditory process, to

promote conservation of hearing, and to further habilitation and rehabilitation of persons with hearing impairments. For many years, the Society has been in the enviable position of advancing these aims principally through its publication, the journal *Ear and Hearing*, and the annual meeting. By design, the Society has concentrated its limited resources in these areas. That this strategy has been successful is evidenced by the fact that *Ear and Hearing* is now generally acknowledged as the leading journal in clinical audiology and that our annual meetings have assumed a life of their own. Whether the Society will choose to meet its stated aims solely through its journal and annual one-day meeting or use its steadily increasing resources to expand into other areas will be the principal question facing the membership and its elected Executive Committee to address such matters as relationships with other organizations, representation of special interest groups within the Society, a more visible stance on governmental policies affecting hearing disorders and hearing research and quite possibly, the very nature of the multi-disciplinary makeup of the Membership and Executive Committees. Paramount during all this will be the need to protect the integrity of the journal and, indeed, to do everything to enhance the stature and excellence it now enjoys. The next several years may well mark the transition from youthful growth to an era of maturation for the Society."



Don W. Worthington
Ph.D.

Don W. Worthington, Ph.D., received his B.S. and M.S. degrees from Utah State University, and his Ph.D. from Northwestern University. He is currently Director of Audiology and Vestibular Services and of Clinical Services at Boys Town National Institute for Communication Disorders in Children.

Dr. Worthington states: "The American Auditory Society was initially conceived and organized by a group of highly respected professionals representing audiology, otolaryngology, the hearing aid industry, education of the hearing impaired, and auditory neurophysiology. These professionals felt that there was a need for an organization which would provide a platform for the interchange of information among disciplines. Sixteen years have not passed, during which time the AAS has worked toward achieving this interaction of varied professions and professionals."

The AAS serves as a unique model for interdisciplinary or multidisciplinary interaction. While major conflicts have existed between organizations representing the interests of only one profession, the AAS has been able to set those differences aside and work for common goals and objectives. Members of the AAS can be proud of what they have accomplished. Through the outstanding journal, *Ear and Hearing*, and the annual meetings, AAS provides an exceptional forum to foster interaction among all disciplines interested in hearing and hearing disorders.

The future, like the past, rests on the ability of the AAS to continue to expand its membership and provide the forum for collegial interaction among all disciplines interested in hearing.

Territorialism or support of a single profession's interests would defeat the purpose of the AAS, and result in its eventual downfall. If selected to serve on the Executive Committee, I would work for the continued growth and development of this unique organization."



Allison M. Grimes,
M.A.

Ms. Grimes is Director of Audiology for the Hearing Society for the Bay Area in San Francisco, California. She holds her M.A. in Audiology from the University of Denver and her M.A. in Speech Pathology from Humboldt State University.

Ms. Grimes states: "The American Auditory Society is facing a crucial test in the next few years, one which will require strong and carefully directed leadership from its Executive Committee. With the advent of the American Academy of Audiology, there are those who question the need for two organizations. Such persons, I believe, fail to understand the fundamental differences between the American Auditory Society and the American Academy of Audiology. The American Auditory Society has a vital role to play in the professional lives of audiologists; it is the only non-partisan professional group where audiologists interact with their colleagues in industry and medicine for ONE purpose: to serve, through research, rehabilitation, and product development the needs of the hearing impaired population. We cannot allow ourselves to believe that the American Academy of Audiology will ever supplant the role and need for the American Auditory Society, and it is my hope to be able to continue the work which I have done over the past few years as an Executive Committee member and as a member of the Long-Range Planning and Membership Committees to strengthen and preserve the American Auditory Society as a vital, viable organization for the audiologic community and the larger professional community serving the hearing impaired."

Don't Forget

The 1989

**American
Auditory
Society
Convention
Scheduled**

**For
New Orleans**

**On
September 24.**

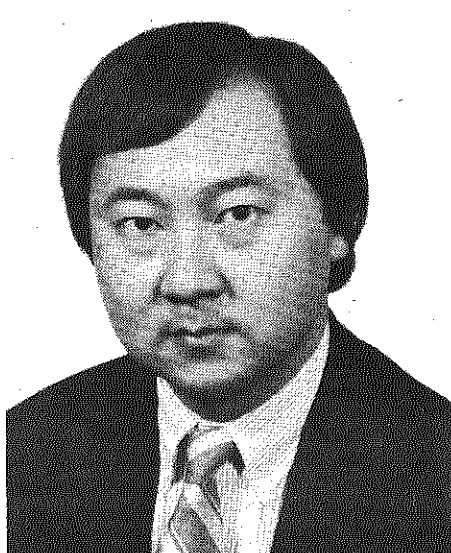
Nominees For Otolaryngology



**Patrick E. Brookhouser,
M.D.**

Dr. Brookhouser completed his M.D. at Johns Hopkins University School of Medicine in Baltimore, Maryland. He served as Chief Resident of Otolaryngology at Johns Hopkins Hospital. He was named as Fellow in Surgery and Fellow in Otolaryngology at the University. Dr. Brookhouser is currently Director of The Boys Town National Institute for Communication Disorders in Children in Omaha, Nebraska. In addition, he is Father Flanagan Professor and Chairman of the Department of Otolaryngology and Human Communication, Creighton University School of Medicine.

He states: "During my service on the Executive Committee of the American Auditory Society, I have been impressed by the Society's record of achievement, as well as by its potential to make future contributions to our field. As intended from its inception, the Society's annual meeting serves as a major forum for exchange of ideas among otolaryngologists, audiologists, auditory scientists, and industry representatives interested in hearing disorders. Founding of the new National Institute for Deafness and Other Communication Disorders at NIH attaches even greater importance to such creative interdisciplinary interaction. Our journal, *Ear and Hearing*, has achieved acceptance as a respected and widely-read publication, but it must be provided with continuing support by our membership to maintain its present high level of quality. Particular emphasis must be given to encouraging participation by younger members of the Society as Executive Committee Members, as presenters at the annual meeting, and as authors of articles in *Ear and Hearing*. In short, I believe that the American Auditory Society should continue to serve its essential role as a *non-political* meeting ground for all of us interested in hearing and hearing disorders."



**Richard T. Miyamoto,
M.D.**

Dr. Miyamoto received his M.D. degree from the University of Michigan and an M.S. in Otolaryngology from the University of Southern California. He completed his residency in Otolaryngology-Head and Neck Surgery at Indiana University, and a fellowship in Otolaryngology and Neurotology at the Otologic Medical Group and House Ear Institute in Los Angeles, California. Currently, he is Professor and Chairman of the Department of Otolaryngology-Head and Neck Surgery at the Indiana University School of Medicine. Dr. Miyamoto was one of the original seven co-investigators in the national clinical trial of cochlear implants in children. He serves on the National Institutes of Health Communicative Disorders Review Committee and is the principal investigator on an NIH grant evaluating sensory aids in deaf children. He is the author and co-author of over 80 publications and abstracts.

Dr. Miyamoto states: "I am honored to share this candidacy for re-election to the Executive Committee of the American Auditory Society. The Society has taken a leading role in serving as a sounding board for a complex multidisciplinary approach focused on the hearing impaired population. The goal of bringing together professionals working in this complex, dynamic arena is one of ever-increasing importance, and I fully endorse the efforts of the Society to this end. I continue to support the concept of bringing together the inputs of academia, industry, and the broad clinical domain of our membership into a unified whole."



**Paul R. Lambert,
M.D.**

Dr. Lambert is currently Associate Professor of Otolaryngology-Head and Neck Surgery and Director of Otolaryngology at the University of Virginia Health Sciences Center in Charlottesville, Virginia. He completed his M.D. degree at Duke University and his Otolaryngology residency at UCLA. Dr. Lambert was a Fellow in Otolaryngology at the House Ear Institute and the Otologic Medical Group.

According to Dr. Lambert: "The establishment of the National Institute of Deafness and Other Communication Disorders represents one of the major achievements of our time for the areas of hearing science and management of the hearing impaired. It will now be important for the American Auditory Society to be a leader among the coalition of organizations that will bring together people and resources during these early critical years of the Institute. As a member of the Executive Committee, I would work toward that goal. The Society's expertise in diagnostic testing and rehabilitation should enable it to be an integral part of an effective lobby to increase Congressional appropriations for the Institute. I welcome the responsibility of helping the American Auditory Society have an important and continuing presence in the development and function of the Institute."

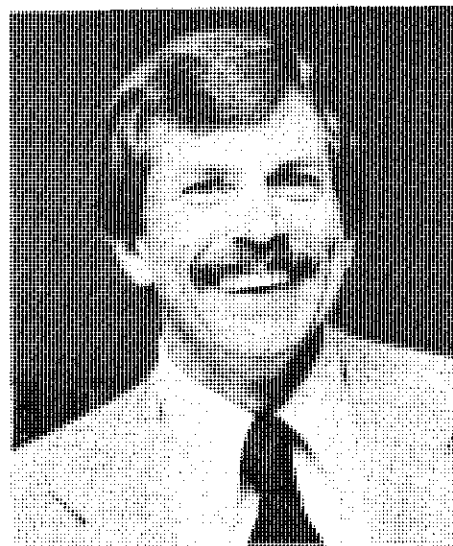


**Sean R. Althaus,
M.D.**

Dr. Althaus completed his M.D. at the University of Buffalo and his Otolaryngology residency at the Veterans Administration Hospital of San Francisco. He completed a clinical fellowship at the House Ear Institute in Los Angeles. Dr. Althaus is a member of the American Otological Society; the American Laryngological, Otological, and Rhinological Society; the American Neurotology Society, and the American Academy of Otolaryngology-Head & Neck Surgery, Inc. Dr. Althaus is currently a Clinical Associate in the Department of Otolaryngology-Head & Neck Surgery, University of California San Francisco Medical Center.

He states: "The American Auditory Society fills a vital role in linking the various disciplines involved in the acquisition and application of knowledge regarding the human auditory process. This should remain the Society's primary goal, as we strive to bring the latest developments in our knowledge of auditory physiology and applied technology and education to the attention of the hearing-impaired public and of the professionals who serve them."

Nominees For Hearing Science



**David J. Lilly,
Ph.D.**

Dr. Lilly completed his Ph.D. at the University of Pittsburgh. He is currently Director of Audiology at Good Samaritan Hospital and Medical Center in Portland, Oregon.

According to Dr. Lilly: "In fewer than 20 years, the American Auditory Society has emerged as a major association for many workers in audition. The success of our Society stems, in part, from the diverse backgrounds of our members. Indeed, the American Auditory Society has been unique in its ability to provide a common forum for audiologists, engineers, hearing aid specialists, otolaryngologists, neurophysiologists, physicists, and psychoacousticians. During

(Continued on Page 8)



**Margaret W. Skinner,
Ph.D.**

Dr. Skinner holds her Ph.D. from Washington University. She is currently Director of Audiology and Assistant Professor of Audiology in the Department of Otolaryngology-Head and Neck Surgery at Washington University School of Medicine.

Dr. Skinner states: "Since its inception 15 years ago, the American Auditory Society has become an extremely important, unique forum for those of us from different professional fields to exchange information and work together toward our common goals 'to increase knowledge of human hearing, to promote conservation of hearing, and to foster habilitation and rehabilita-

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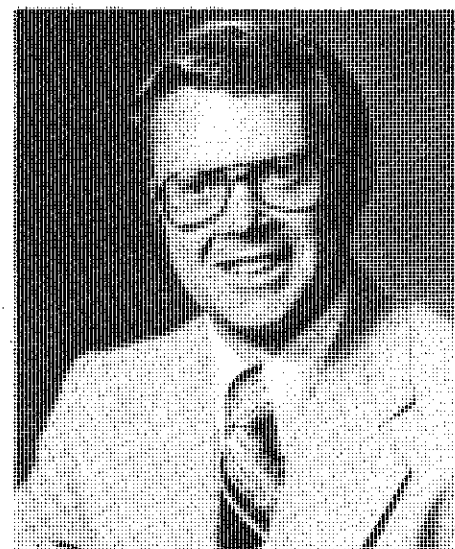
Nominees For Industry



Harry Teder

Mr. Teder holds his degree from Dartmouth College. He is currently Chief Engineer of hearing instruments at Telex Communications, Inc.

According to Mr. Teder: "The growth of the American Auditory Society to its current prominent position in the hearing sciences field is convincing proof of the need for such an interdisciplinary, information-oriented organization. Our journal, *Ear and Hearing*, is, of course, our primary means for disseminating information in our fields, and it has done a superb job. It has occurred to me that if I were forced to reduce my professional reading list to two publications, *Ear and Hearing* would be one of the two (the other published Down Under). One concern I have is the danger of "burnout" among the busy professionals that help produce the magazine; comparing the names on the Editorial Board in Volume 1, Number 1 in 1980, to those in December, 1988, shows two of the original ten veterans still in harness. This, hopefully, indicates that we have both a healthy turnover of participants and continuity from the past. Let us hope this desirable balance continues."



**David A. Preves,
Ph.D.**

Dr. Preves is Vice President of Research and Development of Argosy Electronics in Eden Prairie, Minnesota. He has B.S. and M.S. degrees in Electrical Engineering from the University of Illinois and a doctorate in Biomedical Engineering from the University of Minnesota.

Dr. Preves states: "In the field of hearing health care, the challenges for developing a better understanding of the auditory system and for providing better aural rehabilitation are so great that a concerted effort is needed with all parties working together toward common goals from within their individual disciplines. Once we have obtained a better understanding of how both normal and pathological auditory systems function, it may be possible to design and fit more effective hearing prosthetics. Toward these goals, the American Auditory Society is a unique organization, bringing together members of such diverse disciplines as otolaryngology, psychoacoustics, audiology, and hearing aid design. The organization facilitates the germination of new ideas, identifies research needs, and examines possible new clinical practices. The frontiers of the hearing health care field are further advanced from interactions at annual meetings of the Society, as well as via papers published in its excellent journal, *Ear and Hearing*."

Health Care Providers Will Run 26 Miles For Hearing Help Awareness

A 1989 "Run for Better Hearing" team of hearing help providers and hearing field dignitaries will again run 26 miles on June 17th to focus public attention on available hearing help. The team will participate in the eleventh annual Grandma's Marathon Run in Duluth, MN, and personify the interdisciplinary support for cost-effective public information projects of the Better Hearing Institute, according to Richard T. Burger, BHI president.

The run is a fund-raising effort to strengthen BHI hearing awareness projects, which have generated the equivalent of more than \$178,000,000 in broadcast time and print media space since 1973. BHI's program has been spearheaded by famous Americans who overcame hearing loss. They include Art Carney, Norm Crosby, Phyllis Diller, Richard Dysart, Nanette Fabray, Lou Ferrigno, Florence Henderson, Bob Hope, Surgeon General C. Everett Koop, M.D., Arnold Palmer, Richard Thomas, Charlene Tilton, and many others.

Joining BHI executive director Joe Rizzo will be hearing help providers from across the U.S. and from around the world, including Michael Brocco, Starkey, Miami Lakes, FL; Duncan Clifton, Gennum, Burlington, ONT; Reg Garratt, Knowles Electronics, and BHI board member, Franklin Park, IL; Bruce Gliken, dispenser, Houston, TX; Bob Hanrahan, dispenser, Wilmington, DE; Dr. Gil Herer, American Speech-Language-Hearing Association president, Washington, DC; David Hilton, Rexton, Plymouth, MN; Dr. I. King Jordan, Gallaudet University president, Washington, DC; Dr. Mead Killion, Etymotic Research, Elk Grove, IL; Richard Marschinke, Dahlberg, St. Louis Park, MN; Marco Parodi, Gfeller AG president, Bernafon, Switzerland; Rae Reynolds, Cochlear Corp., Englewood, CO; Nita Rizzo, Joe's "better half," Springfield, VA; Dr. Ross Roeser, Callier Center director, audiologist, and BHI board member,

Dallas, TX; Sharon Roeser, Dr. Roeser's wife, Dallas, TX; Chuck Walton, Activair/Duracell, Bethel, CT; Ron West, Cochlear Corp. president, Englewood, CO; Wayne Whitney, dispenser, Strum, WI; and Michael Winship, Hearing Services president, Eden Prairie, MN.

Organizing and coordinating this year's campaign is a steering committee that includes Al Bruce, chairman, Starkey; Jim Anderson, Qualitone; Pat Koepke, Dahlberg Electronics; Bud Raas, Earmold Design Inc.; Bob Tischbein, Starkey; Mike Winship, Hearing Services; and Tom Yates, Rexton.

Key Run supporters to date include: Activair/Duracell, American Academy of Otolaryngology-Head and Neck Surgery, American Auditory Society, Argosy, Audiotone, Beltone Electronics, Bernafon, Best Labs/Fidelity of Florida, Cochlear Corp., Dahlberg Electronics, Eveready, Fine-tone, Frye Electronics, General Hearing Instruments, Gennum Corp., Goldentone, GN Danavox, Hal-Hen/Widex, *Hearing Instruments* magazine, *Hearing Journal*, Hearing Services Inc., Hearing Technology Inc., Knowles Electronics, Lang Hearing Instruments, 3M/Hearing Components and Disposables, 3M/Hearing Health, Magnatone, Maico, Marcon, National Hearing Aid Distributors, National Hearing Aid Society, Nicolet Audiodiagnosics, Omni Hearing Systems, Oticon, Phonic Ear, Qualitone, RAY-OVAC, Resistance Technology, Rexton, Siemens Hearing Instruments, Starkey, Telex, United Hearing Systems, Unitron, and Voroba Technology.

Supporting earmold laboratories include: All American Mold Labs, Anthony Earmold Labs, Earmold Design Inc., Emsee Labs, Emtech Labs, Microsonic, Mid States Labs, Pacific Coast Labs, Precision Mold Labs, and Westone. *Hearing Instruments* magazine will again host Run festivities in Duluth.

1989 Society Meeting

The 1989 Annual Convention of the American Auditory Society is scheduled for New Orleans on September 24.

The charge of the Local Arrangements Committee is always to surpass the arrangements of the previous year. This year there will be no exception to that rule.

Our convention this year will be in conjunction with AAO-HNS.

The meetings will be held at Tulane Medical Center, which is a very short cab ride from the convention hotels and French Quarter.

Following the meeting we will have a memorable evening of dining and entertainment. The Society banquet will be at the famous Arnaud's

Restaurant in the French Quarter. The newly renovated banquet facilities at Arnaud's include a unique Mardi Gras museum. Following the banquet, we will have '50's-'60's music and dancing by one of the outstanding bands of New Orleans.

For those AAS members who will not be registering for hotel rooms through AAO-HNS, we have made arrangements for rooms at the new Riverside Hilton. Reservation information will be forthcoming in the near future, along with other convention announcements.

The New Orleans weather is quite favorable in late September. There are many activities throughout the city for the entire family, so plan to bring the family along.

First Annual American Academy Of Audiology Meeting Is Overwhelming Success

by: Eric Reynolds

"AUDIOLOGY - A NEW BEGINNING," was the theme of the first annual meeting of the American Academy of Audiology (AAA) held April 21-24, at the beautiful Kiawah Island Resort near Charleston, South Carolina. The meeting, which was kicked off by an exceptional opening night party sponsored by Starkey Laboratories, Inc., offered attendees up to 18 hours of continuing education in a broad range of topics covered in a series of tutorial sessions, poster sessions, workshops, a "CROSS FIRE" luncheon, and a panel discussion. In addition, the meeting featured 45 commercial exhibitors displaying products such as hearing aids, instrumentation, and publications reflecting the state of the art and science of Audiology.

When planning the meeting, the executive committee and advisory board of the academy attempted to develop the kind of activity that would be of help to Audiologists in their professional lives. To achieve this goal, tutorial sessions lasting one to one and one-half hours each were conducted by a panel of invited participants having expertise in specific areas. These expert panels addressed major topics and issues that impact current as well as future aspects of the field of Audiology. Tutorial session topics, which were presented over a two day period, included: Issues in Private Practice; Decision Making in Rehabilitative Audiology; Current Issues in Pediatric Audiology; Adaptive Business Strategies for Future Profit; Update on Selection and Evaluation of Hearing Aids; Digital and Hybrid Hearing Aids; Audiologic Evaluation: Yesterday, Today, and Tomorrow; Current Trends in Educational Audiology; Recent Concepts in Auditory Evoked Responses; New Issues in Aging; Cochlear Implants in Children; and Central Auditory Processing Disorders. The format of these sessions reflected a departure from that of the "traditional" convention format in which specific research findings are reported in a series of lectures lasting a relatively limited amount of time. All sessions were conducive to active participation in discussion, and many attendees took advantage of the opportunity.

Thirty poster sessions were displayed for the purpose of presenting new research findings to the entire profession in areas such as auditory evoked responses from ECochG to the P300 response, hearing aids, vestibular evaluation, hearing impairment in the elderly, and the application of neural networks and computers to Audiology to name a few. The poster sessions were on display throughout the majority of the meeting, providing ample opportunity for all attendees to analyze them thoroughly.

Five intensive workshops designed to provide in-depth exposure to various topics and new techniques to a small number of people concluded Saturday's meeting agenda. The five workshop topics, which were presented simultaneously, included: Evoked Potential Monitoring in the Operating Room; Vestibular Evaluation; Brain Mapping; Calibration: Complying with the Standards; and Practical Aspects of Otoacoustic Emissions. Interestingly, three of the five workshops included topics that some feel do not belong in the realm of Audiology.

Perhaps the most thought provoking activities of the meeting were the six one and one-half hour informal "CROSS FIRE" luncheons occurring simultaneously on Saturday. The executive committee and advisory board intended for these luncheons "to foster small group discussion" and to "provide an opportunity for members to interact over professional areas of mutual interest". Controversial issues were discussed and, as it turned out, debated. Topics of discussion included: Audiology Needs a Professional Doctorate; Non-profit Corporations Should Not Dispense Hearing Aids; Central Auditory Dysfunction: Fact or fiction; Controversies Surrounding Implants in Children; The Role of the Audiologist in the General Practice of Neurophysiological Measurements; and Why You Should Work With but not for an Otolaryngologist in

Private Practice. Those attending the luncheon were free to select the topic of most interest to them. What a great concept!

Dr. James Jerger, distinguished co-founder and honorable president of the AAA, was unfortunately unable to attend the meeting. However, following a meal accompanied by musical entertainment courtesy of Drs. Chuck Berlin and Roy Sullivan, his presidential address, presented via videotape, was featured as the highlight of a banquet Sunday evening. In his presidential address, Dr. Jerger reviewed the history of Audiology in the United States and attributed the very existence of the profession to the "unrelenting efforts" of a relatively small number of individuals. These individuals, whom he referred to as "giants of the past," were C.C. Bunch; Raymond Carhart; Leo Doerfler; William O. Hardy; Grant Fairbanks; Hallowell Davis; Richard Silverman; Ira Hirsh; Wendell Johnson; Mack Steer; Hayes Newby; and Kenneth O. Johnson who, in Dr. Jerger's view, was "the single individual who has had the most influence on the profession as we know it." Undoubtedly, Dr. Jerger too stands among this group of eminent individuals.

Dr. Jerger went on to discuss the current trends in, and their effects on, Audiology as an independent profession. As the field has grown, audiologic activities, some of which are unconventional, have become much more diversified. And while this diversity is good in that it "strengthens our financial base" and "heightens the importance of our position in the health care system," it is bad in that it has spawned "a tendency for those who follow a particular path to want to redefine the entire profession in their own image". Thus, with all the great strides that the profession has made, Dr. Jerger said of the many battles still to be won, "the biggest battle is with ourselves". In concluding this discussion, Dr. Jerger stated, "We can, and should, argue these matters among ourselves, but there is an urgent need to close ranks, suspend our differences, and present a united front when we deal, as we must, with related professions, related professionals, government agencies, third party insurers, etc. We cannot afford the luxury of intra-professional warfare when the future of the entire profession is at stake." Dr. Jerger's professional address was characterized by his usual eloquence, and to have to quote from and paraphrase it truly serves as an iniquity.

A panel discussion focusing on the future of Audiology concluded the meeting on Monday morning. The panelists presented a number of issues deemed to be in need of resolution if Audiology is to prosper as an independent profession in years to come. Included among those issues discussed were: the need for a professional doctorate in Audiology (Au.D.); the expansion of the scope of Audiology to include the provision, performance, and interpretation of clinical procedures such as facial nerve ENOG, ENG, posturography, visual and somatosensory evoked responses, etc.; the need for federal recognition of and funding for research in Audiology; the need to apprise the consumer and the referring professions of the field of Audiology; the need to upgrade the clinical, as well as academic, education of Audiologists; and the need for board certification in areas of Audiology such as aural rehabilitation, evoked potentials, etc.

Of utmost importance, kudos to the program committee, chaired by president-elect Dr. Fred H. Bess, for a meeting which 570 attendees can attest was superbly formatted and conducted. Reportedly, the number of attendees more than doubled that initially expected. Thus, remarkably, while still less than one year old, it is apparent that the AAA is well on its way to becoming a force in the field of Audiology. Indeed a professional organization, "of, by, and for Audiologists" has arrived.

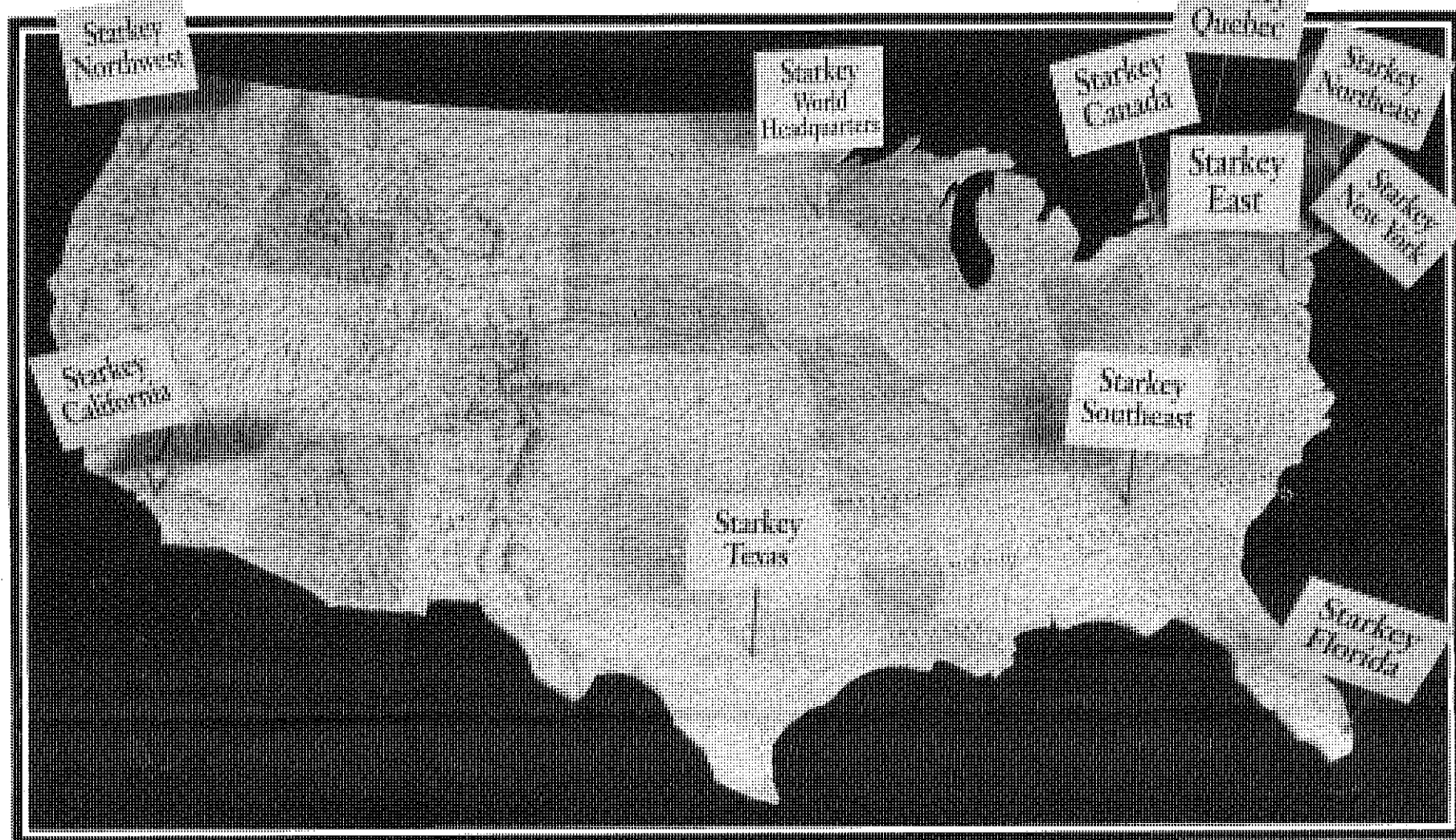
The second annual convention of the AAA, chaired by Dr. Linda J. Hood, will be held April 26-29, 1990 at the Fairmont Hotel in New Orleans, Louisiana. Drs. Chuck Berlin and Roy Sullivan, keep your musical instruments tuned!

Position Available

Auditory Physiologist: The department of Otolaryngology, University of Miami School of Medicine, has an opening for a full-time Research Scientist. This position is on the University's tenure track. The preferred areas of research interest and background include artificial hearing [43.63Mb, 43.66Ts], hearing physiology [43.63Hx, Kz, La, Nc, Pd, Qe, Sg, and Th], and assessment of hearing [43.63Rf, 43.66Ts, 43.66Yw]. Beyond developing an active research program of his/her own, the candidate will guide research activities of residents and clinical faculty. Some teaching is also required. The ideal candidate must have earned a terminal degree (Ph.D., Sc.D., etc.) and have demonstrated productivity through significant publications and grants. Academic rank and salary are commensurate with experience. Please send CV to: W. Jarrod Goodwin, Jr., M.D., Dept. Otolaryngology (D-48), University of Miami School of Medicine, PO Box 016960, Miami, FL 33101, or call (203) 785-2594.

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AMERICAN AUDITORY SOCIETY

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Nominees For Hearing Science

(Continued from Page 5)

David J. Lilly, Ph.D.

this same period, our journal has become an important archival repository for manuscripts concerned with nearly every aspect of audition. The rapid and equitable review process instituted by *Ear and Hearing* and its minimal publication lag are attracting first-rate manuscripts. Moreover, the 'special issues' on selected topics have become required reading in many training programs. The growth and success of the American Auditory Society and *Ear and Hearing* could not have occurred without the dedication and efforts of its officers, editors, and Executive Committee. In consequence, I consider it an honor and a challenge to have been chosen by the Nominating Committee to serve as a candidate for election to the Executive Committee. If elected, I shall do my utmost to foster the continued growth of our Society in an environment that emphasizes scientific achievement and clinical excellence, while

avoiding the 'professional' and political issues that have attenuated the growth of so many other organizations.

(Continued from Page 5)

Margaret W. Skinner, Ph.D.

tion of aurally impaired individuals.' Through the well-planned scientific sessions of the Annual Meetings and the rigorous editorial policy of *Ear and Hearing*, the Society has promoted excellent clinical research, much of which has stimulated state-of-the-art delivery of clinical services in the United States, as well as in other countries. In this era of rapid technological development and an aging population, the Society has an opportunity to foster an even greater understanding of hearing impairment and of ways in which its impact on communication can be minimized. The continued growth and commitment of the Society's membership are essential for realizing these goals."

TELEPHONE, ADDRESS, OR NAME CHANGE??

Ear and Hearing subscribers and AAS
members should send changes to:

AAS
1966 Inwood Road
Dallas, Texas 75235

(NOT to Williams & Wilkins)

CORTI'S ORGAN

The Official House Organ of The American Auditory Society

Volume 10, No. 3

Fall 1985-Winter 1986

Carhart Memorial Lecturer

Samuel F. Lybarger

Introductory Remarks by President

Don W. Worthington

Samuel F. Lybarger is a native of Wilkensburg, Pennsylvania, a suburb of Pittsburgh. He is a graduate of Carnegie-Mellon University, with a B.S. degree in Physics. Entering the hearing aid field in February 1929 on a part time basis while still in school, he has continued in this area ever since. Most of his work has been in hearing aid engineering through the vacuum tube and transistor eras. He is the inventor or co-inventor in 22 U.S. patents relating to hearing aids and audiometers. A few of these patents include; the first master hearing aid fitting device, bone vibrators including the ones in extensive current use, wearable hearing aids with inductive telephone pickup, magnetic microphones, and one of the first directional hearing aid designs.

Since about 1935, Sam Lybarger has been active in standards work related to hearing aid measurements and audiometry. He has served as either a member or chairman of national and international working groups responsible for approximately 10 standards dealing with hearing aids, and 6-8 standards dealing with audiometer specifications and calibration. He has served capacities in organizations related to the hearing aid industry. He has been a contributor to various acoustical and audiological publications (22 published papers), numerous presentations, and has written chapters in nine books. In his long career at Radio Ear he worked as a Laboratory Assistant, Hearing Aid Engineer, Chief Engineer, Executive Vice-President and subsequently President. After retiring in 1973, he has continued his activities in the hearing aid field as an acoustical consultant.

He was one of the original members of our organization, served on the Executive Committee and was President in 1979. It is indeed a pleasure to introduce Samuel F. Lybarger, this year's Carhart Memorial Lecturer.

Samuel F. Lybarger

It is indeed an honor and a privilege to have been asked to give the Carhart Memorial Lecture this year. The fields of hearing measurement and prosthetics are greatly indebted to the pioneering work of Raymond Carhart.

I feel very fortunate to have been able to make the acquaintance of Dr. Carhart when he was working with hearing impaired U.S. Army personnel at the Deshon Army Hospital in Butler, Pennsylvania, near Pittsburgh, and to have been in touch with him on other occasions over the years when he was at Northwestern University. It was at Deshon, I believe, that Ray developed his well-known battery of tests for evaluating hearing aid fittings that is still widely used. At Deshon, each hearing aid candidate went through a prescribed series of listening experiences with three different makes of hearing aids, selected from a hearing aid "library" on the basis of the Carhart test battery. The candidate wore each aid for two weeks, partly at post and partly at home, before a final decision was arrived at jointly by the audiologist and the candidate. Aids were purchased by the Army from participating Pittsburgh hearing aid dealers. Patients then spent about eight weeks in an aural rehabilitation program at Deshon. At that time, (mid 1940's) all aids were of the vacuum-tube type and most of them had rather large "A" and "B" batteries separate from the microphone-amplifier unit.

In Dr. Liden's lecture last year, many of the important scientific contributions made by Raymond Carhart during his very active career were ably described. What has strongly impressed me is the great number of Dr. Carhart's students and associates who have also made outstanding contributions in the fields of audiology and hearing science. The training and inspiration passed along to a large group of

continued on page 8

1985 Annual AAS Meeting Voted The Best

In 1985, reasserting our autonomy, the society convened at the Hyatt Regency Hotel in Atlanta, GA., concurrently with the American Academy of Otolaryngology. More than 140 audiologists, otolaryngologists, otologists, research scientists, students, and other affiliated professionals attended the diversely program of educational and technical sessions.

The day began with a Run for Better Hearing by the hale and hearty just after dawn led by our illustrious leader, Ross Roeser, and his wife, Sharon. The weather was made to order, and the runners arrived all fit for the president's opening remarks.

The highlight of every reunion of the society is the Carhart Memorial Lecture. This oration is presented each year by an outstanding member whose career has been distinguished by contributions to the field of human hearing. The executive committee invited Samuel Lybarger to make the 1985 address. Sam graciously accepted and enlightened us in his tempered engineering parlance, on the subject of "Coupler to Insertion Response Factors".

Special events included the awarding of plaques to departing executive committee members, to the Carhart lecturer, to the Beltone Distinguished Audiology Teacher of the Year, and to the secretary-treasurer of (AAS) for his enthusiastic and all-persasive activities within and on behalf of this multi-disciplinary organization. The recognition of Ross Roeser consisted of a mini-roast, partly in the form of a slide show of Ross as only an intimate could have told it. Fellow audiologist former classmate, Mike Seidemann, missed nary a fault nor an attribute in his commentary.

The day's meeting concluded with a professional and social call by Derald Brackman to open dialogue between AAS and AAO regarding dwindling numbers of physicians in the ranks of the academy. He made it clear that the academy would like to see an increase in the number of other workers in the hearing health field. Some of our society audiologists were concerned that they had paid their dues, only to be relegated to "second class citizens" lacking voting rights. Dr. Brackman expressed some surprise that such concerns exist. In the end it was decided that an AAO committee would study the issue of academy membership and draw up a resolution encouraging participation in that organization's annual congresses.

The evening's entertainment planned by Atlanta resident, Tad Zelski, perpetuated the society's reputation for light-heartedness. The historical Fox Theater provided an old world atmosphere for a cocktail buffet of tantalizing food and drink accompanied by the lively and danceable music of a three piece orchestra. Many of our friends really kicked up their heels. A fitting grand finale to a long but stimulating day.

With each passing year our attendance grows. The 1986 meeting will be held in Detroit in conjunction with ASHA. Bill Rintelmann is the chairman and everything is in readiness for a return engagement to this northern city. Moreover, the appointment of Lazlo Stein as 1987 coordinator guarantees that the tradition of exciting meetings will continue. In the year of his tenure we will convene in Chicago, continuing our policy of meeting on alternate years with the AAO. Larger attendance is anticipated each year as membership increases.

(See Pages 6 & 7 for Convention Pictures)

Student/Resident Membership Category Approved By Executive Committee

At the 1985 meeting of the American Auditory Society Executive Committee a student/resident membership category was approved beginning January 1986. This category of membership will allow students/residents in training to join the American Auditory Society at a significant reduction over the \$35.00 membership rate. The approval of this category will

In this issue

New Membership Status Approved Page 1

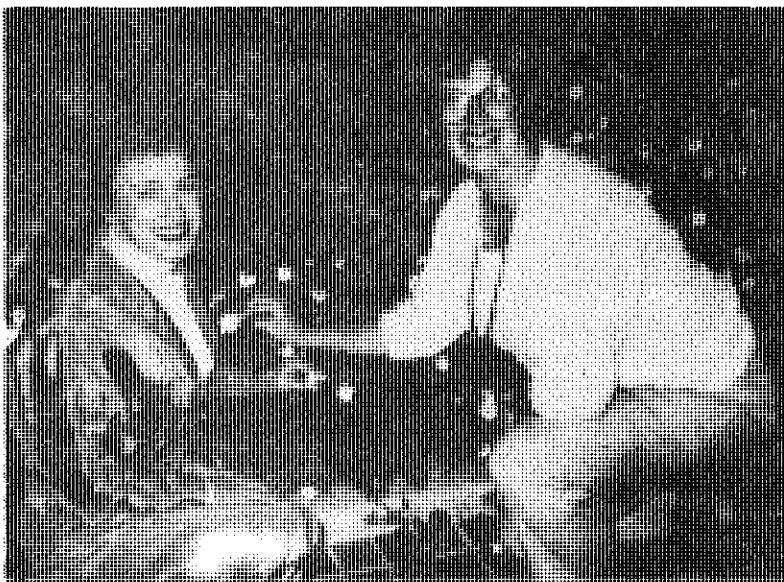
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allow students and residents to have full membership privileges, including subscriptions to *Ear and Hearing* and *Corti's Organ*. The dues for the student-resident membership were set at \$20.00 per year. Page 8 of this issue of *Corti's Organ* contains a membership application that can be submitted by students-residents for 1986 membership.



Virginia Berry & Susanne Kos

New Editors Take Reign Of Corti's

After 3 years as Editor-in-Chief, Suzanne Greening Brown is turning over Corti's to fellow AAS members Virginia Berry and Suzanne Kos. The AAS Executive Board approved this appointment at its meeting in October.

Virginia Berry has been an active member and supporter of AAS since 1978. She assisted with the planning and operation of the 2 Society Conventions held in New Orleans, her home town. Now living in Little Rock, Arkansas, Virginia is the State Consultant for Educational Audiology with the Arkansas Department of Education.

A graduate of Vanderbilt University, Virginia has held positions in medical audiology, supervision, university training, administration and much more. She has served on ASHA Committees and is currently the President of the Arkansas Speech, Language and Hearing Association. Virginia brings varied experience and interests with her to this new position as Editor.

Susanne Kos, assistant editor of *Corti's Organ*, has been an integral part of the AAS since its beginning in 1974. At that time she was working at the Callier Hearing & Speech Center in Dallas while completing her MA training at North Texas State University. She participated in

the founding of the AAS and has served as an executive committee member and as assistant secretary from the Society's inception to the present. At the November, 1985 meeting she took on another responsibility with the AAS of Assistant Editor of the *Organ*, primarily handling advertising.

Ms. Kos worked at Callier Center until 1980, at which time she left to enter private practice as a dispensing audiologist. For four years she managed a branch office of a metropolitan retail organization. In October, 1984, she became self-employed, opening her own office in Arlington, TX.

Thanks Suzanne Brown for a job well done. Welcome Virginia Berry and Suzanne Kos!!

Second International Otology Workshop Scheduled

On April 1-5, 1986, the Second International Otology Workshop will be held in Riva del Garda, Italy. Distinguished faculty from around the world will discuss current research and trends in hearing aid technology, cochlear implants, neurology of hearing, diseases of the ear, and much more. For full program details, contact:

CRS Amplifon
Via Ripamonti 129
20141 Milano, Italy

This sounds like one program not to miss!!

From The Editor...

When I was asked by the Executive Committee to become the Editor of *Corti's Organ*, I was both complimented and overwhelmed. My professional ego was thrilled that the officers of our Association would have this amount of confidence and faith in my abilities. But--my personal ego was scared! The thought of "following in the footsteps" of the series of experienced Editors who came before me was frightening.

Rather than letting the fear consume me, I looked on this position as my ultimate challenge. My goal is to have this publication become more than that "newspaper" that is delivered a few times a year. The American Auditory Society is an Association with two publications. Granted, *Ear and Hearing* is the professional journal of AAS. That does not mean that *Corti's Organ* can not also be a viable means of communication.

Corti's Organ can and should be our vehicle for a more relaxed exchange of clinical and scientific information. This publication is our opportunity to share research, express concerns, discuss issues and report findings without the usual intimidation of journal style. *Corti's Organ* is the voice of the Association and, typically, only a very few take advantage of it.

Corti's Organ can be **anything** we want it to be, and everything we want it to be. But, the "we" in that statement is not the royal we. For this publication to be the voice of the Association, every member must take responsibility. As Editor, I see my role as Team Captain. No Editor should have the right to dictate the total direction of a publication nor should the Editor have the responsibility of generating every issue. It's always easy to be critical of things we had no part in. Criticism usually takes less energy than creativity. But--we are an energetic group.. Channel that energy and your abilities in a positive direction.

I promise to commit myself to producing a quality publication AAS will be proud of. You, as members, need to commit yourselves to being a necessary part of the entire process. Do you want *Corti's Organ* to be used only to publish directory information, meeting abstracts and agendas, election results, etc? I don't! Share your experiences with the membership in whatever form you want. Any clinical or case management information you are excited about, the membership will be excited about.

As a national organization, our publication should reflect national input. As a member, I don't want to read issue after issue covering the concerns of a "select" few. I want to read about innovative procedures, changing trends, new technology, the better mouse trap, whatever. In addition, keep us posted on honors, awards, travels, and all news. Expose yourself!!!

An "official" publication doesn't have to mean inflexible, rigid data reporting. A wealth of information can be conveyed in an enjoyable manner. Let's all work together to make *Corti's Organ* a unique publication that makes the American Auditory Society a landmark in professional associations.

Virginia Berry, Editor
11701 St. Charles Blvd.
Little Rock, AR 72211
(501) 371-2554

Speech for the Deaf

London, England
July 9 - August 15, 1986

East Texas State University is offering a six semester hour course in speech for the deaf at the University of London. The course is being offered through the Institute of Anglo-American Studies, an academic collegium co-sponsored by the University of Southern Mississippi, East Texas State University, the University of South Alabama and Phi Theta Kappa.

The course will be taught by British professors in the very heart of oralism and visits will be made to British oral schools for the deaf. The course can be taken for graduate or undergraduate credit and, if approved by your school district, will count toward career ladder requirements.

Although final plans are not yet complete if you are interested contact:

Frank L. Brister, Ph.D.
Director, Communication
Disorders Center
East Texas State University
Commerce, Texas 75428
Phone: 214-886-5910

The approximate cost is expected to be \$2000 which includes airfare, tuition and lodging.

This is the eighth year of the British Studies Program and many other courses are also offered as well as short term courses. If you have questions in general about this program contact:

Glenn P. Fournet, Ph.D.
Associate Director,
Institute of Anglo-American
Studies
East Texas State University
Commerce, Texas 75428
Phone: 214-886-5115

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1966 Inwood Road
Dallas, Texas 75235
(214) 783-3036

Susanne Kos, M.A., Assistant Secretary

Minutes of the Corti's Organ Editorial Board Meeting

Members present: Virginia (Anderson) Berry, Susanne Kos, Ross Roeser

Place:
Hot Springs, Arkansas

Date:
September 11, 1985

The meeting began by discussing the winter/Spring 1985-86 issue. The primary material for this issue will include Sam Lybarger's Carhart address, minutes from the 1985 Executive Committee and Editorial Board meetings, announcements of the Editorial Board changes, and highlights and photos of the 1985 meeting. It was agreed that the issue should be in the mail at least by the first few weeks in January. It was also agreed that the issue would be printed in Little Rock and shipped to Dallas for mailing.

Future issues will include advertisements. Susanne Kos agreed to have this as her primary responsibility as the Assistant Editor for *Corti's Organ*. She agreed to write a letter that would be sent to all potential advertisers before the end of the year. Ross Roeser indicated that he would generate a mailing list that would be used for sending the material. It was agreed that the rates would be \$250.00 for a full page, \$150.00 for a half page, and \$100.00 for a quarter page. All matters dealing with advertisement would be sent through Susanne Kos.

Of the revenues generated by advertisement, 25% would be split equally between the Editor and the Assistant Editor of *Corti's Organ*. Virginia Berry raised a question about the format of *Corti's Organ*. She indicated that she would like to explore changing the newspaper format to something more permanent. There was no objection, although the newspaper format was felt to be less expensive than any other format. She indicated that she would explore costs for changing the format.

It was stated that an active editorial board would benefit *Corti's Organ*. Each editor would be responsible for generating material that would be submitted to the editor. The Editorial Board in the past was based on regional representation and did not generate much information, since the board members were not contacted routinely to solicit information. It was suggested that the Editorial Board members be selected to generate material for feature columns in *Corti's*. The columns could be based on ideas that were featured in past issues, such as the interrogatory, "name that lesion", "AAS Trivial Pursuit", etc. Or, new features could be generated. Virginia Berry indicated that she would consider different individuals for each feature column and contact them.

The final issue discussed was the budget. There has been no specified annual budget for *Corti's*, primarily because the costs have been so reasonable. Virginia Berry indicated that she would look into costs of printing *Corti's* in Little Rock and then,

Roeser Roasted & Toasted by Exec

Editor's note: The following is an excerpt from a speech given by Don Worthington at the 1985 AAS Convention.

On September 22, 1972, a group of 20 highly respected professionals, representing the disciplines of audiology, otolaryngology, the hearing aid industry, education of the hearing impaired, and auditory neurophysiology, met to discuss the formation of an organization that would fill an existing need in the area of human hearing. While not all persons attending that inaugural meeting felt another organization was needed, the large majority did. They felt a need for an organization that would provide a platform for the interchange of information between disciplines. The group founded the American Auditory Society.

One year later, in 1973, the first formal meeting of the Society was held in Dallas, Texas, with 50 interested persons in attendance. At that meeting, the Executive Committee was elected. Aram Glorig was appointed President, Dix Ward was appointed Vice-President, President-Elect and Ross Roeser was appointed Secretary-Treasurer. During the years since 1973, there have been eight different Presidents of this Society, but only one Secretary-Treasurer.

Every President, myself included, are deeply indebted to Ross for his diligent, meticulous dedication to details, his unsurpassed ability to work with people, his total support of the President and most important, his vision of what the American Auditory Society could become.

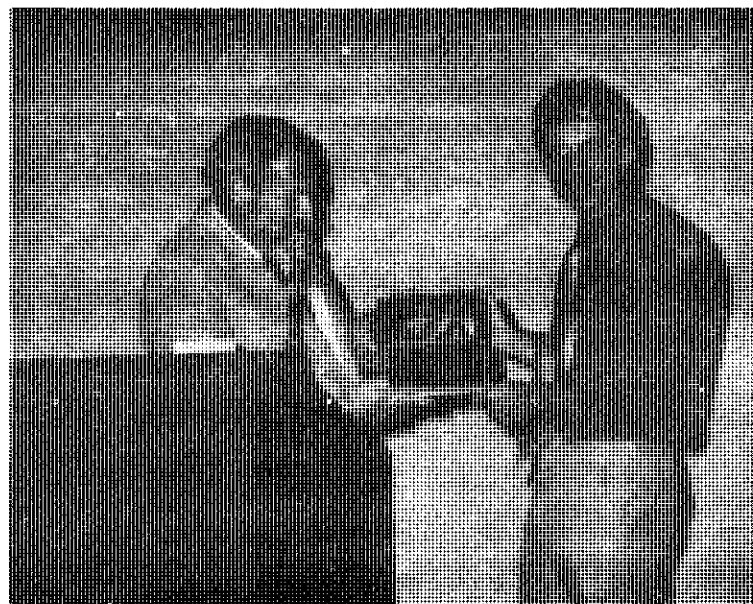
In effect, he serves as an Executive Director of this organization, a position which is a highly visible, highly paid

position in most societies. Ross and his lovely wife Sharon have handled all of membership applications, renewals, all financial matters, most organizational follow-up including overseeing plans for annual meetings, Executive Committee meetings, as well as reminding the members of the Executive Committee of assignments and commitments that had made.

When the society organized, the members decided to publish a formal scientific publication. This effort was spearheaded by Dr. J. Donald Harris and appeared as the *Journal of the American Audiology Society* and changed to the *Journal of the American Auditory Society* in 1978 with the society name change.

In 1980, Ross Roeser took over from Dr. J. Donald Harris as the Society's Editor in Chief. Ross introduced a new name, *Ear and Hearing*, and a new philosophy and format that have resulted in a Journal that has assumed a place of national and international prominence. As Dr. Robert Keith states, "The success of our Journal is largely due to the vision and guidance of this talented man and his efforts are due to respect and gratitude of our clinical and scientific community who have benefited from his work."

Ross Roeser, for all your efforts in our behalf, Secretary-Treasurer for over 12 years, Associate Editor, *Corti's Organ* 1976-1984, member, Editorial Policy Board of the *Journal of the American Auditory Society* 1975-1979 and, last but certainly not least, as Editor in Chief, *Ear and Hearing*, 1979-1985, the membership of the American Auditory Society salute you and honor you.



Mike Seidemann presents award to Ross Roeser after roasting him with the aid of graphic slides.

Keith Asks AAS to SHARE Their Knowledge

The primary purpose of SHARE (Speech and Hearing Alliance for Resource Exchange) is to assist in the international development of Audiology and Speech Language Pathology training programs and services through the sharing of surplus textbooks, journals, reprints or other materials and resources.

based on this information, a budget would be generated.

There being no further business the meeting was adjourned.

Ross J. Roeser, Ph.D.
Secretary, Treasurer

A secondary purpose is to share experiences and information among persons with the common interest of helping the communicatively impaired.

The primary recipient of these resources will be training or clinical programs located in developing nations who do not have the means to purchase journals and textbooks necessary for the development of professionals who will serve the communicatively handicapped in their countries.

The method used for obtaining books, journals, and other materials will be through donations from individuals and libraries. Although more recent editions of textbooks are more useful, any edition can be helpful as background information for beginning scholars and as

Continued on page 12

Editorial Board Working Hard

Date: Sunday, October 20, 1985, 10:00 a.m., Atlanta, GA
Present: Robert W. Keith, Hiroshi Shimizu, Deborah Hayes, Eugene Sheeley, Don Worthington, J. Gail Neely, Laszlo Stein, and Ken Startt from Williams and Wilkins Publishing Co.

A continuing problem with scheduling is that there is not sufficient backlog of accepted manuscripts. Since May, 1984, approximately 53% of submitted manuscripts have been accepted, 39% rejected, and 13% returned to the author (s) for revision. Ken Startt from Williams and Wilkins stated that a rejection rate of 40 - 60% is appropriate for *Ear and Hearing*. At present, 24 manuscripts are out for review, 18 are awaiting revision, and 8 have been accepted for publication. Dr. Keith stated that manuscripts returned to author (s) for revision are held for 6 months and will not be sent for second peer review if the revisions are satisfactory. After 6 months, the manuscript will be considered new and will be subject to the entire editorial process.

In addition, *Ear and Hearing* was allotted additional pages, and the journal pages are underutilized. This adds to the problem of not having sufficient backlog.

Fred Bess is scheduled to have a special issue on unilateral hearing loss for Vol. 7, No. 1 (Jan/Feb), 1986. Dr. Bess is also scheduled to edit a supplement for the July/August issue, which will focus on the papers presented at meeting dedicated to Jay Sanders.

The March/April issue will feature eight manuscripts plus Dr. Sheeley's software directory and the Book Review Section.

The May/June issue will be a special issue on ENG, edited by Dr. Neely. Twelve authors include Dave Lilly, Tom Balkany, Alfred Coats, Kevin Kavanagh, Paul Lambert, John Dickens, Keith Clark, and Barry Hirsch. Topics will focus on the dizzy adult patient, the dizzy child, ENG techniques, errors and artifacts, peripheral lesions, non-localizing lesions, and torsion swing. It is hoped that his special issue will be used as a manual on ENG and will be a valuable teaching tool. It is hoped that these special issues will create a backlog of accepted

manuscripts.

Dr. Worthington reported that many otolaryngologists with whom he has been in contact seem to consider EH to be a journal just for audiologists. He would like to see more otolaryngologists become active members of AAS and submit their manuscripts to EH.

Dr. Neely suggested that speakers who present at various meetings be personally contacted with regard to the possibility of publishing their paper in EH. An incentive would be to offer publication within four months, but manuscripts would still be subject to peer review and must be appropriate for the readership. There was some discussion regarding the appropriateness of approaching these individuals for the purpose of soliciting their manuscripts. There was no objection to begin this practice.

Dr. Neely is willing to contact otolaryngologists, audiology/otology teams, and department chairpersons to solicit case studies, unusual cases, etc., stating that there is a lot of good, unpublished data. Dr. Neely is interested in receiving manuscripts from physicians on such topics as SICU monitoring, or monitoring psychoacoustics, approaches to differential diagnosis, early identification, medical aspects of congenital hearing loss, etc.

The journal philosophy was discussed. The majority of EH manuscripts are related to hearing aids/aural rehab (approx. 20%-25%). We would like more manuscripts dealing with diagnostic approaches and psychoacoustics of auditory pathology.

The breakdown of subscribers is:

- 500 US libraries
- approx. 1700 members
- 600 non-members
- 125 students
- 300 overseas (mostly libraries)

Adding a new section to the journal entitled Grand Rounds of Audiology or a case studies section was discussed. It was the opinion of the board not to add another section. We could devote one page to a single case that would have teaching value and do that through the clinical notes sections.

The time element of 8-10

Continued on page 5

1983 and 1984 Ear and Hearing Editor's Award Recipients Announced

At the 1985 meeting of the American Auditory Society, held in Atlanta on October 21, the 1983 and 1984 *Ear and Hearing* Editor's Awards were presented. The recipients were selected by the entire Editorial Board. Several papers nominated by the Board were judged according to their scholarly merit and their impact within the field. Awards were presented for both 1983 and 1984 because an Executive Committee discussion of the award's status delayed the 1983 presentation by one year.

For 1983 two papers were selected: "Auditory Brainstem Response Variability in Infants" by Janet E. Stockard, James J. Stockard, and Ronald W. Coen, and "Neural Correlates of Sensorineural Hearing Loss" by Richard J. Salvi, Don Handerson, Roger Hammernick, and William Ahroon.

For 1984 three papers by the same authors on the same topic were selected by the committee: "Application of Clinical Decision Analysis to Audiological Tests" by Robert G. Turner and Donald W. Nielsen; "Clinical Performance of Audiological

and Related Diagnostic Tests" by Robert G. Turner, Neil Shepard, and "Formulating and Evaluating Audiological Test Protocol" by Robert G. Turner, Gregory J. Frazer, and Neil T. Shepard.

In presenting the awards, Ross J. Roeser, Ph.D., retired editor of *Ear and Hearing*, expressed his satisfaction with the excellent quality of material that is being submitted to the journal.



Richard Salvi accepts The *Ear and Hearing* Editors Award from Ross Roeser with pride.



Robert Turner accepts the 1984 *Ear and Hearing* Editors Award for three papers on Clinical Decision Analysis in Audiology

1985 American Auditory Society Meeting Available On Videotape

The 1985 annual meeting of the American Auditory Society was videotaped and will be made available to members in January 1986. Michael F. Seidemann, Chairman of the Audio-Visual Committee, provided his expertise in preparing this material for the society. A formal announcement of the availability of the videotape will be made early in 1986. Those interested in more information should contact:

Michael F. Seidemann, Ph.D.
Joachim Eye, Ear, Nose and Throat Hospital
145 Elk Place
New Orleans, LA 70112

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THEN----- please send any name, address or status changes to the Dallas Office. This is the official address for the Society and should be used

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Dallas, Texas 75235

Send old and new information. This helps in processing.

20th Anniversary!!

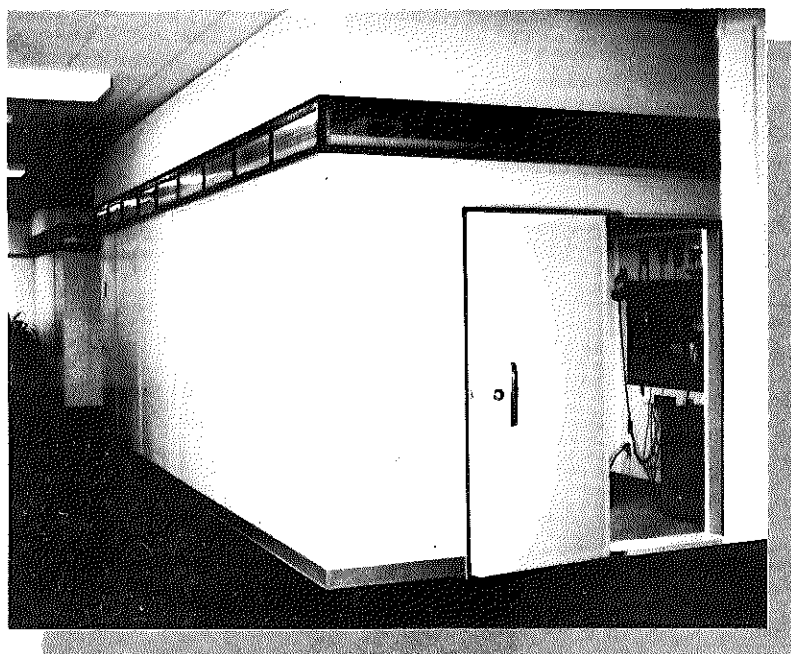
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Lipscomb Announced as '85 Beltone Distinguished Teaching Award in Audiology Winner

David M. Lipscomb, Ph.D., a professor and director of the Noise Research Laboratory at the University of Tennessee, Knoxville has been named the winner of the 1985 Beltone Distinguished Teaching Award in Audiology (BDTAA).

The BDTAA is the only teaching award given in the field of audiology. It was initiated by Beltone Electronics Corporation, the nation's largest manufacturer of hearing aids and hearing test instruments, to recognize contributions made by the teaching profession in the field of audiology. To be eligible, instructors must be nominated by a current or former audiology student and have five or more years of experience in teaching audiology.

Lipscomb has been an audiology instructor for more than 25 years. He is a leading authority on the effects of environmental noise on man. He is also well known for his research on industrial audiology and the physiology of the ear. He is on the board of directors of the Better Hearing Institute and the executive board of the American Auditory Society. Lipscomb was named a fellow of the American Speech-Language-Hearing Association in 1973. A charter member of the Southern Audiological Society, he also served as the organization's president in 1974. He has published dozens of technical and non-technical articles and has authored five books and 12 chapters in books. A sought-after speaker, he has lectured at 50 professional workshops and seminars, delivered papers at 24 conventions and given more than 350 presentations to schools, service clubs and other organizations.

As the 1985 BDTAA winner, Lipscomb receives a \$1000 cash award, a commemorative plaque and a luncheon in his honor at the University of Tennessee from Beltone. He also has the opportunity to deliver three Beltone-sponsored lectures at different universities across the country.

In addition, Beltone awards the University of Tennessee, Knoxville, a \$2500 scholarship to assist with the education of an audiology graduate student. A \$100 award is given to the students who nominated Lipscomb.

Lipscomb was chosen from a field of 16 candidates. His required essay on "The Future Role of the Audiologist in the Healthcare Field" was one of seven factors weighed by a blue-ribbon panel of judges. The panel was composed of 10 prominent professionals in the field of audiology—including two previous BDTAA winners -- plus one student representative chosen by the National Student Speech-Hearing-Language Association.

The judges were Charles I. Berlin, Ph.D. (1984 winner), Louisiana State University; Fred Bess, Ph.D., Vanderbilt University; Michael R. Chial, Ph.D., Michigan State University; Marion R. Downs, M.A., University of Colorado; Gloria Garner (student), University of Georgia; Jack Katz, Ph.D., State University of New York; Bob Keith, Ph.D., University of

Minute Highlights

• **Membership Up**
• **New Membership Category Approved**
• **New Ear & Hearing Section Editor**

Appointed
• **Ear & Hearing Expanded**
• **Video Taping Big Success**

• **AAS Joins Council for Better Hearing & Speech Month**
• **AAS Receives "Gift" of \$5,000**

• **Publication Materials to be sent to Underdeveloped Countries**
• **Long Range Planning Underway**

Date: October 20, 1985

Place: Hyatt Regency Hotel, Atlanta, Georgia

Time: 1:15 p.m.

Members Present: LaVonne Bergstrom, F. Owen Black, Deborah Hayes, Robert W. Keith, Suzanne Kos, David Lipscomb, James J. Pappas, Ross J. Roeser, Michael F. Seidemann, and Don W. Worthington.

Members Absent: Charlie D. Anderson, Suzanne Brown, Earl Harford, E. Robert Libby, William L. Mayerhoff, James A. Nunley, Wayne J. Staab, and W. Dixon Ward.

Guests: Patrick E. Brookhouser, Barry Freeman, Alison M. Grimes, David J. Lilly, Richard T. Miyamoto, William F. Rintelmann, Hiroshi Shimizu, Eugene Sheeley, Ke Startt, Laszlo K. Stein.

1. President Worthington, **opened the meeting** at 1:22 p.m.

2. President Worthington welcomes the **new Executive Committee members** attending the meeting. They were Patrick E. Brookhouser, Alison M. Grimes, David J. Lilly, Richard Miyamoto, William F. Rintelmann, and Laszlo K. Stein.

3. The **minutes from the 1984 meeting** of the Executive Committee were reviewed and approved.

4. The **Treasurer's report** for the period 1/85 through 9/85 was reviewed by Ross Roeser. There were no comments.

5. Ross Roeser gave a **report on membership**. The current 1985 membership as of 9/30/85 was 1,686. This represents approximately 130 more members than 1984. Of the 1,686 members, 1,470 (87%) are audiologists, 6 are engineers / industry representatives, 39 (2%) are hearing aid specialists, 149

Cincinnati; Geary McCandless, Ph.D., University of Utah; Frank E. Musiek, Ph.D., Dartmouth-Hitchcock Medical Center; Ralph R. Rupp, Ph.D., University of Michigan; and Terry L. Wiley, Ph.D. (1983 winner), University of Wisconsin.

The result of this year's Beltone Distinguished Teaching Award in Audiology Search was officially announced on October 21 at the annual meeting of the American Auditory Society in Atlanta, GA.

Beltone Electronics distributes its products through a network of trained and authorized hearing aid specialists at more than 3300 locations in the U.S. and Canada. The company has produced more than 2 million hearing aids since it was founded in 1940.

(10%) are physicians, and 22 (1%) are associate members. The special membership offer sent by the Promotional Committee generated 292 new members for 1985 and 95 new members for 1986.

6. A discussion was held regarding the possibility of establishing a **student resident membership category**. By opening up this membership category it would give students and residents an incentive for joining the Society. Following the discussion a motion was made to create a student/resident special membership rate of \$20.00. This motion passed. Members requesting this form of membership will have to have their student/resident status verified by an official representative in their university.

7. David Lipscomb reported on the **1985 meeting**. He thanked his committee members and gave special recognition to Mike Seidemann for his work. This year there were far many more submitted papers than could be considered for presentation. Based on his, he suggested that the possibility of having either two meetings per year or parallel sessions be considered. After discussion it was decided that neither of these two options was possible.

8. Bill Rintelmann discussed plans for the **1986 meeting** in Detroit. He said that there were 10 members appointed to his committee. The meetings will be held at Wayne State University. The Carhart Speaker was identified and LaVonne Bergstrom will be responsible for contacting him to verify his participation.

9. Chicago was chosen as the site for the **1987 meeting**. Laszlo Stein was voted the Chairman for that meeting.

10. The Chairman of the **19th International Congress of Audiology** for 1988, Moe Bergman, contacted Don Worthington to find out if the American Auditory Society would be willing to meet in Jerusalem, Israel during that congress. After discussion, a motion was made that AAS retain the format of alternating the annual meeting between ASHA and AAO/HNS. The motion passed. As an alternative it was suggested that Don Worthington contact Moe Bergman and ask if it would be possible to have a special session that the International Congress meeting devoted to papers presented by members of the American Auditory Society.

11. Ross Roeser was **appointed Secretary/Treasurer** for 1987.

12. **Suzanne Kos** was made an ex officio member of the Executive Committee and appointed **Assistant Secretary** for 1987.

13. Robert Keith gave a report on **Ear and Hearing**. The section editors and the reviewers of manuscripts were thanked for their participation. During 1985 a total of 85 manuscripts were submitted. The acceptance rate was 52%, with 32% of the manuscripts rejected and 16% waiting for revision. In 1986 the January - February journal will be a special issue on unilateral hearing loss edited by Fred Bess. The March-April issue will include a computer software directory by Eugene Sheeley and several letters to the editor regarding the cochlear implant supplement. The May - June issue will be a special issue on electronystagmography. In the July-August issue there will be an essay tutorial on testing in the surgical intensive care unit by Jay Hall and a mini series on neuroanatomy by Frank Musiek. The September - October issue may be a supplement. The special issues have been scheduled in an attempt to create a backlog of accepted manuscripts that will help the scheduling process.

Dan Schwartz resigned as the section editor for hearing aids. Dr. Keith expressed his deep gratitude for Dr. Schwartz' contribution in the past year. A new section editor has been identified. (Subsequent to the meeting, Lou Beck was contacted and accepted the post as section editor for hearing aids beginning in January 1986.)

A new reference style will be started with the January-February issue. Also, a new thrust in the journal will be to attempt to get physicians as readers. New sections in the journal will include a calendar of events and letters to the editor.

Ken Startt reported on the financial condition of **Ear and Hearing**. He said that his company is very pleased with the progress that the journal has made. 1984 paid circulation reached an all time high of 2,848 subscribers, a 15% increase over 1983. Paid circulation for 1985, as of September 30, was 3,079 subscribers. Prospects for continued growth in 1986 are excellent. The page allowance for 1985 and 1986 is 400 text pages. Member subscription price will remain the same (\$23.00) for 1986, and most likely will not change for 1987. The journal will generate a profit for 1985, which will be used to pay off the accumulated deficit. With the current growth of the journal the accumulated deficit will be paid in 1986, and a profit should be made, which will be split 50-50 with the American Auditory Society.

14. Joe Rizzo, Executive Director of the Better Hearing Institute, presented on BHI. He indicated that he would welcome the participation of the American Auditory Society in sponsoring a public service

announcement through BHI. The cost of this public service announcement is about \$20,000.00.

15. A discussion was held on **Corti's Organ**. Suzanne Brown was not able to attend the meeting and suggested that consideration be made to replace her as the editor. After discussion, an individual was identified. (Subsequent to the meeting Virginia Anderson Berry was contacted and she accepted the appointment. Suzanne Kos was named assistant editor.)

16. Ralph Naunton gave a report on the Long Range Planning Committee. He reviewed the history of the committee and recapped the activities of the committee. He was his recommendation that the Long Range Planning Committee be formalized, specific number of members be identified, and work begun on formulating long range commitments for the Society. These concepts were supported and it was decided that the committee have four members on it. Ralph Naunton was appointed as the Chairman and David Lilly was appointed a member from the Executive Committee. Other committee members will be appointed the Chairman.

17. Mike Seidemann gave a update on the **Membership Promotional Committee**. During 1985 three activities were conducted. A direct mail to ASHA audiology members and members of AAO/HNS participation in the Run for Better Hearing, and having a display at the annual meeting of AAO/HNS. After discussion was the decision to add especially otolaryngology and the hearing aid industry. Through offering a student/resident category of membership it was felt that membership from these two segments will be increased. Mike Seidemann will remain the Chairman of the Membership Promotional Committee for 1986.

18. Suzanne Kos reported on the **Committee for Qualifications**. She presented 3 lists of members. Following review by the Executive Committee all applicants were accepted for membership. (The names of those accepted appear at the end of the minutes.) Suzanne Kos was reappointed as the Chair of the Qualifications Committee.

19. LaVonne Bergstrom reported on the **Carhart Speaker Committee**. She indicated that Dr. Joseph Hawkins has been contacted and has accepted the invitation for 1986. Following this, the Executive Committee members suggested several possible members of the committee are: E. Robert Libby, Don Worthington, and Patrick Brookhouser.

Worthington, and Patrick Brookhauser.

20. Mike Seidemann reported on the **purchase of the video equipment**. He described the equipment, which represents a capital outlay of approximately \$2,000.00. The entire proceedings of the 1985 meeting, as well as all future annual meetings, will be videotaped and offered to members. Seidemann stated that he had already received about 25 orders for the Gunar Liden tape, and that sale of this tape has generated an income of about 20% of the capital outlay for the equipment.

21. Don Worthington reported on the **joint committee on infant hearing**. He said that he had written a letter requesting representation for AAS on the committee. That request was reviewed by committee members in July and the response indicated that they were concerned about over balancing the committee with one discipline, i.e., audiologists, otolaryngologists, etc. In addition, they had received requests from other groups for inclusion. It was their decision to not create a committee that was unmanageable. They recommended to their parent organizations (ASHA, AAO/HNS, etc.) that the committee have one main committee with voting members then add consulting organizations (of which AAS would be one) that would give input but not allowed to vote on issues. This recommendation was sent to the ASHA Executive Board for consideration. The Executive Board of ASHA turned it down and recommended that AAS not be included.

22. Don Worthington reported on the **Beltone Teaching Award in Audiology**. He indicated that this year the Beltone Award would be presented by the president (D. Worthington). This is the protocol that was adopted at the 1984 meeting of the Executive Committee. Because there may be a conflict of interest, he indicated that in the future, if Beltone or any other organization requests to have their award presented at the AAS meeting, that the president be authorized to delegate the responsibility to another Executive Committee member.

23. Don Worthington reported on the **OSHA Hearing Conservation Amendment Case**. He stated that in 1984, three judges from the Fourth Circuit Court voted 2 to 1 to vacate the OSHA Hearing Conversation Regulation. They concluded that the amendment exceeded OSHA's authority by making employers responsible for hearing loss incurred outside the workplace. The Department of Labor and OSHA filed a petition for review of the case by the Court of Appeals for the Fourth Circuit.

To support the appeals case, American Speech - Language - Hearing Association (ASHA), along with the American Auditory Society, Academy of Dispensing Audiologists, Academy of Rehabilitative Audiology, etc. requested leave of the Court to appear as Amici Curiae.

The Amici Curiae was prepared

by ASHA, reviewed by three executive committee members from AAS and filed. The case was argued and material presented on June 3, 1985. On September 23, 1985, the Fourth Circuit Court of Appeals unanimously reversed the decision of the three judge panel.

24. Don Worthington reported on the former **Medical Audiology Society** donation. The past president of the Medical Audiology Society had contacted Charlie Anderson as President of AAS in 1982 concerning monies that had been left in their treasury that they were considering donating to the American Auditory Society. However, no closure had been made on this issue. In an effort to determine where this matter stood, President Worthington contacted Sharon Graham, a former officer of the Medical Audiology Society. She reiterated the fact that there was money in the treasury but indicated that it would take a vote of the full membership to donate it to any group. She stated that she would follow up this matter with former members and see what their desires would be. Once Sharon Graham reports back to Don Worthington he will inform the Executive Committee of the final decision.

25. Deborah Hayes reported on **Continuing Education Units**. She indicated that she had investigated CEU's from several organizations. It was clear that it would be possible to get CEU's, but no arrangements were made for the 1985 meeting. It was recommended that for the 1986 meeting AAS obtain CEU's from ASHA, CME's from the AMA, and approval from the National Hearing Aid Society.

26. The possibility of having a **hospitality suite at ASHA** was raised by Don Worthington. After discussion it was decided that we should attempt to meet at ASHA. Don Worthington indicated that he would pursue this.

27. Dareld Brackmann requested time following this year's annual meeting to discuss attracting more **audiologists involved in AAO/HNS**. This request was granted.

28. David Lipscomb discussed the possibility of having **workshops at the annual meetings**. Since there was a scheduling problem already with the annual meeting, one suggested was of accomplishing this was to alternate a workshop with ASHA or AAO/HNS meetings. Another possibility was to co-sponsor a workshop with another institution. This item was referred to the Long Range Planning Committee.

29. Alison Grimes reported on the possibility of participating in the **Council for Better Hearing and Speech Month**. She had attended a meeting earlier in 1985 as a representative of the American Auditory Society. She indicated that the Council is actively seeking new members. There are two types of membership-sponsor, costing \$800.00 annually and giving a voting privilege, and cooperating group, costing \$400.00 and having no voting privilege. The advantages and disadvantages of joining the Council were

Executive Committee At Work and Play

The AAS Executive Committee worked feverishly against the clock to deal with the 26 items on the agenda, each potentially deserving of a full day's attention. It is well known to veteran committee members that a unique dining experience awaits them at the end of their labors. They are, therefore, motivated to accomplish this formidable task within the allotted time. The minutes are printed herein to inform you of the Society's accomplishments.

This year's gastronomic delight, reminiscent of a popular 1960's fad, was fondue served at Dante's Down the Hatch on the Poop Deck!! Dante himself met us at the metro subway station in a vintage firetruck and wheeled us rather precariously to his restaurant. There socializing and dining took place in a maritime setting amid alligators, turtles, moats and old sailing sloops. Becky and Tad Zelski are to be complimented for these arrangements.

discussed and following that a motion was made that the American Auditory Society participate in the Council for Better Hearing and Speech Month beginning with the May 1987 campaign. This motion passed. A second motion was made to appoint Alison Grimes as the representative from the American Auditory Society to the Council. This motion passed.

30. Ross Roeser indicated that a **bequest of \$5,000.00** had been made to AAS by the Crystal Leon Elliott Sharp estate. The bequest was made specifically for the study and research for a cure for the hard of hearing, not deafness. After discussion it was the decision that the Long Range Planning Committee study ways in which this money could be used most effectively for its intended purpose.

31. Robert W. Keith presented information on a **project to send outdated publication materials** to underdeveloped countries. He asked members of the American Auditory Society to submit materials to him and he would insure that they would be sent to deserving countries. A full description of this program will be published in **Corti's Organ**.

32. President Worthington expressed appreciation to the following **departing Executive Committee members**: Charlie Anderson, Earl Harford, William Meyerhoff, James Nunley, and W. Dixon Ward.

33. There being no further business the meeting was adjourned at 5:32 p.m.

Don W. Worthington, Ph.D.
President

Ross J. Roeser, PhD.
Secretary/Treasurer



Continued from page 3

weeks in the Information for Authors was discussed. Dr. Shimizu questioned whether or not revisions should be handled directly by the section editor. It was decided that if the matter could be handled more efficiently and if it would reduce turn around time, then the section editor should correspond with the author(s). This is true especially in the case of minor revisions. It seemed that manuscripts that required major revisions should be handled by mail, since reviewers tend to have many specific comments and the author(s) would greatly benefit by having the reviews on hand.

Basic science papers, although few are submitted, should be evaluated on merit and should be published when appropriate. Publication of this type of paper will add prestige to the journal and possibly make it more competitive.

It was announced that Dan Schwartz resigned as section editor of the hearing and aural rehab. section because of an extremely busy schedule. Lucille Beck and Gerald Studebaker were suggested as replacements. A brief discussion of their qualifications was held. It was finally decided that Dr. Beck be offered the position. Dr. Keith will contact her. Dr. Keith expressed his deep appreciation to Dr. Schwartz for his contributions to the journal over the past year.

There does not appear to be a wide range of referees who are used as reviewers. Everyone was encouraged to expand their list of reviewers.

There is no mandate that requires the section editor to use two reviewers for manuscripts. The opinion of the section editor and one other reviewer is sufficient, if warranted.

Letters to the editor will begin in the March/April issue. This will be announced in the highlights of forthcoming issues. The first letters to the editor will be in response to the cochlear implant supplement. A disclaimer will be published in future special issues indicating that the articles are not peer reviewed and the editor of that supplement is not responsible for content.

The 1986 issues of EH will include a calendar of meetings and upcoming events.

Because referencing and style has been a problem in the past, the Uniform Requirements format was adopted and will take effect with Vol. 7, No. 1, 1986. The Uniform Requirements brochure was distributed.

Reverse color for the cover (green on white) for supplement was discussed. Ken Startt will investigate this possibility.

Dr. Sheely requested subject areas for book reviews. He will also invite other individuals to critique new books. Dr. Sheely usually initiates the request to the publisher but some books are automatically sent. He has some difficulty obtaining new medical books and asked for assistance in this matter.

Dr. Neely was thanked for his active role as the otologist member of the editorial board. Similarly, all members of the editorial board were thanked for their help during the past year.

With no other agenda, the meeting was adjourned.

Bob Keith, Ph.D.
Editor and Chief
Ear and Hearing

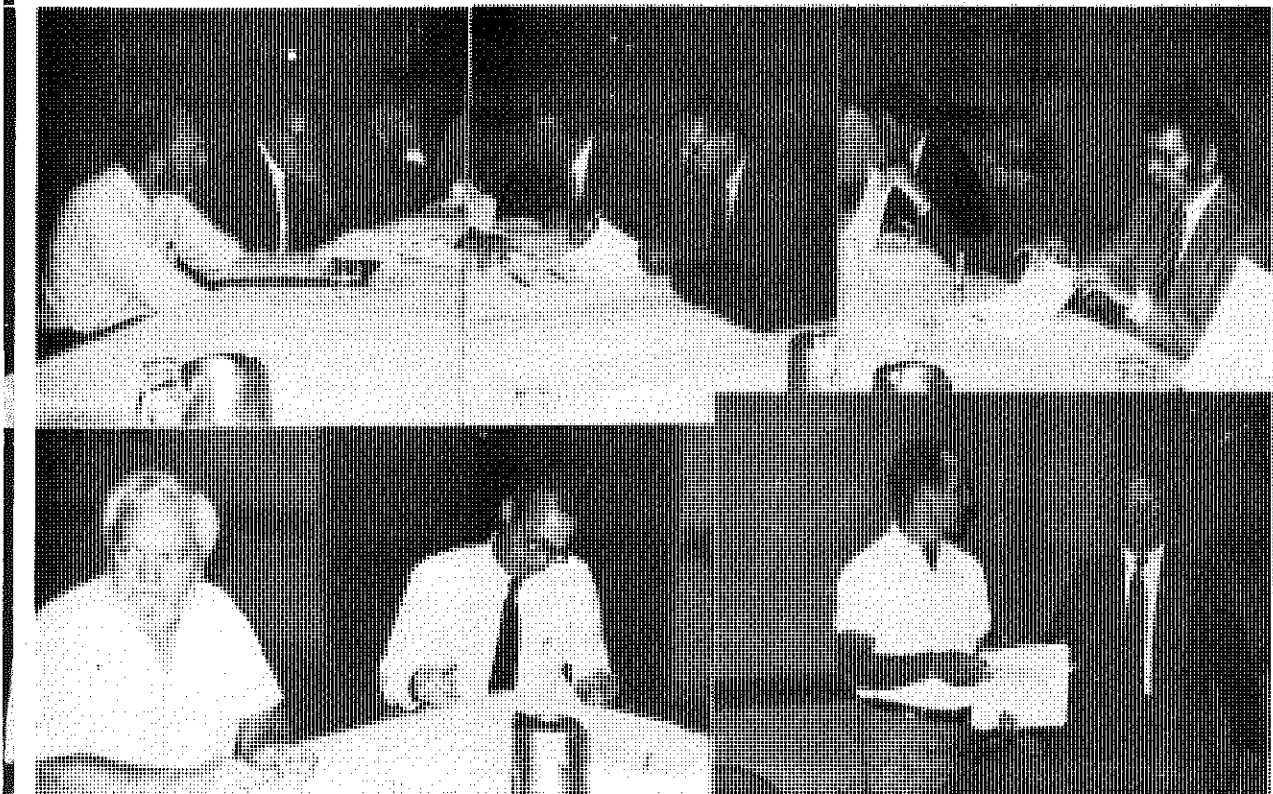
Speakers

The Heartbeat of the Convention



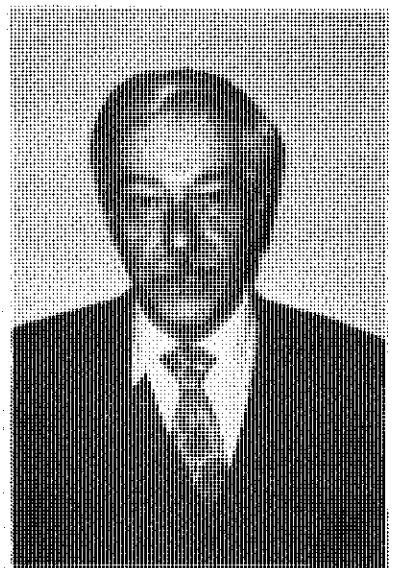
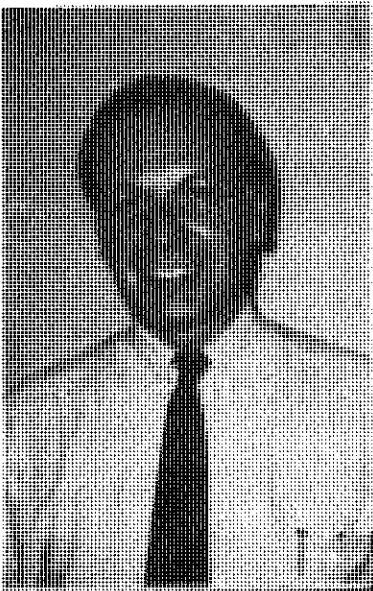
Executive Committee at Work

Executive Committee at Ease

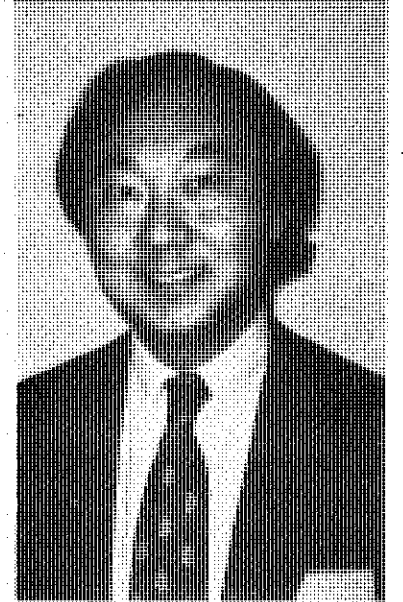
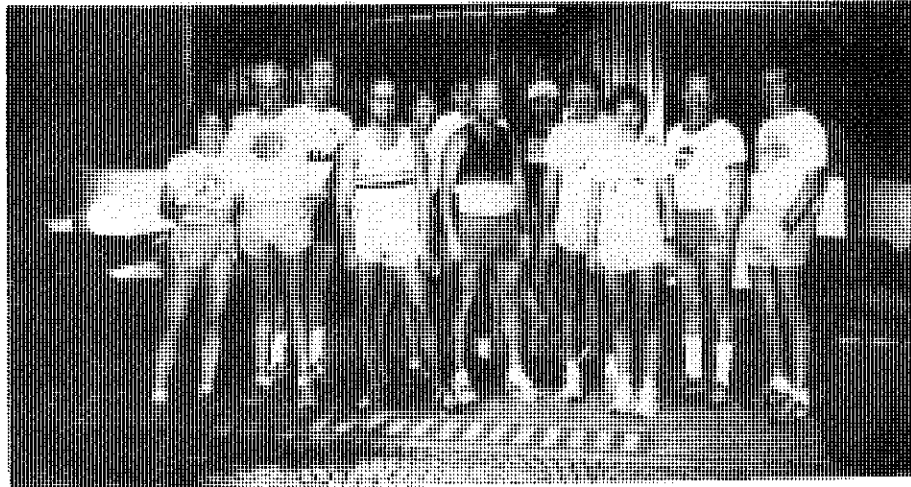


Meet the New Executives Committee members

(Not Shown: David Peeves)



Runners Hit the Pavement



Dancing at the Fabulous Fox Theater



**Applicants Approved For
Membership in the American
Auditory Society
(Membership up 136)**

Name	Degree	Location
Laurence Abikoff	M.A.	Gilford, NH
Jane Acri	M.A.	Washington, D.C.
Shari Action		Springfield, MO
Jayne Ahlstrom	M.S.	Augusta, GA
David Albee	M.S.	W. Palm Beach, FL
Nancy Allonen	M.S.	S. Weymouth, MA
Jane Amis	M.S.	Burlington, VT
Sigmund Ancerewicz	ENT	Portland, OR
Duane Anderson	Ed.D.	Griffin, GA
Robin Andrews	M.S.	Shaker Hts., OH
Joyce Anglin	M.A.	Halifax, Nova Scotia
Berjis Anvar	B.Sc.	Lompoc, CA
James Arneson	M.Ed.	N. Attleboro, MA
Paul Austin	Ph.D.	Englewood, CO
Clarence Baer, Jr.	M.C.D.	Lafayette, LA
Jewell Baggett	Ph.D.	Stevens Point, WI
Robert Balas	M.A.	Evansville, IN
Julia Balbach	Ph.D.	Palo Alto, CA
Larry Ball	M.Sc.	Scarborough, ONT.
Denise Barbiero		Omaha, NE
Nancy N. Barlow	M.S.	Falls Cr., VA
Vergine Barsoumian	M.A.	Minneapolis, MI
Christine Bauleke	M.A.	Kansas City, MO
Kathleen Bauman	M.S.	Waterville, OH
Janice Beaton	Ph.D.	Chevy Chase, MD
Lucille Beck	MSPA	Los Angeles, CA
Carissa Bennett	B.A.	Bolingbrook, IL
Jan Berg	Ph.D.	Wausau, WI
Julie Berger	Ph.D.	Dorchester, MA
Janet Berrick	MSPA	Exton, PA
Katharine Berry	M.A.	Charlotte, NC
Judith Bible	Ph.D.	Logan, UT
James Blair	M.S.	Chesterstown, NY
Susan Boggia	M.S.	Erie, PA
Linda Boisvert	M.A.	Huber Heights, OH
Mary A. Brenneman	M.A.	Etobicoke, ONT.
David Brown	M.A.	Baltimore, MD
Eloise Brown	B.A.	Chicago, IL
Dede Brownstein	M.A.	Durham, NC
Deborah Bruton	M.A.	Oxford, MS
Elizabeth Bryant	M.Ed.	Wilmington, DE
Jan Buckley	M.S.	Sitka, AK
Susan Bunting	M.S.	Baltimore, MD
Margaret Burke	M.A.	Lincoln, NE
Ellen H. Burton	M.S.	Carbondale, IL
Deborah Carlson	M.S.	Fort Worth, TX
Lisa Carter	M.S.	Columbus, Ohio
Christine Casuccio	M.S.	Houston, TX
Ingrid Cedar	M.A.	Troy, MI
Geraldine Chadwick	B.A.	Swissvale, PA
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Rochelle Cherry	M.S.	Providence, RI
Margo Chiappinelli	Ed.D.	Montreal, Quebec
Elizabeth Cole	M.Ed.	Seattle, WA
Suzanne Connors	B.Sc.	Ottawa, Ontario
Leonard Cornelisse	M.D.	Cincinnati, OH
Robin Cotton	Ph.D.	Cleveland, OH
Clarke Cox	M.S.	Dallas, TX
Eduardo Cruz	Ph.D.	Birmingham, AL
Arthur Dahle	M.A.	Winter Park, FL
Joseph DeChant	M.Sc.	Holcomb, MS
Betty DeLoach	M.A.	Austin, TX
Denise Descouzis	M.Ed.	Cincinnati, OH
Mary DeSollar	M.S.	Covington, LA
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Robert DiSogra	M.S.	Memphis, TN
Elizabeth Domico	M.S.	Fargo, ND
Susan Dreith-Ratliffe	M.Sc.	Toronto, Ontario
Reena Duchowny	M.S.	Dallas, TX
Alisa Duggan	M.A.	Dallas, TX
Craig Duncel	M.A.	New York, NY
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Stephen Hart		
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Barbara Swartz	M.S.	Niceville, FL
Robert Sweetow	Ph.D.	San Francisco, CA
Barbara Tatge	M.A.	Germantown, TN
Diane Taylor	M.A.	Woodhaven, NY
Diane Thompson	M.S.	Seattle, WA
Michael Threadgill	M.S.	Ft. Worth, TX
Sylvia Tobin		Albuquerque, MN
Diane Traficanti	M.A.	Maywood, IL
Henry Trahan	MCD	Lafayette, LA
Nancy Tremel	M.A.	Courtenay Province, BC
Beverly Turner	B.S.	Memphis, TN
Dwight Valdez	M.A.	Manchester, NH
Edward Van Der Heiden	M.S.	Burlington, IA
Paula Varette		Kingston, Ontario

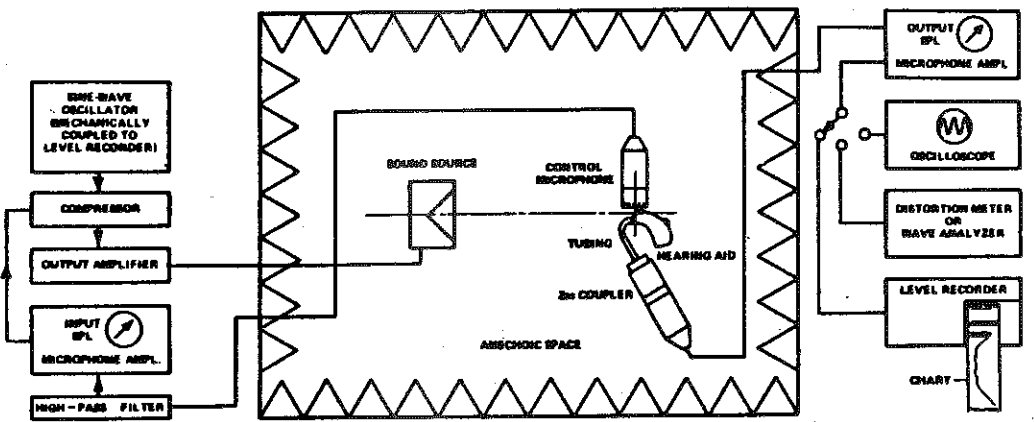


Figure 1. Basic measurement setup for testing hearing aids.
From Katz' Handbook of Clinical Audiology, Third Edition.

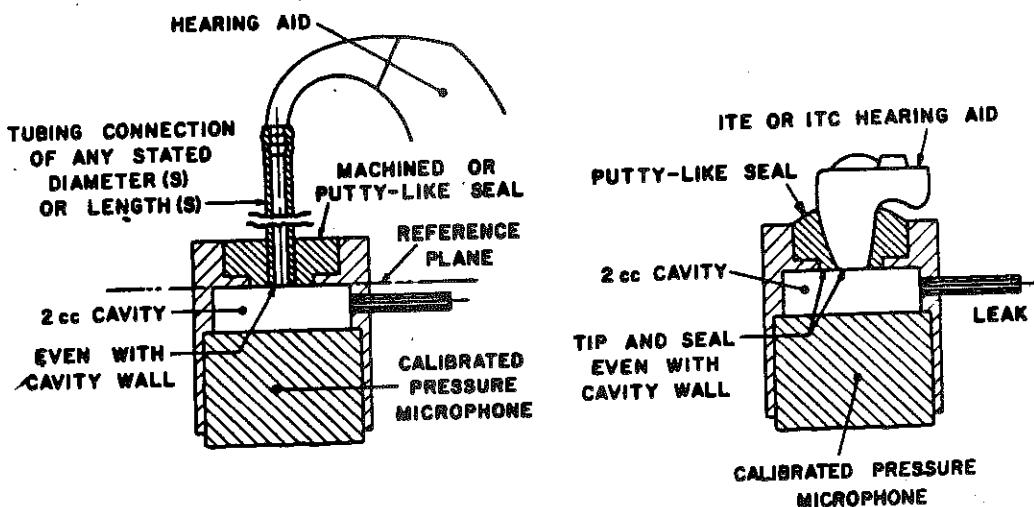


Figure 2. Two forms of HA-1 2cc coupler.
From Katz' Handbook of Clinical Audiology, Third Edition.

graduates must be considered as perhaps the greatest contribution made by Dr. Carhart.

It has been my privilege to be acquainted with, and in some cases, to have worked with many of these individuals. One of the first that I met was Leo Doerfler, who was at Deshon even before Dr. Cahart and who later completed his doctoral work at Northwestern. Dr. Doerfler, Director of the Audiology at U. of Pgh. for over 25 years, has in turn been an outstanding teacher and contributor to the field of audiology. I am indebted to him for reviewing and improving my comments about the Deshon era. Also at Deshon, I made the acquaintance of Francis Sunday, later a doctoral graduate of Northwestern and Director of Audiology at Indiana University Medical Center. One of Dr. Sunday's duties at Deshon was to make earmold impressions using dental plaster, the standard method at that time. Much of the electronics work for Dr. Carhart at Deshon was done by the late Kenneth Stewart, who became a professor at the University of Pittsburgh. The Doerfler-Stewart test for malingering was developed at Deshon.

It would be difficult to name all of the individuals who studied under Ray Carhart with whom I have had the good fortune to be acquainted. To mention just a few, they include Don Dirks, Earl Harford, Jim Jerger, Roger Kasten, Wayne Olsen, Tom Tillman and Laura Wilber. Most of these have been active in Standardization work.

An interesting connection that I had with Ray Carhart was that my very competent secretary for several years before I retired, Jean Owens, had done secretarial work for Ray at Deshon.

Ray Carhart's greatest concern at Deshon Hospital, back in the forties, was to match the performance of a hearing to the needs of a hearing impaired individual. We have seen a great deal of progress since then, particularly in the direction of measuring the performance of an aid on a person and in the direction of protocols relating the required performance of a hearing aid to an individual's hearing characteristics. Equally important are the great strides that have been made in hearing aid technology.

The coupler measurement of a hearing aid has proved essential, first, because it provides accurate, repeatable data on the operation of an aid and second, because the data are available on all aids sold in the U.S. as the result of FDA regulations. Thus, the coupler measurement can well be the starting point for the selection of an aid for a particular type and degree of hearing impairment.

A full description of procedures to obtain hearing aid performance data, using the standard 2cc coupler, is contained in American National Standard S3.22-1982, available from the Acoustical Society of America. A basic measurement setup for testing hearing aids is shown in Fig. 1. A loudspeaker delivers the desired sound pressure level (SPL) at the microphone opening of the hearing aid. This input SPL is accurately measured by a calibrated standard microphone placed close to the microphone opening on the aid. The output of the standard microphone is

fed back to a compression circuit in the pure tone oscillator supplying the loudspeaker and a constant SPL at the microphone opening is maintained. The acoustic output of the hearing aid is fed to a standardized 2cc coupler via a specified tubing connection. In the case of an in-the-ear or in-the-canal, the tip of the aid that projects into the ear canal is placed flush with the reference plane (outer cavity surface) of the 2cc coupler and the aid is sealed in place with modeling clay or similar material. Fig. 2 shows these two coupler arrangements. The SPL developed in the coupler is then automatically recorded as a function of frequency. In addition to a basic test system such as that shown in Fig. 1, test equipment of modest size can be used to make accurate tests on most kinds of aids and to produce printouts of the data. Much more complex systems using computerized control are also employed.

It is well known that 2cc measurements, particularly those of frequency response, may not give the best indication of the results that will be obtained on a person. A better indicator of what the aid does on a person is given by its insertion gain. (or response).

Technical portion 1

To review the concept of insertion gain, first look at Fig. 3. A sound source is delivering a suitable constant sound pressure level L_0 at a test point in a non-reflective space. In Fig. 4, a head facing the source has its center at the test point. A hearing aid amplifies the sound and produces a sound pressure level L_3 at the eardrum. In Fig. 5, the hearing aid is removed and the sound pressure level at the eardrum is L_4 . A plot of the results is shown in Fig. 6. The flat 60 dB SPL line shows the SPL at the test point with the head absent. The solid upper curve is the SPL produced at the eardrum when the hearing aid is present. The dashed line is the SPL at the eardrum with the ear canal open and no hearing aid present. The dotted curve shows that there is considerable amplification without the aid due primarily to ear canal resonance. The increase in SPL at the eardrum for the two conditions is the insertion gain, the amount the hearing aid really adds. Note that the effect of ear canal resonance and other factors is small at low frequencies, but very significant from 2 to 5 kHz.

The insertion gain (or response) of a hearing aid compares well with functional gain or response as measured subjectively and is a good indicator of how the hearing aid will amplify sound for the user.

Insertion gain is influenced by the direction of incidence of the sound. For standardized in-situ tests, 0° incidence, with the sound source a meter away, is used. This corresponds roughly to the position of a person speaking directly to the listener. It is also possible to derive the insertion gain for random incidence, as has been suggested by Killion and Monser (1980). This would correspond to a situation where the speaker was farther away and located in a fairly reverberant space. In addition to the direction of arrival of sound, the position of the

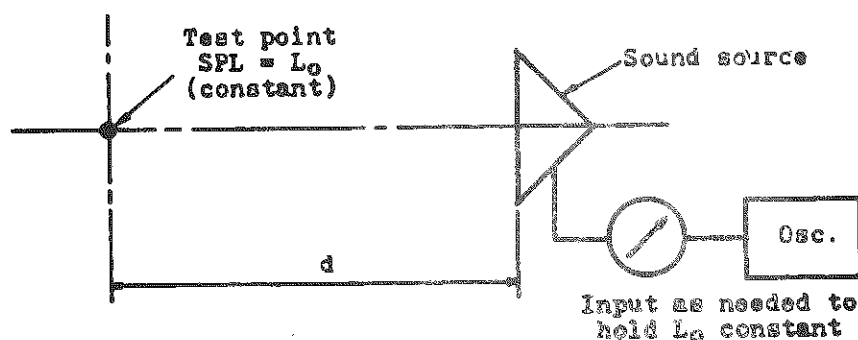


Figure 3. Constant sound pressure level at a test point.

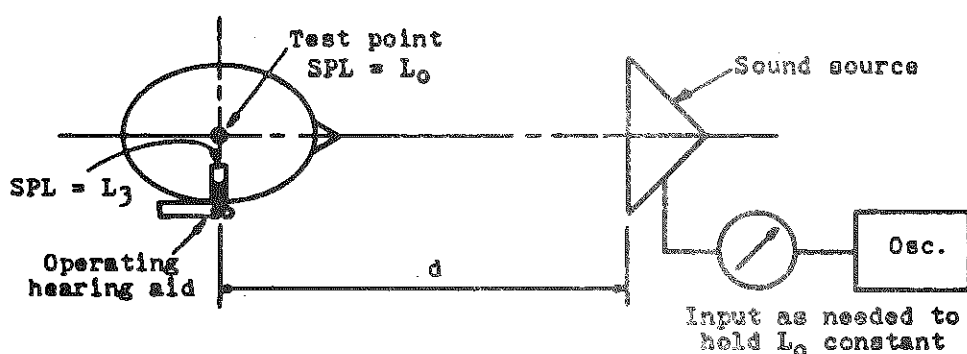


Figure 4. Head in sound field with with hearing delivering an amplified signal to the eardrum.

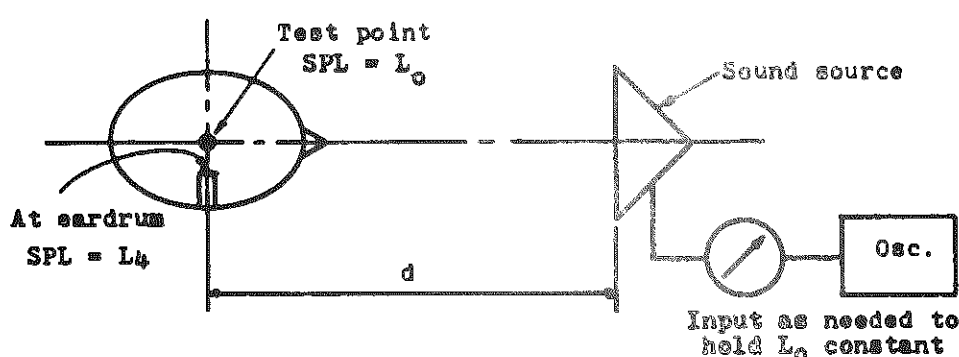


Figure 5. Head in sound field without a hearing aid.

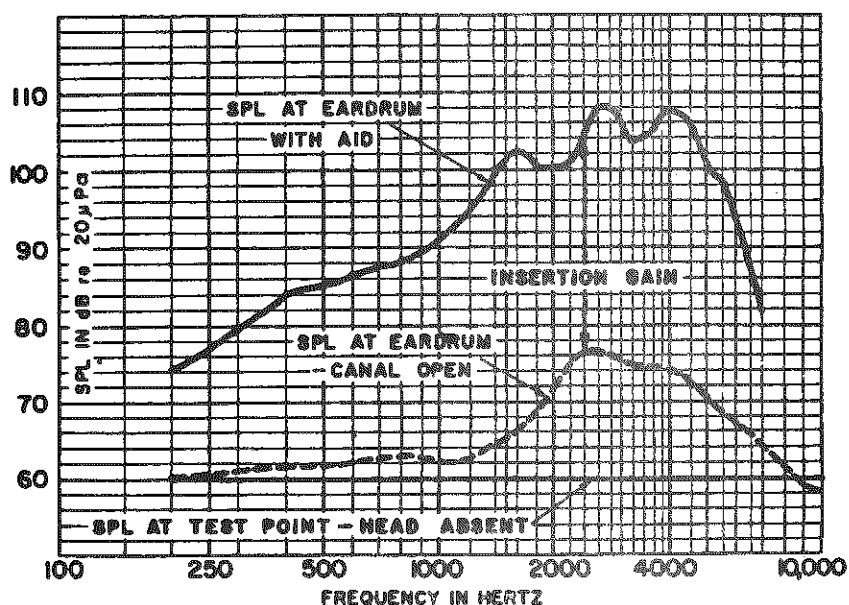


Figure 6. Insertion gain of a hearing aid.

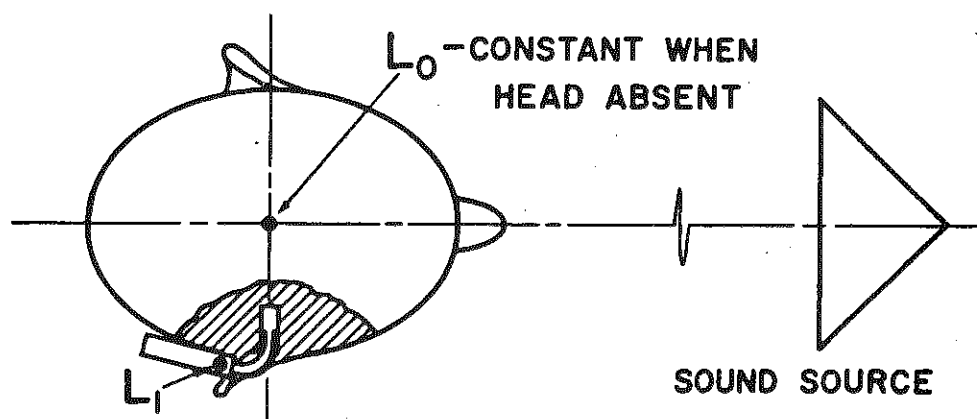


Figure 7. Head and sound source with hearing aid. L_0 is the SPL with the head absent. L_1 is the SPL at the sound entrance of the hearing aid microphone.

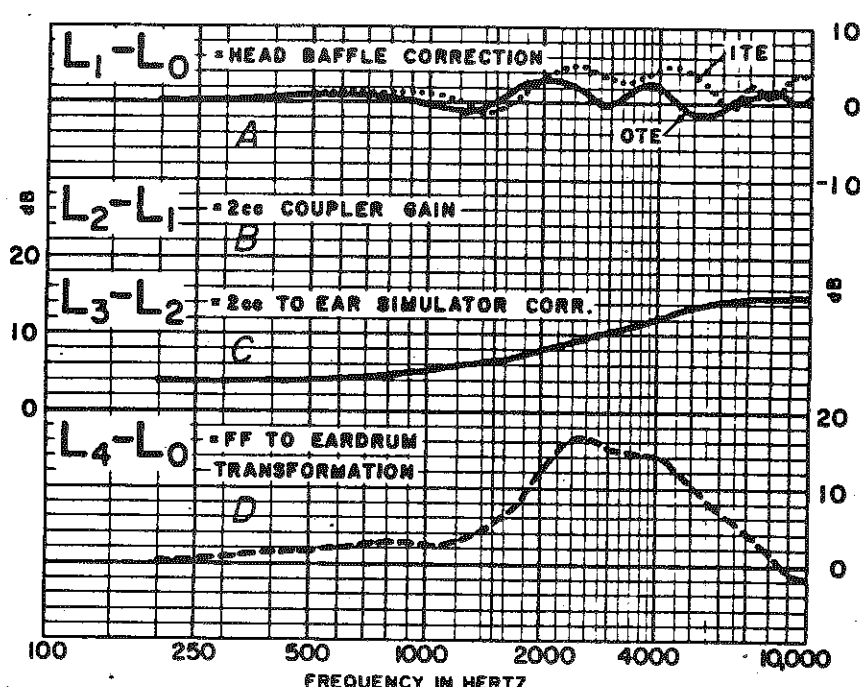


Figure 8A, 8B, 8C and 8D. Level relationships for conditions shown in Figs. 7, 9, 10 and 11.

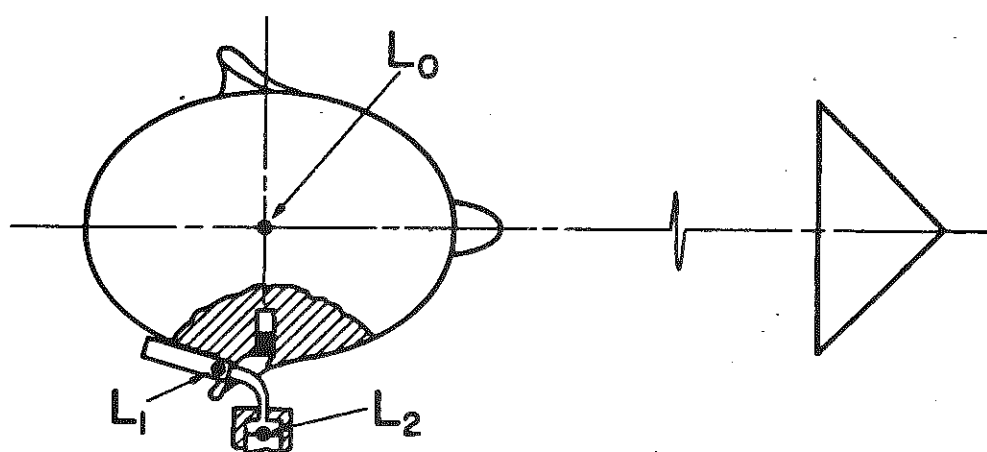


Figure 9. Hearing aid in place on head, but output delivered to a 2cc coupler. L_2 minus L_1 is the 2cc coupler gain of the aid.

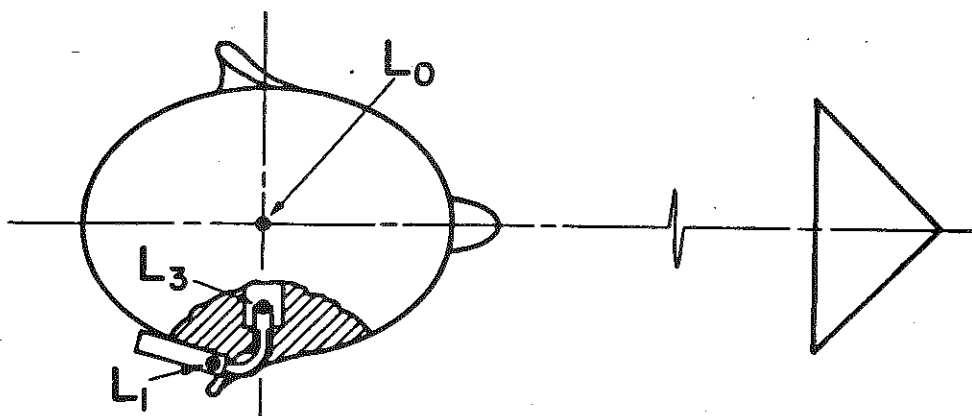


Figure 10. Hearing aid delivering output to the eardrum or ear simulator. L_3 minus L_0 is the apparent gain of the aid without considering natural amplification of the ear.

hearing aid microphone sound entrance effects insertion gain.

Three methods by which the insertion gain available from a hearing aid can be found are:

1. Direct measurement of the sound pressure level in the ear canal of a person by means of a probe tube or canal microphone near the eardrum, with and without the hearing aid.

2. Measurement with and without a hearing aid on a carefully dimensioned manikin such as the Knowles KEMAR. The sound pressure level at the equivalent of the eardrum location is measured by a calibrated microphone in an ear simulator.

3. An estimated insertion gain derived by applying a correction to the standard 2cc coupler gain or response curve.

Method 1 can now be accomplished with sophisticated probe tube equipment. Its application is perhaps best suited for checking in-situ performance and making adjustments after suitable hearing aids have been selected.

Method 2 has been very successfully used for hearing aid selection by the Veterans Administration for several years. It requires expensive equipment and good expertise.

Method 3 appears to have considerable practical value, since an approximation of the corrections needed can be derived and applied to the gain or response curves supplied with every aid sold in the U.S. in accordance with FDA labeling regulations. Currently, no standardized correction have been established, although the possibility is under consideration by standards Working Group S3-48. If such standardization were to prove feasible, manufacturers might be willing to voluntarily add an estimated insertion response curve that could make aid selection easier.

In addition to the use of manikin tests on particular hearing aids to derive an estimated insertion response, it also possible to obtain a useful estimated correction to apply to 2cc measurement data. This is done by adding to the 2cc coupler response a head baffle correction and the 2cc coupler-to-ear simulator correction and then subtracting the free field-to-eardrum transformation.

In Fig. 7 is shown a diagram of a head and sound source. The electrical input to the sound source is adjusted to produce a sound pressure level L_0 , constant with frequency, at a chosen test point when the head is absent. The SPL at the hearing aid microphone sound entrance, L_1 , is different than L_0 because of the presence of the head. The difference ($L_1 - L_0$) is the head baffle effect. Fig. 8A shows this effect for a typical OTE sound entrance location (at the pinna notch) and for an ITE aid with the sound entrance at the center of the filled concha. The curves are based on KEMAR measurement made by Madaffari (1974). Different corrections would be needed for in-the-canal aids or others with different sound entrance locations.

Fig. 9 shows the same OTE aid in place, but with its acoustic output directed to a 2cc coupler through the identical acoustic connection used to the ear canal. An SPL L_2 is developed at the

condenser microphone in the 2cc coupler. By definition, ($L_2 - L_1$) is the standardized 2cc coupler acoustic gain, available from specific accompanying all hearing aid and indicated in Fig. 8B.

In Fig. 10, the 2cc coupler has been removed and the earmold placed in the ear canal where it generates an SPL L_3 at the eardrum position. Sack and Burkhard (1974) developed an average relationship between the SPL at the eardrum of real ears and that produced in a 2cc coupler for typical hearing aid receivers with identical acoustic tubing connections. Fig. 8C shows this average relationship, which is also the same as that between closed ear simulator and closed 2cc coupler. The increase in the SPL at the eardrum compared to that at the 2cc coupler is ($L_3 - L_2$).

In addition to direct measuring L_3 , we can also arrive at a value for it by adding the various corrections to the free field SPL L_0 . Thus,

$$L_3 = L_0 \pm (L_1 - L_0) \pm (L_2 - L_1) \pm (L_3 - L_2) \text{ Eq. 1}$$

One might assume that the useful gain of the hearing aid is simply ($L_3 - L_0$). However, we must take into account the natural gain of the ear as indicated in Fig. 7. With a free field SPL of L_0 and no hearing aid, a sound pressure level L_4 will be produced at the eardrum. The average relationship between L_0 and L_4 has been carefully examined by Shaw (1974) (also Shaw and Vaillancourt, 1985). For coincidence, the curve of Fig. 8D shows this relationship. The amplification due to ear canal and concha resonance and head effects is ($L_4 - L_0$). To get the insertion gain, this must be subtracted from the apparent gain ($L_3 - L_0$).

$$IG = (L_3 - L_0) - (L_4 - L_0) = (L_3 - L_4) \text{ Eq. 2}$$

$$\text{or } IG = L_0 \pm (L_1 - L_0) \pm (L_2 - L_1) \pm (L_3 - L_2) - L_4 \text{ Eq. 3}$$

$$\text{Rearranging terms, } IG = (L_2 - L_1) \pm (L_1 - L_0) \pm (L_3 - L_2) - (L_4 - L_0) \text{ Eq. 4}$$

Eq. 4 says: insertion gain = 2cc coupler gain \pm head baffle effect \pm 2cc-to-ear simulator correction - free field-to-eardrum transformation.

Thus $IG = 2cc \text{ coupler gain} \pm K$, where K is the sum of the last three terms above.

Calculated values for K are shown in Fig. 12 (upper). The solid curve is for an OTE aid; the dotted curve is for an ITE aid. This curve is for an OTE aid; the dotted curve is for an ITE aid. These curves show the corrections that must be applied to a 2cc coupler gain or response curve to get an estimated insertion gain or response curve.

An alternate way to look at this situation is shown in the lower curves, which are the negative of the upper curves. These show the curve shape needed, as measured using a 2cc coupler, to produce a flat, zero gain, insertion response. This type of curve has been termed CORFIG (for coupler response for flat insertion gain) by Killion and Monser (1980). It can be seen from the CORFIG curve that an OTE aid should have a substantial peak at about 2700Hz to give a smooth insertion gain curve. Less of a peak would be indicated for an ITE aid, as indicated by the dotted curve.

Preliminary calculations, requiring further confirmation, indicate that for an in-the-canal

shape will be almost the same as that of the 2cc coupler curve.

Fig. 13 shows how the performance of an OTE aid is affected by applying the correction of Gif. 12. The solid curve is the aid's 2cc gain curve. The dashed curve is the estimated insertion gain curve. The dotted curve is the same as the dashed curve but moved down to coincide with the 2cc gain curve at 100 Hz. The strong dip can be seen in the 2.7 kHz region. A smoother insertion gain curve would have been obtained with additional gain in this region, as measured on the 2cc coupler.

This is a point that should be remembered, because you can quickly visualize the nature of the insertion response by looking at a 2cc coupler curve and making a mental subtraction of about 10 dB in the 2.7 kHz region for an OTE aid, less for an ITE aid.

Considering the prevalence of increasing hearing loss with frequency, a flat insertion gain response would not be desired too often. Fig. 14 shows how the CORFIG values can be added to a desired final insertion response characteristic to obtain a 2cc coupler response estimated to produce it. The curves shown are for an OTE aid. The lower dashed curve shows a desired insertion gain characteristic rising at 3 dB/octave. The solid curve shows the broad peaking at 2.7 kHz.

The upper dashed curve shows a desired insertion gain characteristic rising at 6 dB/octave up to 2 kHz and then remaining flat above that. The adjoining solid line shows the estimated 2cc coupler curve that would be needed to produce it.

Some precautions must be observed in predicting an estimated insertion gain or response curve from 2cc coupler data, or vice versa, as follows:

1. The correction used must be for the type of aid used so as to take into account the location of the hearing aid microphone sound entrance.

2. Identical acoustic tubing connections must be used in the case of OTE and eyeglass aids. This is not a problem with ITE or ITC aids. The length, and particularly the inside diameter of tubing used in an actual fitting should be the same from the hearing aid to the tip of the earmold as was used in the 2cc coupler test. In many cases, the published curves are made with 25 mm of #13 tubing followed by 18mm of 3 mm diameter tube adjacent the coupler cavity. The effect of this dual tube arrangement is to enhance the 2cc coupler response by about 6dB from 2.2 to 6 kHz. If single diameter #13 tubing is to be delivered with the aid, the 2cc coupler response should be greater in this region than otherwise, or a dual diameter tubing arrangement such as a 3mm horn should be used.

3. While excellent for closed coupler tests over the usual hearing aid frequency range, the 2cc coupler is unsuitable for measuring the effects of venting because it produces a sharp peak at the vent resonant frequency not present in actual ears. The corrections or corfigs that have been discussed apply only to closed, unvented

conditions. Venting corrections should be handled separately. Data on various types of venting are given in Katz Handbook of Clinical Audiology (2nd or 3rd edition).

It is fully recognized that variations in ear size and ear canal impedance exist from one individual to another and that in some cases they are large. Studies made on real ear performance of hearing aids compared to 2cc coupler data have been made by Harford (1980), Hawkins and Haskell (1982) and Hawkins and Schum (1984). While estimated insertion gain or response using the methods described in this discussion will give a better guide to the selection of an appropriate hearing aid than might be obtained using only 2cc coupler data, the need for final evaluation on an actual user remains important.

We can improve our measurement and understanding of insertion gain or response by derivation estimates from the 2cc coupler data, by the use of KEMAR measurements or by direct probe-tube measurement on an individual. However, the most exact determination of insertion gain is of little value unless we establish a definite target for what we want-- and this is not so easy. A number of protocols for deriving the desired amplification and limiting have been developed and successfully applied. These protocols all aim to place the amplified signal level at some comfortable point within the dynamic range of hearing available to the hearing impaired person. Many of the systems used tend toward an amount of insertion gain roughly equal to half the pure tone hearing level over the frequency range of interest. Some of the procedures for determining suitable amplification characteristics from audiological measurements are those of Berger, Hagberg and Rane (1979), Brooks (1973), Byrnes and Tonisson (1976) and McCandless and Lyregaard (1983).

The following steps might be suggested to arrive at a suitable frequency response for a hearing aid:

1. Make audiological tests, including HTL and probably MCL.

2. Using a suitable protocol, determine the insertion gain desired over the frequency range. Allow some additional reserve gain.

3. Using 2cc coupler response data with corrections applied to give an estimated insertion response, select a hearing aid or aids that appear suitable. Some protocols have an insertion gain correction built in, so the 2cc coupler data can be examined directly.

4. Make a final in-situ check with the aid on the user by established audiological methods or perhaps by probe-tube measurements.

Of course, there are a lot of other factors to consider, such as various types of compression, limiting or signal processing that require attention as well as frequency response.

It is hoped that the material presented today will add in some small way to the many basic contributions made over the years by the man we are honoring today-- Raymond Carhart.

Thank you.

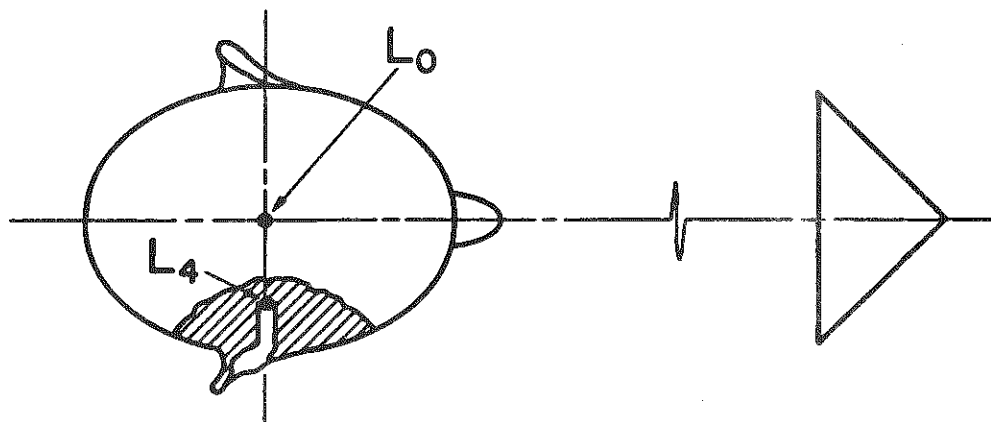


Figure 11. Head in sound field without hearing aid. L_4 minus L_0 is the natural gain of the ear.

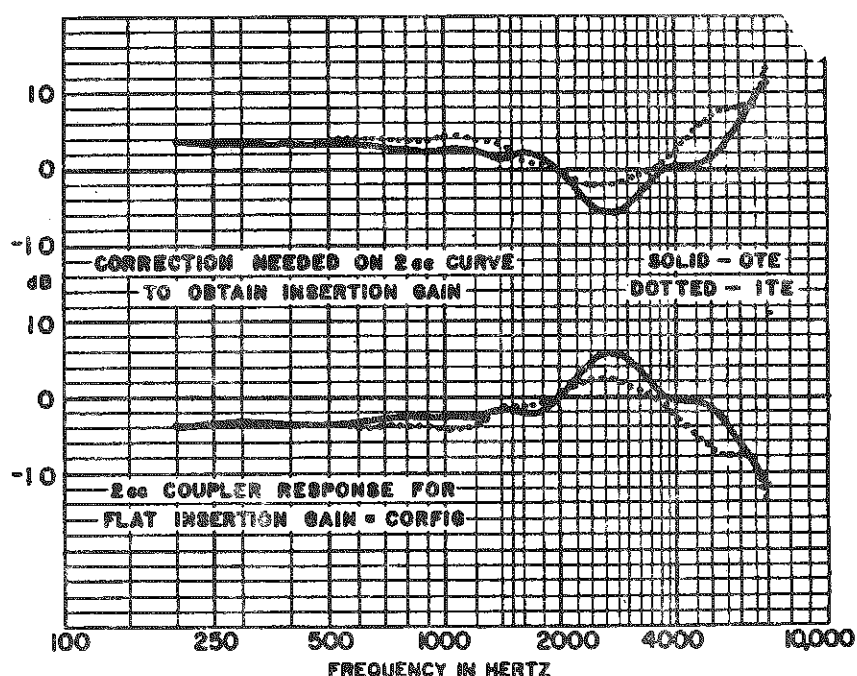


Figure 12. Correction curves and CORFIGs for OTE and ITE aids.

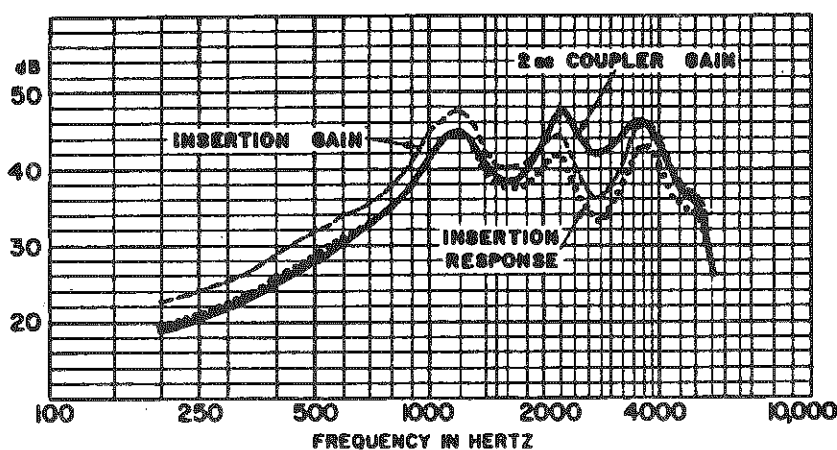


Figure 13. 2cc coupler and insertion gain curves for an OTE aid, showing dip in insertion gain curve at about 2.7 kHz relative to 2cc coupler curve.

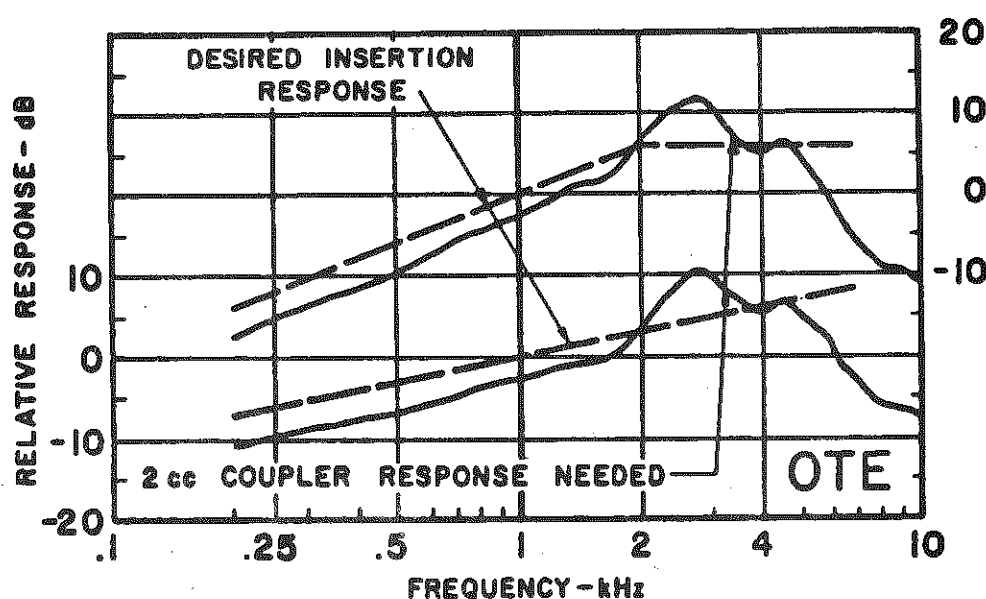


Figure 14. Application of CORFIG values to desired insertion response curves to obtain desired 2cc coupler response curves (for an OTE hearing aid).

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