The first two issues of "Anlet, A.A.," seem to have interested a number of anesthetists and sufficient inquiry has been made about it so that this third issue has been prepared. As stated before, so far as possible the material has been limited to problems facing the anesthetist and how they have been met, either successfully or unsuccessfully. If someone has a solution for any of these problems, or has a better solution than that presented, correspondence is invited so that the best thought may be disseminated.

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Some years ago the editor was making a prediction that if we should ever have another war anesthesia would emerge from the war a bigger specialty than it ever had been and that in all probability it would be very firmly established throughout the country. That conviction is growing all the time and is being generally accepted. Correspondence is invited on any plan that might be briefly stated that would have to do with the postwar development of anesthesiology. The best of these proposals will be published later, either in this newsletter or in some other publication.
"Since our hospital has been changed from a surgical hospital to an evacuation hospital we have not seen nearly the number of casualties... With our change in position, there has been a change in the type of anesthesia. Where before we used large quantities of pentothal sodium, we now use it very little (not because of any fault of the drug, but because we have little indication for it). However, there is a marked increase in the use of regional anesthesia (and I am glad that I brought my Lundy needles, etc. with me)... The schedule yesterday was:

**Exploration of Median Nerve (Foreign Body)**

**Brachial plexus block**

**Hemorrhoids**

**Caudal Trans-sacral block**

**Herniorrhaphy**

**Spinal**

**Appendectomy**

**Spinal**

**Incision and Drainage of Abscess on Leg**

**Sodium pentothal**

With the brachial plexus block I also "ringed" the arm with 1% procaine at the insertion of the deltoid. Since I was at your clinic I have always done this and I have not had one fail yet (Neither have I had a failure in the caudal trans-sacral blocks)... We have been doing quite a number of circumcisions. The G.U. surgeon does not like the "tissue distortion" when he uses a local infiltration. He approached me and asked if I would give the patient a spinal on one case. I said I felt that a spinal was a bit radical for circumcision, and rather than that I would prefer to give pentothal. He was not satisfied—preferred not to have a general, and I could understand that. I then told him that, while I had never done a caudal trans-sacral for circumcision, I would try one for him on that particular patient. He thought it would be ideal—if it would work. (I remembered your words that priapism seemed to occur occasionally with caudal; however, I also remembered that it was your opinion that this might be avoided if a "careful prep" was done). I put 30 cc. of 1% procaine in the caudal canal; 3 cc. in the 4th sacral foramen, 5 cc. in the 3rd, 10 cc. in the 2nd, and I also put 15 cc. in the first. I then returned to the caudal and gave 15 cc. more there (making a total of 45 cc. in the caudal canal). I used 2 drops of 1:1000 adrenalin/oz. Within 10 minutes the entire penis was anesthetized, and checking the patient later anesthesia was found to be present about 2½ inches above the symphysis. The surgeon said that he could have done a supra-pubico cystotomy. It so happens that on this same patient the surgeon desired to pass some sounds, and these were passed with no discomfort to the patient. Now—this is only one case, but about what percentage of failures can I expect to have? Is this too radical an anesthetic for circumcision? I certainly feel that it is less radical than spinal."

United States: October 9, 1943.

"The enclosed is a summary of the 247 anesthetics given at the hospital between July 8 and Oct. 1, 1943, while located on the California desert. During the first month all of the laparotomies were done under spinal anesthesia using procaine and pentocaine. There was no gas machine available for our use and the extremely high temperatures made the use of other very difficult. However, when we encountered so many pulmonary complications after the use of spinal anesthesia it was decided to abandon it. A gas machine was improvised by mixing nitrous oxide and oxygen from regulating valves on the tanks, through a glass Y tube and attaching the rubber connecting hose to a B-L-B orinal oxygen mask. By means of this
crude gas machine 50% oxygen and 50% nitrous oxide was administered and 2% solution of pentothal sodium was given intravenously. The relaxation was not as good as we desired for laparotomies, so in addition, field-block of the abdomen was done using 1% procaine solution. The relaxation obtained was ideal, there was no pushing of the bowel, no vomiting postoperatively. The induction is very rapid, the amount of pentothal sodium used is small, usually about 1 gram and the soldiers like the reaction that took place in such a pleasant way. The reaction time is from 1/2 to 3 hours. Occasionally, after the patient reacts, he will be very restless, a dose of 1/4 grain of morphia relaxes them and they usually sleep for several hours. The striking thing noticed was the absence of pulmonary complications under the identical conditions existing when spinal anesthesia was used. The patients turn from side to side and move their legs as soon as they react. This is probably the principal reason for the absence of pulmonary complications. For rectal work the combined sacral and caudal block has given excellent results. Wherever possible for the simpler surgical procedures, local or field block anesthesia has been used.

United States: Written October 21, 1943.

"I thought I would drop you a note to tell you how much I have enjoyed "Anlot". It really is nice to hear the experiences of other anesthetists in the service, both here and overseas. It is interesting to me to see how similar the reactions are in men in the continental U.S. with reference to types of anesthesia administered. It seems to boil down to spinal wherever it can be used and pentothal if possible and inhalation only where specifically indicated. I have been at this station for about ten months and I quite agree with this feeling. Where one is running three or four operating rooms it becomes necessary to use that method that allows the greatest freedom for circulating throughout the operating room. I have trained my enlisted men to check blood pressure, pulse and respirations and to report abnormal findings. In this way I can keep several operating rooms going and still keep an eye on the patients even if "in absentia". On the whole it has worked out very well and there has been no unpleasant occurrence to mar the record.


"I think that you will be interested to learn that I am now at work running an operating suite of eight tables in four operating rooms in a busy place erected in the field on top of a hill with conveniences and equipment and smoothly functioning organization which are tributes to the thought and performance of our quarter master and medical and transportation services from Washington all the way across the top of Africa. Our operating room work is increasing and my hand is regaining the skill it had seven months ago doing blocks, etc. Most of our procedures lend themselves best to spinal and intravenous anesthetics for they are almost all elective cases in good risk patients. In fact, I have been functioning without a gas machine, of any type, with only a commercial size tank of oxygen and Heidbrink reducing pugus and a plentiful supply of B-L-B masks and four complete laryngoscope sets and endotracheal catheters. Blocks are growing more frequent as the surgeons become more reliant on my ability of which they had only a general idea before. This hospital started working. I am also doing all the transfusion work, using Baxter Transfusor-vac bottles, indirect gravity method and many direct transfusions with my own DeBakey direct apparatus—a thing of beautiful simplicity and efficiency. The day before yesterday we did a five hour retroperitoneal ganglionectomy with pentothal with a very desirable post-operative comfort, quick, unembarrassed, and a good neurological result."
"I had . . . an Italian who had been shot through the wrist and forearm. I gave him a brachial plexus block. The surgeons worked two and a half hours on him . . . . The other night we had a liver abscess, very toxic and in quite poor condition. The abscess was probably an amebic abscess. The surgeon was not quite sure whether or not it had perforated the diaphragm; he was going to make the incision just beneath the right costal margin, anterior, then do whatever was necessary to drain the abscess. I decided on combined anesthesia and did an intercostal block. Not being just sure what he was going to do I decided to anesthetize the patient from the nipple to the umbilicus and did so by blocking the intercostals (right) from T-4 to T-10 (lumbar). I then did an abdominal field block (because the surgeon so insisted) and after the incision was made started pentothal. At no time was the patient unable to be roused to answer questions. He got along perfectly. Incidentally, the surgeon was unable to find the abscess from the anterior approach and the patient had to be turned and the abscess drained posteriorly . . . . I do know that I have had more experience with pentothal in shock than any other single individual ever here. It was a lifesaver."


"To the Editor: I am seeking information regarding the hazards of using pentothal sodium for operations about the head and neck, most particularly septic surgery, as for example sublingual abscess. Are there any contraindications to the use of pentothal in such cases? If so, what would be the anesthetic of choice?"

First Lieutenant, M. C., A. U. S.

"Answer.—Pentothal sodium is used for minor operations about the head and neck. However, it is not particularly suitable for prolonged operations unless it is combined with local anesthesia or unless an intratracheal tube has been inserted before operation has begun. For septic conditions such as sublingual abscess, peritonsillar abscess or phlegmon of the neck, pentothal sodium is not the anesthetic of choice. The contraindication to its use is that some pus or foreign material may gravitate to the throat and cause laryngospasm. This spasm is sometimes so severe and so prolonged that a fatal outcome is threatened. It has been suggested by Capt. George Bradasc, M. C., A. U. S., that preliminary tracheostomy be done in these cases if pentothal is to be used.

"Few persons will submit to the opening of an abscess without some anesthesia, but the hazard is so great that the following precaution should be followed if general anesthesia is to be used: The patient's head should be lowered so that the contents of the abscess will not obstruct the air passages as it drains.

"Nitrous oxide and oxygen, administered by a nasal inhaler only to the point of analgesia, seems to give the safest general anesthesia for the persons here under consideration."

"
 United States: November 19, 1943.

"We have been impressed recently with a couple of unusual things. (1) Amoebic abscess of the liver with rupture of the abscess and formation of a subdiaphragmatic abscess. We have had two of these recently, both boys who had been out in the S.W. Pacific. Both had negative stools but both had been admitted for other causes. Apparently the liver abscess developed very insidiously and gave no sign until it ruptured and formed a subdiaphragmatic abscess. Both these cases were explored and drained by Dr. [redacted] after pre-operative medication with emetin and both made uneventful recoveries. The material from the abscesses was full of amoebae. (2) Spontaneous rupture of the spleen in a patient who had had severe and repeated attacks of malaria and apparently developed a markedly enlarged spleen, which developed a large infarct and ruptured without any trauma. This particular patient was not one of our boys but was visiting near here when he developed an acute abdomen and was seen by a local MD who made the impression of a perforated viscus and gave him a couple of HMC on. When he arrived here he was sound asleep and very little history could be obtained. Dr. [redacted] operated on him and you can imagine our surprise on finding this great big spleen crammed almost in two. I started him off with a spinal (BP 120/70 but the pulse rate was 120 also) of which I was very dubious, so when I lost some of the agent after the second syringe failed to fit the spinal needle correctly I was not too unhappy. The operation was started under the spinal which was quite satisfactory for about 15 to 20 minutes and I was all set with N2O + Ether and continued with general. I had started plasma as soon as we put him on the table and we had blood going soon after we discovered it was a ruptured spleen. He has made an uneventful recovery. A spontaneous rupture of an enlarged malaria spleen apparently can happen and certainly is something to be borne in mind when you see an acute abdomen, especially if he gives a history of malaria.

"We have had some very interesting traumatic cases recently, which were operated on under pentothal. You can imagine what the propeller of one of these new Corsairs does to a man's thigh. Well, we had one of those the other night. The thigh was laid open from the knee to the hip. Dr. [redacted] did a debridement—plated the femur (what was left of it) and did a primary closure. Pentothal 22% (with caution) and plenty of plasma and blood. Outside of the fact that the patient had a severe flare-up of his malaria twenty-four hours after operation, his course has been uneventful."


"With the permission of Major McCulloch and acting on the suggestion of the Secretary, I should like to add some remarks based on my own experience abroad that will be supplementary to Major McCulloch's paper... 'Pentothal' was a godsend... The men for whom we used it were very ill, suffering from burns, shock, sepsis, trauma, anaemia, et cetera, and a small dose went a long way. Much care is required with 'Pentothal' in this regard to avoid over-dosage and unduly prolonged narcosis. In such cases three or four cubic centimeters of the 5% solution may suffice for the induction, while the remaining six or seven cubic centimeters may last for as long as an hour or more. Used thus, 'Pentothal' provides an excellent basis for supplementary nitrous oxide and oxygen anaesthesia... This combination was found to be extraordinarily effective in 'poor risk' cases, and it is preferable to the use of either 'Pentothal' or nitrous..."
oxide and oxygen alone. Even if it is used only for induction purposes, 'Pentothal' is excellent for those who must undergo repeated anaesthesia and operations. When veins become scarce, it was found useful to remember the external jugular vein as a site for injection.

Notwithstanding the unfortunate occurrences mentioned by Major McCulloch, spinal analgesia had a useful place in the Middle East. We were greatly hampered by having no preparation other than the 1/2/500 solution of 'Percoain' in 0.5% saline solution. The intravenous use of morphine is a great help when analgesia, either spinal or local, is imperfect. Despite premedication with morphine and hyoscine, a further quarter of a grain of morphine may be safely given in such circumstances. However, in the field, soldiers are often easily upset in the operating theatre—a situation readily overcome by the timely intravenous administration of morphine. Otherwise general anaesthesia must be induced, and if 'Pentothal' cannot be spared for this purpose, much struggling and obscenity will accompany the exhibition of ethyl chloridé or ether. The same applies to nitrous oxide and oxygen. The great advantage of 'Percoain' is its prolonged action, but this is sometimes undesirable. Nitrous oxide and oxygen anaesthesia per se has a limited applicability under army conditions.

"Used in its wider and now commonly accepted sense, the term 'resuscitation' covers the treatment of shock generally, as well as the restoration of animation after anaesthetico or asphyxial collapse. I will make a bold statement, and it is this: it is no exaggeration to say that resuscitation has become so efficient as to permit the administration of almost any anaesthetic agent with reasonable safety. The old 'pint of blood' idea, originating rather in the quantity a donor might safely give than in the need of the recipient, is obsolete. Efficiency often means the giving of two or three or more litres of blood, with perhaps one or two litres of serum as well. For exsanguinated patients massive and rapid transfusions are indicated before any anaesthetic or operation is permissible, while the administration should be continued by a drip method during the conduct of these procedures, and afterwards, too, if necessary. The great advantages of serum are its universal compatibility and immediate availability, since no storage on ice (with consequent necessity for warming before use) is required. Too much stress cannot be placed on the necessity for adequate nutritional and haematological preparation of patients before both urgent operations and operations of elective. Saline and saline-glucose solutions, so important formerly in the treatment of shock, are now largely discarded. They still have their place in states of dehydration and will afford temporary benefit in shock associated with haemoconcentration. In such circumstances a simple glucose solution is often preferable to one containing chlorides or combinations of various salts. We learned by bitter experience the importance of these considerations in relation to anaesthesia and operation on gravely ill patients. As for asphyxia, anaesthetic collapse, primary cardiac failure or ostra, nothing is more efficacious than the prompt intermittent inflation of the lungs with oxygen. I would mention a piece of apparatus which came to us in our latter days in Palestine—the Hufield ether vaporizer. We found the machine very useful for the maintenance of ether anaesthesia, especially when the inhalational endotracheal technique was used. Once in action, the machine is automatic, the only attention required being the progressive reduction of the ether concentration as time passes. This is effected by the moving of a lever."
North Africa: Received December 5, 1943.

"Regional anesthesia is not used over here nearly as much as it could be. We use a lot of intravenous sodium pentothal, and a fair amount of \( \text{N}_2 \) + Ether and spinal anesthesia."

United States: December 15, 1943.

"I am in charge of anesthesia in the General Hospital... We have two doctor anesthetists and two nurse anesthetists with promise from the army that we will get one more nurse anesthetist before going overseas. We are doing fair surgical lists at present, but are not really working too hard as we have adequate help in our department. We are able to follow our anesthesia cases rather well and have a rather complete record of all anesthetics given and complications encountered."

China: Received December 19, 1943.

"China is a nice place. I am teaching sanitation and pharmacology to Chinese medical officers. Have done some surgery and block anesthesia. Anesthesia in the Chinese army is mostly ether and chloroform. Spinal and local is used some."

United States: January 13, 1944.

"The major portion of our anesthesia has been local infiltration and field blocks, totaling 1503 for the past year. Most of these were for fingers and toes plus the large number for circumcision, at least two a day. Spinals using both metycaine and procaine and occasionally a combination of procaine and pontocaine and a few with pontocaine and 10% dextrose, numbered 577. Caudals and trans-sacrales 64. Pentothal alone, 105. Inhalation anesthesia 181 without intubation. With intubation, 12. Spinal plus inhalation, 7. Spinal plus pentothal, 4. Local plus inhalation, 6. There were 4 pentothal anesthesias for eye cases and 36 inhalations for tonsillectomy and 919 locals for tonsillectomy. The operator usually injected his own anesthesia for tonsil cases although I have done a few. We had no deaths and complications were very few."
EXCERPTS OF LETTERS FROM ANESTHESIOLOGISTS

EDITOR — JOHN S. LUNDY

Volume 2 May 1, 1944 Number 2

The fourth issue of "Anlet, A.A." is prepared because of the interest that was expressed in regard to the previous three issues. As stated before, so far as possible the material has been limited to problems facing the anesthetist and how they have been met, either successfully or unsuccessfully. If someone has a solution for any of these problems, or has a better solution than that presented, correspondence is invited so that the best thought may be disseminated.

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North Africa: Written December, 1943.

"I have just finished my 100th case—in a little less than six weeks.... I have been having a lot of fun with N₂O analgesia. We get quite a number of burns and traffic injuries which need débridement and sutures. I have found that I can't get 3rd stage anesthesia with N₂O alone on most of these soldiers, even with a quarter of morphine, unless I get a fair amount of cyanosis too. However, they seem to take to analgesia very well. Some of them remember the procedure done and some don't, but they all talk to me during all of it.... One thing I have tried and that is metycaine solution for spinals—10 per cent ampules.... At several of the hospitals here there were a number of headaches after procaine spinals, all at about the same time. With metycaine, I have had no postoperative complaints, to date, and I have gotten a minimum of 90 minutes analgesia.... All the hemorrhoids now are being done with transsacral analgesia.... The record situation is as bad as ever."
India: Written January 6, 1944; received January 17, 1944.

"I am really convinced that the surgeons in the army have learned already how valuable an asset an anesthetist is to good surgery... I have had the occasion to do several therapeutic blocks to break up vasospasm and have obtained good results. Also injected a few cases of meralgia paraesthetic involving the lateral femoral cutaneous nerve."

Italy: Written January 9, 1944.

"The clinical anesthesia has been fairly good for the most part. However, my helpers are not sufficiently experienced to permit me much freedom from the O.R. Therefore, I have neither the time nor ambition to follow the patient postoperatively except the majors. The problems encountered are not particularly different from what one encounters at receiving hospitals."

India: Written January 10, 1944.

"It may be of interest to the society to know that it is now possible to secure laryngoscopes and endotracheal tubes in this theater—something I was unable to do before I left the states."

United States: Written January 11, 1944.

"I have been receiving copies of "Anest" regularly and I want to express my appreciation that they are being sent here. They are very instructive as well as interesting. I have picked up many little hints that have been helpful in my own program at this hospital... I have started a program for training nurses in anesthesia... We have had several patients with peripheral vascular disease. I have done sympathetic blocks on them using the Lundy technique and the immediate results have been uniformly successful. However, the interpretation of the results from a diagnostic and prognostic point of view are somewhat questionable..."

"We do a great many pentothal anesthetics. I have a method of mixing pentothal in a flask that is quite convenient. To 1 gm. of pentothal 3 Abbott ampules of water are added. Since the ampules contain 52 to 53 c.c., this makes close to a 2 1/2 per cent solution. We keep the solution on hand 3 to 4 days without any noticeable change in its effectiveness. I hold the solution in 30 c.c. syringes with plugs. The plugs are made from broken needles as you have described. However, we seal off the opening with collodium and it works quite effectively. They can be repeatedly autoclaved without the collodium working loose."

"We have been using pentothal a great deal in eye surgery. It has always been a problem to maintain a good airway because the patient's mouth and nose are under drapes and the surgeons occasionally use the patient's chin for a hand rest. The situation has been alleviated a great deal by spraying the throat with 10 per cent cocaine 2 or 3 times before surgery. Then after anesthesia has been induced an airway can be placed in the mouth without creating any spasm or desire to expel it. The drapes can then be put directly over the airway and there is much less likelihood of disturbance during the surgery..."

"One patient was to have a cholecystectomy. I had decided to give him a high pontocaine-glucose spinal. Soon after the solution was injected the patient's blood pressure began to fall with no increase in pulse rate. In 5
minutes his pressure was 70/40 (initially 110/70) and his pulse 80. The anesthetic level had reached thoracic 2. I gave him 2 min. of neo-synephrine intravenously. Almost immediately he complained of exorciating headache. A check of his pressure showed 230/120 (min was a close second). Pentothal was begun because of its depressing effect and also to ease his headache. Over a period of one-half hour his pressure gradually dropped until again it registered 70/40. This time I gave 2 min. of ophedrine intravenously and his pressure rose to 130/60 within 2 to 3 minutes. In the meantime 5 per cent glucose in saline had been started and the pressure stabilized at 110/70. The patient left the table in good condition. Both the surgery and the postoperative course were uneventful.

South Pacific: Written January 18, 1944.

"Had a death recently on a deep cervical cellulitis which extended into the mediastinum and patient died while getting intravenous pentothal sodium and before any incision was made. Just suddenly turned deep blue and out. His chances were slim any way but I think the anesthesia was the immediate cause of death."

South Pacific: Written January 22, 1944.

"I'm the surgeon for a medical company... We had nine acute appendicitis in one three week period and, of course, I gave them all spinal. No one in the outfit ever given pentothal except me so I showed them how to get them to sleep at first, and then scrubbed up; after a while the others overcame their fear of it and we did better... We used the 2.5 per cent solution. I used it on my brain cases and necks, on most of the chest surgery, on half the laparotomies and on all orthopedics and it worked fine. In fact, plasma, pentothal and sulfonamides in that order were the greatest things we had. I did a few chest cases under local but as many of them were wounded in say the chest, the leg and the hand local wasn't ideal; these men had been lying in mud and water in dirty dungs asses and their wounds and surrounding areas were not ideal for local. Another factor against local is time; no one else had any experience in giving local and when you have fifteen major cases waiting, it's easier to use pentothal..."

"The abdominal cases I did under pentothal were fine until it came to closing and then we had to put them pretty deep to close them. In fact, we had two who had apnea, one for ten minutes and the other for five; we gave them procetoxin and artificial respiration and they came around... You probably wonder why I used pentothal on bellies at all; the first one was my first case and was done by flashlights and gas lanterns during an air-raid with blankets to block us out; I couldn't use ether and the lanterns... Ether anesthesia as I got it was a 50 minute struggle so that was another vote for pentothal... I finally got around to putting the bellies to sleep with pentothal and then switching to ether; this reduced the fight to about 20 minutes. All in all pentothal worked out wonderfully and any scares it gave us wore out our own fault..."

"We used plasma by the gallon... It saved more lives than anything else. We used as much as 15 units in 24 hours on one patient... Severely wounded man arrived and had no perceptible pulse or blood pressure and two ankle and one arm vein already had been cut down on elsewhere and plasma given but the needle (which was a 23 and too small) had plugged; everyone rushed for a knife..."
to cut down on a vein and I noticed no one had bothered with the wrists; to
everyone's amazement I applied a tourniquet just above the wrist and a big
vein popped up and I started plasma without any trouble.

"One thing I noticed about the spinal--they seem to take a larger
dose out here. Excitement of action, etc., may be the answer. In several cases
I got good free aspiration before and after injection and gave a good size dose
and it didn't last very long."

Italy: Written February 16, 1944; received March 7, 1944.

"At the present time I am living in one of the forward hospitals and
at times have been working, that is, giving anesthesia myself, farther forward
than our own artillery; so I am really getting a first hand picture of anesthetic
and resuscitation (also part of my job) in the forward areas. As I am sure you
will have heard from many sources, pentothal has proved itself to be of great
value in military medicine. The chief problem that arises in connection with
is concerned with the many anesthetists who have had no training in anesthesia.
The combat zone is hardly the place for teaching or training of inexperienced,
but because of the shortage of anesthetists, we have set up several places where
for three months training can be given."

North Africa: Written March 17, 1944; received March 25, 1944.

"We ... are functioning as a general hospital.... One thing that
was a little difficult to get used to was the transportation of postoperative
patients by litter from the surgery to the wards—especially in rainy, cold
weather. However, we rigged up some waterproof covering out of an old barrage
balloon and the patients take it without apparent ill result. Our anesthetic
supplies and equipment are quite adequate. We have three small Heidbrink mohi-
fitted for nitrous oxide and oxygen with, of course, an ether bottle and absorber.
The army furnishes a laryngoscope and intratracheal tubes and I brought along my
one laryngoscope and some tubes with inflatable cuffs. For spinal anesthesia we
have procaine crystals and pontocaine solution. Since I had to sign for all of
the surgical property I felt justified in taking two operating table mattresses
apart and making a mattress for continuous spinal.

"Sodium pentothal is found suitable for many of the operative procedures
we have, such as secondary closures, débridement, manipulations, etc. We get
in various blocks when suitable and have had a few cervical and lumbar sympathetic
blocks. Lumbar sympathetic block has been tried for trench foot but the results
are not encouraging although apparently some were benefited. We have been using
caudal block for circumcision."

India: Written March 18, 1944; received March 30, 1944.

"Due to extreme pain and shock I am giving morphine gr. 1/2 intra-
venously unless contraindicated. Often repeat the dose in one half to one hour.
Sometimes the extra dose is run in with the plasma. Due to the small arm veins
of our patients and the injuries' often involving the arms, I have been using the
femoral vein or the superficial jugular to administer the plasma. Most cases
require 500 to 2000 c.c. Our assortment of stimulants consists of caffeine sodium
benzoate and ephedrine sulfate.
"My choice of anesthesia has been 90 per cent local—excluding spinal which I soon found even in small doses was not compatible with the shock.... I have done a scalp block, brachial plexus block and wrist block and ankle block all on one patient. This is just an example of combinations used. Have also done bilateral brachial plexus block on several patients.... Of all the blocks the brachial plexus has proved to be the one that has impressed the surgeons.... Have done a few trigeminal nerve blocks and stellate ganglion blocks. The stellate ganglion block has proved its value in determining whether the circulation in some arm cases has been adequate or not. The same for lumbar-sympathetic block for leg injuries. Caudal sacral has been used in all wounds of the buttocks of which we see many. All abdominal cases to date have been done under abdominal block and pentothal sodium given when necessary. Amputations of leg are done under local. I divide the leg above sight of injury (several inches proximal) into 4 or 5 equal parts. Insert my needle through each part to the bone. Deposit 10 c.c. on the bone and 10 to 20 c.c. on the way out. Then through a sub-cut and intradermal circle around the leg. The success to date has been 100 per cent.... In multiple wounds which run into two figures pentothal sodium has been very good.... In one case of many wounds 600 mg. was sufficient for two hours work. So severe shock is not a contraindication to pentothal; it is the method by which it is given which is important. Have used about three pounds of other only.... My endotracheal tubes are made from a stomach tube—little small but help out remarkably."

United States: Written March 18, 1944.

"Did you, by any chance, see the citations given to one of our members [of the American Society of Anesthetists] — Doctor ————? Since he joined as late as March 1943 we do not have very much information about him but he certainly has made good according to one commendation from Major-General ————, and a second from Major-General ————. As far as I can discover, this is the first time the U.S. armed forces have specifically cited an anesthetist, through whose skill and willingness to stay at the side of his patients at every opportunity, the lives of four men with sucking wounds of the chest were saved, and by means of his knowledge of anesthesia and through his help the surgeons were able to continually operate in a scientific manner."

United States: Written March 30, 1944.

I thought I would say something about training nurses and especially corpsmen to give pentothal which we do both because it helps us here and in the hopes that these boys may be of some use to the men when they get aboard ship or out in the islands. Furthermore, everyone of these young men that we teach to hit a vein may be able to save a life by the prompt administration of plasma sometime. I also thought I would say something in the defense of the use of pentothal in the severe traumatic emergency.... Yesterday we had an orchiectomy (temporal approach to a pituitary tumor) under pentothal—cocainized his larynx started the pentothal, intubated him and Miss ———— carried him through without a flit. He was awake and talking 15 minutes after he went back to his room. He had 36 c.c. of 2.5 per cent pentothal and the surgeon infiltrated his line of incision with 1 per cent procaine."
United States: Written April 2, 1944.

"On arrival I was assigned to take over anesthesia since all they had was one nurse anesthetist. They were swamped with a backlog of several hundred operative cases (hernias, pilonidals and hemorrhoids) and my instructions were to get into the operating room and see what I could do to speed up the schedule. I was able to increase the number of cases daily from 7 to 12 or 14 by using your system of a central anesthesia room and feed our cases directly from there to the two operating rooms. Until I got here the cases were being done right in the operating room with the consequent delay between cases. The nurses had been, doing some of the spinalis... The surgeons now agree that caudals are best for hemorrhoidectomies and in so far as the schedule will permit they are all done that way... There are lots of other things that could be done here but due to lack of time I just can't get around to them. If only I could devote all my time to anesthesia, but they have me doing other things in addition to anesthesia—things totally unrelated and of no interest to me at all."

India: Written April 3, 1944; received April 14, 1944.

"As well as being the anesthetist with this surgical team I also have daily sick calls where I treat common medical ailments of the enlisted men. In this zone they are often exposed to extreme dampness and cold air in the course of guard duty, work details, and bivouacs. The result is that I have had several cases of sciatica come to my attention for treatment. A few of these cases had been in existence for several weeks before I would finally see them and the results of my therapy, although gratifying in most cases, is puzzling to me when I seek to answer them.

The men may have been from one dispensary to another, receiving everything from salicylates to coal tar analgesics, rest, heat packs, and placebos. As a result many of them complain of this stereotyped treatment and ask me to try something different to give them relief. Under this urging with such a history I have resorted to blocking the nerve trunk with procaine, using your method of localization and injection. The result has been uniformly gratifying and in some cases dramatic. Now what I wonder is why should the anaesthetic action of the procaine block completely and then symptoms or so radically alleviate the pain that small recurrences can very easily be controlled with aspirin or allied... analgesics? Why should a case of recurrent sciatic pain over a period of days to weeks be suddenly and completely, or almost so, eradicated from such a brief acting block? This leads to these inquiries on my part:

1. In your experience what is the average span of analgesia in this form of block when using 5 cc. of 2 per cent procaine solution with no added vasoconstrictor agent?

2. How would you account for the fact that some cases (the above dosage used) are so relieved that subsequent treatment with aspirin, etc., control and finally end the pain in one or two days when they have had long courses of analgesics before?

3. What is the advisability of using alcohol injections plus the block in intractable cases, and what would be a safe percentage of ethanol to use?

"Since I have to prepare and autoclave my own procaine solutions in the field for the various blocks used in-field military surgery, I am also desirous of asking you how long is procaine in saline stable after 15 minutes at 20 pounds
pressure in the pressure cooker we use? The solutions are kept in the dark and the temperature here averages about 75-80 at the present but soon will be between 80-90 as a mean. I have tried to seek out this answer but the texts at my disposal, which are few here, do not give the stability period. This is of concern to me because I have to have the solutions made up and ready to use quite a distance from fresh supplies or a base and I'd surp be up the creek if the solutions were inefficient when a block is mandatory due to shock or other indications against a general anesthetic. I am dead against the routine use of general anesthesia in field surgery when a brachial block, for example, can be used instead for extremity work of short duration. In order to support this contention I will have to be able to 'produce' since others who vary in this opinion with me will be watching my results. Therefore, I sure hope you can supply me with this information so I don't get failures from poor solutions and have it blamed on technical considerations of the injection.
"In table 1 will be found a list of the percentages of the various anesthetic procedures to be discussed.

Table 1

<table>
<thead>
<tr>
<th>Type of Anesthetic</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intravenous Pentothal</td>
<td>41.6</td>
</tr>
<tr>
<td>Spinal Anesthesia</td>
<td>31.4</td>
</tr>
<tr>
<td>Regional Methods</td>
<td>16.9</td>
</tr>
<tr>
<td>Inhalation Anesthesia</td>
<td>5.3</td>
</tr>
<tr>
<td>Combined Procedures</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>

"Pentothal, the sole intravenous agent, proved to be the most popular anesthetic. This was not at all contrary to our expectations; we have long regarded intravenous pentothal as the agent of choice in the majority of minor procedures, and for selected major cases. There is certainly no substitute for intravenous anesthesia in such operative cases as change of dressings, removal of foreign bodies, débridements, incision and drainage of abscesses, skin grafts, change of casts, and comparable procedures. It was also used in such major operations as craniotomies, amputations, and thoracotomies. Intravenous anesthesia has been a priceless contribution to wartime surgery.

"Spinal anesthesia was employed in a rather large number of cases. The percentage (31.4) might appear surprisingly high until cognizance is taken of the type of cases coming to surgery. A substantial number of the surgical patients were admitted for what might be termed elective surgery. The following constituted the bulk of our spinal work: excision of knee cartilages, hernia repairs; hemorrhoidectomies, pilonidal cysts, cystoscopic procedures, and some few acute surgical conditions.

"Regional anesthetics were extremely useful and were employed as often as possible. They were especially indicated for secondary closures, operations on the upper extremities, circumcisions, minor local operations, and the like. The frequent use of regional methods has been of incalculable value; the very busy ward personnel were relieved of the very strict surveillance of the patient during the postanesthetic interval; the patient was granted a pleasant anesthetic interlude, and an easy, uneventful anesthetic recovery.

"Inhalation anesthesia was administered relatively infrequently; it being used in but 5.3 per cent of the cases. Nitrous oxide and ether were the only agents available. Pentothal inductions were employed in the majority of the cases.

"The combined procedures, of which mention is made in table 1, include those intentional combinations of spinal and pentothal, spinal supplemeanted by inhalation of pentothal, and those few pentothal-refractive cases in which it seemed advisable to change to the inhalation method."
"Endotracheal intubation was resorted to in 29 of the cases. This does not represent a large number, but it comprises a most important series. When intubation was indicated, its use was generally most urgent.

"The anesthesia section was responsible for the blood transfusion service. It was not possible nor practical in our case to maintain a blood bank. There was a total of 196 whole blood transfusions given during the six months period.

"Another of the functions of the section was to make provisions for oxygen therapy. B.L.B. units were set up and made available to the wards on call. These units were in great demand and were used by the medical as well as the surgical service."
The fifth issue of "Anlet, A.A." is prepared because of the interest exhibited by readers of previous issues. There has been no change in the policy of limiting the material as far as possible to the problems facing the anesthetist and how they have been met, either successfully or unsuccessfully. We would again urge any one who has a solution for any of these problems, or has a better solution than that presented, to communicate with the editor.

The word, "Anlet," as some readers know, is drawn from the words "anesthesia letters." The abbreviation "A.A." stands for "Anesthesia Abstracts."

As was stated previously, the Burgess Publishing Company, of Minneapolis, who distributes "Anesthesia Abstracts" has no connection with "Anlet", although the editor of the two is the same person. "Anlet" is produced by the Whiting Press, of Rochester, Minnesota, and is distributed by the editor. This newsletter, then, has become largely a private effort but it continues on a non-profit basis. It is hoped that persons formerly interested will be kind enough to forward to the editor suggestions and criticisms but, above all, letters or excerpts from letters which they feel would be suitable for publication.

Indian: Written June 11, 1944; received June 19, 1944.

"I can say without any modesty that my syrings and needles have made me well known in Burma and India. I guess I am getting as "hopped up" over regional nerve blocks as Koster was over spinal. I have proved to myself and many others that the only thing I cannot do under regional anesthesia alone is some belly casts. I have not had the opportunity as yet to try any extensive pulmonary surgery except as deep as the pleura... I have just finished several hundred cases. We had many terrifying case wounds with fracture of the jaws, part of jaws missing, tongue torn, antrums blown out, etc... The one case we
lost was because the nurse removed an endotracheal tube too soon... I cannot convince... others of the wide margin of safety plus the many other advantages of local over general or spinal. They feel the anesthesia is not always satisfactory. I am convinced they don't know their anatomy, for if a nerve is bathed in procaine it will always become anesthetized. Using the 3 needle brachial plexus technic I have not had a failure in over 500 procedures and can do them now in 3 to 4 minutes flat, so it is not time-consuming as some believe. Most cases can be worked on in 8 to 12 minutes...

"We have many cases with a wound in the buttock, one somewhere in the thigh and often a third or fourth in the same leg. I inject 20 c.c. in the caudal canal, 10 in S2, 5 S3, 5 S4. Then I infiltrate the skin from S2 around the anterior superior iliac spine and from there across the inguinal region and around the inside of the leg close to the sartorius until I reach the gluteal fold. Then I inject the lateral femoral cutaneous with 10 and the femoral with 10. (In over 150 cases this has given 2 hours of anesthesia for any fracture, amputation, radical debridement, etc.

"I forgot to add a paravertebral of L and L using total 120. The whole procedure requires 110 to 120 c.c. My unit has the best record in the field as to results and I know that local anesthesia has made the difference. My local procedures now total well over 3,000."
this method most satisfactory and to this date all of our cases have done well. All cases are aspirated by catheter through the intratracheal tube when the operation is completed. The use of stellate ganglion block and lumbar sympathetic block has aided a great deal in the care of traumatic vascular disorders.

New Guinea: Written June 27, 1944; received July 13, 1944.

"Most of our surgical cases are extremity and trunk shrapnel wounds of moderate extent, with a much lesser number of belly cases. The majority of the former two types are not sufficiently shocked to preclude the use of pentothal with nitrous oxide and oxygen, which does excellently with these patients. A fair percentage of the extremity wounds involve nerve and tendon repair in which regional and nerve blocks are often used by us, but not when greatly rushed (Battle rushes usually last for some days at a time, quiet down and leave us with our interim work which is essentially that of a station hospital). Belly wounds are surprisingly (to me) few and are invariably done under gas-oxygen-ether. Some of us miss cyclopropane but carbon dioxide even more; the latter, while furnished station and general hospitals (I understand) is unavailable to us. Ordinary herniotomies and appendectomies are just plentiful enough to keep our spinal anesthetic technicians. The anesthesia section includes one other medical officer... and one nurse anesthetist. The hospital is of four hundred bed rated capacity but at the moment has over eight hundred fifty patients....

"We are supplied with spinal procaine, pontocaine, and numperoaine but no uetoxaine. I use mainly pontocaine, for one thing because the surgeons are the slow type, for another because unaccountably the effective duration of procaine seems lessened here; for example, in the California-Arizona desert the spinal anesthesia with procaine for the average abdominal case would last a good hour; here I cannot squeeze more than forty-five minutes out of the same agent. But I cannot adduce any reasonable theory for the shortened action of the procaine, though I suppose climatologic factors and the keeping qualities of the drug are possible influences."

United States: Written July 11, 1944.

"Much of the work is elective, incidental in many cases to the service, and on young men in pretty vigorous health. There are, of course, battle injuries requiring plastic and reparative work. In my series I have not included any of the eye, ear, nose and throat work commonly done in the ward operating room. From June 4, 1943, when we opened with 23 patients, until May 31, 1944 when we have a regular census of 700-800 we have given 1,215 anesthetics. Of these 1,215 cases there have been 446 spinalis (36.7%); 303 locals (24.9%); 85 caudals (7%); 88 straight inhalations of all types (7.2%); 17 continuous spinalis (1.4%). In 251 cases (20.8%) we have used sodium pentothal of which number it was used alone in 157 cases, as a supplement to spinal in 24 cases and combined with nitrous oxide and oxygen in 70 cases. The remainder of the series consists of the use of endotracheal in 8 cases and 17 miscellaneous anesthetics.

"You will note the great preponderance of spinal, which is typical of the wishes and leanings in the Navy. It is used in most lower abdominal and lower extremity work. I have fought against high spinal quite effectively, as I am afraid of it and have noted a higher occurrence of atelectasis with its use than with inhalation. Caudal is used in all rectal surgery. I use the caudal plus
transsaccral, and have had no failures and no complications. In all contemplated
long orthopedic operations on the lower extremities and long lower abdominal
work I use the continuous spinal. We did not get the needles or Leman
mattress until January so the figure given above represents only 5 months.
My maximum dose was 425 mg. on a repair of the common peroneal nerve, lasting
4 hours, using 3% procaine in L3 - L4. The results were perfect. On all
work on the upper extremities where a general is indicated I have used 2.5%
pentothal supplemented by a flow of 1000 cc of nitrous oxide and 500 cc of oxygen.
This permits our orthopedists to putter along for 2 or 3 hours giving the patient
doses of not over 2000 mg of pentothal. With this combination I notice that
the greatest amount seems to be used early in the operation, and maintenance
is simple and smooth on small additional doses. I have had nothing but excel-
lent results with this combination.

"I now use cyclopropane for getting my patients deep before intubating
then. I was very dissatisfied with nitrous oxide induction for the introduc-
tion of the tube. Several times I had to resort to blind nasal intubation
with nitrous but have failed only about three times and then only when I was
less adept than now."

France: Written July 3, 1944; received July 12, 1944.

"We have just been in the campaign that took Cherbourg landing in
France shortly after D-Day.... I have compiled our anesthetic statistics and
although I can't quote figures to you, I can quote the percentages. I might
say that these are based on three figures - the middle range (one thousand
being the high limit). Here they are: Pentothal --- 63%; Local --- 13%; Open
ether --- 15%; Gas-0.2-oxygen --- 15%; Spinal --- 0.8%; Pentothal, N2O and O2
0.3%; Morphin, intravenously --- 4%. The high percentage of local used I
think is interesting. I have found the surgeons very cooperative in this
respect. The reason why we did not use the gas machine more often is because
of the lack of experienced anesthetists, the non-mobility of the machines and
the selection of cases. These were reserved for the more serious abdominal
cases. We used 2.5% pentothal. I plan to use a 4% solution during the next
campaign because of the ease of preparation and the ease of maintaining the
supply of syringes. This latter supply is quite a problem. We do not have
time to boil our syringes. We use alcohol for sterilization. We give all pre-
operative medication intravenously -- morphine gr. 1/4 and atropine gr. 1/150.
Anything less than 1/4 gr. of morphine I have found is inadequate with these
lads.

"We had one laryngospasm during the administration of pentothal. This
was controlled by intravenous atropine. There were four other cases that
approached this but we aborted them. Two postoperative pulmonary atelectasis
occurred. These were massive affairs and fortunately they responded well to
conservative treatment. I passed four intratracheal tubes. Many more could
have been passed but we have no one else that can do so and I was occupied at
the time. We had no anesthetic deaths. When we function at full capacity
there are not enough anesthetists. I have had to give two anesthesias at one
time on a few occasions. I had made a few syringe holders out of the brackets
from a ping-pong net which worked very well at these times. We give oxygen
in most of our pentothal cases. The B&L masks are used and they are wholly
adequate. We are supplied with enough blood which we use freely. However, the
sets, i.e., the tubing and filter is the damnedest contraption out. Whoever
passed on that really made things difficult for us. The blood goes in much too slowly and the damned thing is either coming apart or plugging. Why they couldn't use the good old simple tube is beyond me. We all are very disappointed and upset about this."

South Pacific: Written July 9, 1944; received July 14, 1944.

"I have never been up before so many grade IV risks in my life. I was sure happy to have that hand roller that you gave me. All the acute casualties had plasma or blood running through 15 gauge needles and I pushed it real hard. Pentothal is a godsend. I have used it in 90 per cent of our cases (two loads) using oxygen with it on ten longer cases. I have one nurse, two dentists and two medical men working five tables with pentothal and although it was hectic at first supervising them, they've become fairly good at it by now.

"I am using deep cervical blocks in the neck cases, spinals as much as possible but the hemoglobin's have been obviously very low so that I had to go a little easy with them. We're in a spot right now where pentothal will be hard to get so whenever we get close to a supply ship or even any ship that has some we go on a begging tour. There should be plenty of it stocked out here or in any battle zone in large quantities. I can sure recommend this and I would certainly like to get my hands on some five gram ampoules."

United States: Written July 11, 1944.

"We have recently had letters from three of our corpsmen who were trained as operating room technicians and were assigned to new baby flattops. They all have the same complaint; whoever drew up the list of equipment to be furnished the sick bays on those ships forgot to include pharyngeal airways. Apparently McKesson gas machines are standard equipment aboard such ships... We had another one for the books a couple of weeks ago, a left-sided lobectomy for bronchiectasis. The patient had a very productive cough with a large amount of purulent expectoration every day... I [did not see] the patient until he came to the operating room. He should have had postural drainage that a.m. and he should have been bronchoscooped. Miss [name] put him to sleep with cyclopropane and I slipped in a tube and we turned him over on his side. The surgeon had no more than made a good start in the left lower lobe when he plugged up in the right side and got a complete collapse--so I carried him in his left upper lobe while they got the left lower out and closed up. Then we turned him over, sucked out the right main bronchus through a bronchoscope and got the right side treated. He had four pints of blood and two pints of plasma on the table and his postoperative course was entirely uneventful. The one big difficulty with an anesthesia service in a hospital of this sort... is that the problem of proper preanesthetic medication is often completely ignored... We have circumvented that detail here by tasteful suggestions to the surgeons and now most of our patients are satisfactorily prepared as far as preoperative sedation is concerned."
United States: Written July 17, 1944.

"I am enclosing a copy of our anesthesia work done since I've been here:

1944

<table>
<thead>
<tr>
<th></th>
<th>March</th>
<th>April</th>
<th>May</th>
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<tbody>
<tr>
<td>Spinal</td>
<td>134</td>
<td>164</td>
<td>122</td>
<td>66</td>
</tr>
<tr>
<td>Caudal</td>
<td>35</td>
<td>8</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Local</td>
<td>32</td>
<td>19</td>
<td>59</td>
<td>79</td>
</tr>
<tr>
<td>Intravenous pantothal</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Caudal + pantothal</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gas-oxygen-ether</td>
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<td>1</td>
<td>4</td>
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<td>Open drop ether</td>
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<td>Spray</td>
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<tr>
<td>Sympathetic injections</td>
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<td>1</td>
<td>-</td>
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<tr>
<td>Total</td>
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<td>230</td>
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</table>

Things are going smoothly at present although in June I did have a few complications that worried me. I had 2 cases of atelectasis following spinal. One in a case of ruptured pelvic ulcer, the other in a case of nephrolithotomy. Both were rather high spinal blocks although the patients both had good intercostal activity throughout. In addition, my nurse gave a drop ether for an obstetrical case and got an ulceration of the cornea, after taking all the usual precautions to protect the eyes. Our eye man insisted that we change from mineral oil to castor oil, which we did. Several days later the same thing happened to her. She was almost ready to quit anesthesia and go on ward duty. We now have a gas machine in the delivery room which we stole from the dental clinic and I hope our obstetrician's problems will be satisfied. I tried selling the O₂, but on local or perineal block but no luck thus far... The surgeons here are impatient and don't like to wait for a case. Hemorrhoidotomies are scheduled with not enough time for me to do other than spinal. The number of pantothal cases are still lower than I'd like but with a more varied type of surgery perhaps we can now increase that.

India: Written July 21, 1944; received July 31, 1944.

"I have one problem among many which I wish to relate to you for it really gives one something to ponder over. I have had ten cases of convulsions
in ten Chinese patients, none in Americans. Each case received a left brachial block for surgery on the arm. I have done at least three hundred of these blocks and all have been satisfactory from the standpoint of anesthesia. These patients were perfectly calm until suddenly their eyes would begin to roll, they would talk in a jabbering manner, start reaching into the air for something and then go into a clonic convolution. Pentothal sodium usually no more than 3 or 4 c.c.s of a 2.5 per cent solution would control the convolution and they would go into a sleep which was more coma-like than natural sleep. Then they would sleep for several hours. One fellow slept for 10 hours. When they awakened they were perfectly normal in every respect but none could recall having the convolution or being operated. Immediately after the convolution started the pulse and blood pressure were very little disturbed and at no time was there any respiration arrest.

"The striking thing to me is that all were with left-sided brachial plexus blocks, never from right side. They never occurred in Americans. I am wondering if some of the solution anesthetized the cervical sympathetic or the vagus and in some way increased the cerebral anoxia to such a point that it resulted in a convolution or whether I just by accident hit ten epileptics or ten procaine sensitive patients. The slight change in blood pressure, pulse and respiration are equally difficult to explain. When given pentothal the respiration did not become depressed either. It is a very puzzling thing to me. There was no preliminary muscle twitching but a sudden take off into the clonic stage...."

"What is the opinion of giving plasma by arterial route? I have used this method often and don't want to commit myself until I have had an authority's opinion on it. Just how irritating is plasma to the artery wall? I saw one case of arterial occlusion from pentothal which was given by an inexperienced person. The way I got started on using plasma in the artery was we had a Chinese boy who was practically dead on arrival—no pulse or blood pressure. I usually use the femoral vein but even it was collapsed. So I put the needle in the femoral artery and even there I had to aspirate to get blood and with difficulty. After running in 1500 c.c's the vascular pressure was raised sufficiently high to be just equal to the pressure of the plasma flowing by gravity from a height of 3½ feet. Then the needle was inserted in the femoral vein. The comeback the patient made was really dramatic, so since then in those cases that looked like they were beyond help I have used this method. I have never experienced any reactions or seen any thrombosis from its use."

France: Written July 22, 1944; received August 1, 1944.

"We worked for 19 straight days and nights and due to a shortage of anesthetists I had to put in many hours. During that time we gave about 1,300 anesthetics and had no anesthetic deaths and no anesthetic complications—a wonderful slice of good fortune, as I had quite a few untrained people giving pentothal at various times. The above figure is broken down as follows: Pentothal 67.26%; regional (local infiltration, field block and nerve block) 25.16%; inhalation 4.64%; combined pentothal 1.70%; spinal 1.18%. In addition, I did 13 lumber sympathetic blocks and 2 cervico-thoracic sympathetic blocks. Pentothal has been a godsend on account of the speed and ease of giving, the pleasant
induction and its safety in selected cases in untrained hands. We had one severe laryngospasm. The patient was being given pentothal by a dentist of a maxillo-facial team and he had just inserted a nasal airway (contrary to my standing orders to my own personnel). I inserted an I.T. tube with immediate relief (to all of us). We did all of our brain cases under pentothal and they did extremely well—26 cases. One of these cases lasted 3 hours and 10 minutes and required only 1.75 gm.; premedication was nembutal gr. iii and atropine 1/100 gr. The routine premedication for pentothal is morphine gr. 1/6 and atropine gr. 1/100 given intravenously in the operating room. The morphine is omitted in cases showing any degree of clinical shock if the field dose of 1/2 gr. has been given within the previous 12 hours and in actual or possible head injuries. I had one commencing ether convolution which was quickly stopped by 3 oz. of good old pentothal. All abdominal and chest cases were done under intratracheal ether, the latter with positive pressure. The regionals include just about all the ones in your book (my Bible)—results excellent. My most valuable possession is my Lundy syringes and needles.... I'd like your opinion of the use of pentothal in blast injury cases."

South Pacific: Written July 26, 1944; received August 8, 1944.

"We are located in a hospital formerly operated by the Japanese.
Our work consists largely of caring for the wounded Japanese snipers who are not killed.... Our unit doesn't even have a suction machine.... The other day and I did a high thoracic laminectomy under pentothal anesthesia for a gunshot wound of the spine. Our instruments and suction apparatus were borrowed from the Army.... We have a few elective cases: appendices and amputations and use spinal or pentothal mainly because of their simplicity and lack of an anesthetist."

South Pacific: Written August 3, 1944.

"We used spinals a lot. Nitrous oxide plus oxygen and ether was the main inhalation anesthesia by itself used. But probably more wisely used than ever was a combination of pentothal and 60 – 70 N₂O and O₂. Operations lasting 2½ – 5 hours can be done on 1½ – 4 Gms. of pentothal, which we consider very good. This is used mainly for neurosurgery and orthopedic work. The N₂O concentration is low enough that more adequate O₂ can be given. It also seems to stimulate respiration, thus countering somewhat the depressing effects of the pentothal and it cuts the pentothal required by about 50 percent. For surgery where relaxation is needed it will work but not quite as efficiently."

Southwest Pacific: Written August 26, 1944; received September 4, 1944.

"I was then taken off medicine and sent to the O.R. room in charge of anesthetics, central supply and penicillin officers.... Anesthesia is quite simplified consisting of spinals and pentothal as a rule with a few general inhalations. Up to today we had 3 nurse anesthetists and now we have 2.
I have had about 6 intratracheals for thyroids and one chest cast. Inflamed pilonidals are done with pentothal, all hemorrhoids and pilonidals (quiescent) are done under spinal. There seems to be no chance for caudal, transsabral or blocks. I did do one too block. For spinals ... [we use] pentocaine with glucose. Hemorrhoids and pilonidals call for procaine. Everything is snow or crystals. Size 18 spinal needles throughout. Under ____ technique 5 c.c. solution is injected requiring a period of 5 minutes. Last week we got a new Lundy-Heidbrink gas machine. We have 3 now. One will have to be sent back for a complete overhaul. There are no gauges for bag pressures on the old machine. One doesn't even have an adjustable relief valve. The new machine appears to be excellent."