needle is attached to the 10 cc. syringe containing 10 cc. of spinal fluid and this fluid is thoroughly mixed with the novocaine crystals in the 500 mg. ampoule. . . . The dissolved crystals are now removed from the ampoule into the syringe which is attached to 30 inches of rubber tubing. It takes 2 cc. of this solution to completely fill this rubber tubing. The stopcock, which is connected with the syringe, is now turned to cut off the flow of solution. There will be 8 cc. of solution remaining in the syringe and 2 cc. in the 30 inches of rubber tubing. The plug is now removed from the needle in the spine, and the rubber tubing, with attached syringe, is connected with the spinal needle.

The stopcock is turned to open, and by gentle traction on the plunger of the syringe a free flow of spinal fluid is obtained. Sometimes the spinal fluid flows itself, pushing the plunger of the syringe outward. When we dissolve 500 mgs. of novocaine in 10 cc. of spinal fluid we get a 5 per cent solution, each cc. of which contains 50 mgs. of novocaine. The usual initial dose of novocaine is 150 mgs.; 3 cc. of this solution is slowly injected. The desired height and degree of anesthesia should be obtained in five or ten minutes. The patient is now placed into the position desired for operation. As soon as that position is assumed, the flow of spinal fluid is tested to be sure it is free. The operative area is prepared, draped, and the operation begun. Every thirty minutes 1 cc. of spinal fluid is aspirated to be sure of a free flow, and 2 cc. returned to the subarachnoid space. This gives a dose of 1 cc. containing 50 mgs. of novocaine. Sometimes the novocaine must be given more often than 30 minute intervals, and in doses more than 50 mgs. in order to maintain perfect anesthesia. The proper dose is enough to produce the desired level and degree of anesthesia, and this varies greatly."

F. A. M.


For the past four years the alcohol nerve blocks have been performed for hypertension. The injection method is simpler of performance and less traumatizing than resection by surgery. Ganglion block for hypertension is done in 2 stages. The first stage is done after a thorough physical check-up which includes, among other tests, a series of blood pressure recordings. Morphine gr. 1/6 and scopolamine hydrobromide gr. 1/200 is given one hour before the block. The patient is anesthetized with cyclopropane. Blood pressure readings are made before, during and after the block. With the patient lying prone the points for injection are mapped out with a china glass pencil. "Each spinal needle is then inserted so that it impinges upon the transverse process. It is then withdrawn slightly and with a downward and inward tilt it is passed beneath the transverse process for a distance of approximately 1 cm. All of the 6 needles are . . . placed into the sites of the eighth to twelfth thoracic and first lumbar ganglia. Five cc. of 1 per cent novocaine is then injected into the first lumbar needle and that needle is withdrawn, leaving 5 needles in situ. Thereafter, 4 cc. of absolute alcohol is injected into each of the remaining needles. As soon as the absolute alcohol is injected the needle is withdrawn. Aspiration before injecting any solution assures that the needle is not through the pleura or in any vessel. If the blood or air is obtained replace that needle before injecting the solution. The injection of the novocaine into the lumbar site pre-
vents the alcohol from running down the plane in front of the vertebrae into a lower site and causing a paralysis. It also prevents a sciatic neuritis previously encountered before doing this. The novocaine acts as a pool in which the alcohol diffuses and becomes harmless.

"The blood pressure is taken immediately upon the completion of the procedure and every few minutes thereafter until the drop has become stationary. Oxygen should be started as soon as the procedure is completed to assist the patient to react more quickly from the anesthetic and to prevent hypotension shock. The patient is kept prone until completely reacted and only then is turning permitted. Lying prone produces abdominal pressure which prevents any severe drop in the blood pressure. In order to maintain abdominal pressure after the patient is turned, an abdominal binder may be applied. As soon as the patient has reacted, he is returned to his bed and is encouraged to drink some hot fluids such as tea, coffee or broth. Careful check on the blood pressure is maintained and if at any time the systolic pressure drops to 100 or below, or if dyspnea occurs, oxygen is administered by mask and ace bandages are applied to the legs and the abdominal binder is tightened. The second stage or the other side is done from five to seven days after the first stage. . . ."

Results have been more satisfactory when the block is done on the left side first. The relief has been permanent, contrary to earlier expectations. "Experimental work is now being done in combining thoracic one, two, three and four in separate stages to improve the heart action along with dropping the blood pressure. It is this approach that may give some relief for the malignant type of hypertension which is yet non-curable. In conclusion may it be said that we believe the alcohol nerve blocks as described in this article have a definite place in the armamentarium of today in hypertension and asthma."

F. A. M.


During 1946 there were 30,574 operations with anesthesia at the Mayo Clinic. The postanesthesia observation room at one of the hospitals was used for 4,309 patients. The scarcity of nurses, as well as the better care that the patients receive, makes the P.A.R. one of the most valuable facilities in the hospital.

Special agents and methods of anesthesia were used more frequently in 1946 than in 1945. Intravenous anesthesia was used extensively. It was used more frequently as a means if induction of general anesthesia followed by inhalation anesthesia than it had been previously. From experience it has been found that small doses (5 to 7 cc.) of a 2.5 per cent solution of pentothal sodium is about the right dose for the average adult. The object is the pleasant production of a state of basal hypnosis and amnesia. Nitrous oxide, 50 per cent and oxygen 50 per cent, are administered with pentothal during operations.

Combined solutions of d-tubocurarine and pentothal sodium were given cautiously. Slow injection of curare is considered to be a safety factor. The dose was limited to that which would produce relaxation without stopping diaphragmatic breathing. Divided doses were given as needed. Cyclopropane followed by curare was the combination most used. Supple-