severe rise in venous pressure, bradycardia, hydremia and hemolysis, followed by sudden ventricular fibrillation in 1–4 minutes after flooding, in spite of IPPB. Sea water drowning caused severe hypotension, slight rise in venous pressure, bradycardia and hemoconcentration and IPPB led to partial reoxygenation of the arterial blood with restoration of the circulation. When IPPB was discontinued after 10 minutes all dogs started breathing spontaneously but died within a few minutes with pulmonary edema. When after sea water drowning in 5 additional dogs, IPPB was performed with oxygen for 3 hours and the trachea was repeatedly aspirated, reoxygenation was better than in the dogs ventilated with air, and foam in the airways disappeared after about 1 hour of IPPB; when IPPB was discontinued after 3 hours, 4 dogs died with pulmonary edema within hours, 1 survived.

Gastric distension: In highly anesthetized dogs (pentobarbital) a gastric latex bag was acutely distended with water (150 cc./kg. body wt.). During spontaneous breathing with normal oxygen saturation (6 dogs) acute gastric distension caused a marked rise in inferior vena cava pressure, no rise in superior vena cava pressure, a slight decrease in mean arterial pressure with a narrowing of the pulse pressure, and no significant change of arterial oxygen saturation. During obstructive asphyxia (tracheal tube clamped) gastric distension produced similar changes in venous pressure, but rise in mean arterial pressure with widened pulse pressure (12 dogs). Obstructive asphyxia was maintained to the point of apnea and resuscitability with IPPB determined. Spontaneous respiratory movements returned more rapidly and the arterial pressure rose quicker when the stomach was drained during resuscitation (6 dogs) than when it was maintained distended (6 dogs). IPPB with fixed tidal volumes reoxygenated the distended dogs as well as the undistended dogs, although higher airway pressures were required in the distended dogs. [*Supported by the Research and Development Division of the Surgeon General, under Contract No. DA-49-007-MD-858.*]

Comparative Evaluation of Three Drugs Used for Sedation, Hypnosis, Amnesia and Narcotic Potentiation During Labor. BENJAMIN ROOT, M.D., EDUARD EICHNER, M.D., MARVIN J. BROWN, M.D., AND MORRIS H. SABLE, M.D. *Departments of Anesthesiology and Obstetrics, Mt. Sinai, Hospital, Cleveland, Ohio.* The evaluation of potent intravenous drugs for pain relief during labor is difficult. Evaluation of drug combinations is performed under conditions unfavorable to objectivity. The use of a single dose for all patients produces too little or too great an effect in a considerable number. Finally, the lack of detailed observation following medication may permit a number of side-effects to remain undiscovered. This study had two main purposes; to develop a technique for objective evaluation of drugs used for medication during labor and to compare two phenothiazine derivatives, promethazine and promazine, with each other and with secobarbital, all being used with appropriate amounts of meperidine and scopolamine.

An obstetric medication evaluation sheet was used to record a battery of reasonably objective clinical observations related to labor, the psychic, hypnotic, and analgesic status of the patient, and vital signs, as well as information about the anesthesia, the baby, and post-partum evaluation. Three drug combinations were administered intravenously in a sequence determined from a table of random numbers in such a manner that the observer did not know their identity until after complete evaluation. The dosages consisted of 50 mg. of each of the phenothiazine with 50 mg. of meperidine, and 100 mg. of secobarbital with 100 mg. of meperidine. All medications included scopolamine 0.4 mg. Subsequent doses of medication were standardized and administered often enough to maintain a satisfactory hypnotic and analgesic effect.

In the first 80 patients studied, the following results were noted. All three medications produced a rather satisfactory degree of hypnosis, analgesia, and amnesia in the majority of patients. Differences in the medications were minor and their significance could not be determined in so small a series. Since equivalent analgesia was provided by the phenothiazines combined with the smaller dose of meperidine, some support was given to the concept of the narcotic-potentiating effect of these drugs.

There were major differences between the medications in their effect on blood pressure. Secobarbital produced little change, but both phenothiazines were associated with a relatively high incidence of rises and falls in blood pressure. Most of these were not of clinical significance, but there were two instances of blood pressure rise associated with severe headache and three cases of hypotension requiring and responding to vasopressors 20–25 minutes after medication. Of the phenothiazines, promethazine had a greater tendency to produce hypertension, and promazine a greater tendency to produce hypotension. In summary, all three medication combinations described were clinically satisfactory in the dosages used. Each method appeared to have certain advantages and disadvantages, none of which were sufficiently important to select or abandon any without further study. The major conclusion was that various medications for relief of pain during labor are capable of being studied with objectivity by the technique described.

The Effects of Neurotropic Drugs Upon the Electrical Activity of the Midbrain Tegmentum. BEN F. RUSY, M.D., AND LEROY W. KRUMPERMAN, M.D. *Department of Anesthesiology, Temple University Hospital, Philadelphia, Pennsylvania.* At the present time there are only a few published reports of the effects of drugs on the electrical activity of subcortical structures in human beings. To our knowledge, no investigations of the human midbrain reticular substance have been made. In recent years animal experimentation has demonstrated the importance of the brain stem reticular substance to the wakeful state, and there have been many animal studies which have shown a definite modification of the activity of the reticular substance by neurotropic drugs. Our investigations were carried out at the time of stereoencephalotomy done by Spiegel and Wycis for treatment of parkinsonism. A multilead, bipolar needle electrode is introduced by stereotaxic procedure into the desired area. In order to direct its placement, Pantopaque encephalography is done to locate the commissures, and the electrode is then introduced according to coordinates of Spiegel and Wycis determined by roentgenogram. The section of the midbrain explored was the dorsal part of the tegmentum, an area containing fibre tracts and the cellular elements of the reticular substance. This area is very small, being ventral to the periaqueductal grey, dorsal to the red nucleus, and between the roots of the third cranial nerve and the spinothalamic tract at a frontal level passing through the posterior commissure. It is believed that the electrode must be confined to this area in order to avoid damage to important neighboring structures. After the electrode has been placed, a control electrogram is made from two levels in the area being studied. A scalp electroencephalogram, an electrocardiogram and a pneumogram are also made. Blood pressure is monitored by the cuff method. The patient up to this point usually has received no preoperative or other medication. Local anesthesia is used to insert the electrode. After a satisfactory baseline recording was obtained, the drug to be tested was injected intravenously. Continuous recordings were made until clinical signs of drug effect were seen or until it is certain that sufficient time had elapsed for the drug to act. The drugs so far examined have been atropine, scopolamine, chloropromazine, and reserpine. To date there has been little effect noted upon electrical activity of the area studied; however, only a few experiments with each drug have been performed. Dosages have been rather small but in the range of clinical effectiveness. Sometimes a definite clinical change (drowsiness) has come on after injection and this has not been accompanied by any striking electrical change. However, the activity we have thus far been recording has been background or "spontaneous" activity. We have not yet examined the action of any drug in modifying a function of the reticular substance such as the arousal response. The study will be continued with some modifications.

The Circulatory Effects of Narcotics and Narcotic Antagonists in Man. EPHRAIM S. SIKER, M.D., HENRY M. BRUNN, M.D., JEFFREY S. CRAWFORD, M.B., AND FRANCIS F. FOLDES, M.D. *Department of Anesthesiology, Mercy Hospital, and the Section on Anesthesiology, Department of Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania.* Little