Two methods of prolonging spinal analgesia have been available: (1) the concentration of the anesthetic drug and (2) the continuous spinal technic. A third method is presented in which relatively small amounts of anesthetic mixed with adrenalin prolong the analgesia. Two hundred patients were anesthetized with hyperbaric pontocaine-glucose solutions containing varying amounts of 1:1,000 adrenalin. Sensory analgesia was prolonged to almost double the time produced by pontocaine-glucose without adrenalin. Motor relaxation, although somewhat prolonged, was somewhat unpredictable as to length of time. Continuous spinal analgesia was used, because of this unpredictable duration of relaxation, in operations requiring more than two hours. By adding adrenalin to the anesthetic solution, the intervals between subsequent injections were widely spaced even with small doses. "Pontocaine solution 1 per cent (20 mg. in 2 cc. ampules) was mixed with glucose, either 5 or 10 per cent, utilizing the following formula: mg. or cc. of pontocaine multiplied by three equals the total volume of diluted solution to enter the subarachnoid space. . . . For continuous spinal a 10 cc. syringe is used, into which 30 mg. or 3 cc. of pontocaine is aspirated. This is diluted to 9 cc. with glucose solution. For any single spinal injection, regardless of whether 6, 8, 10 or 12 mg. of pontocaine is used, only .2 cc. of 1:1,000 adrenalin is added to the pontocaine-glucose mixture. For continuous spinal .6 cc. of 1:1,000 adrenalin is added to the 9 cc. mixture of pontocaine-glucose." . . .

The blood pressure was not noticeably increased by the addition of the adrenalin. No incidence of post-spinal headache was increased and other neurological sequelae were no greater after the use of adrenalin than when adrenalin was not used. No postoperative complications occurred in the series. None of the other vasoconstrictors which were used (methedrine, neosynephrine and epinephrine) was as effectual as adrenalin. 2 references.

F. A. M.

TUOHY, E. B.: *The General Problem of Anesthesia in Obstetrics.* Minn. Med. **30**: 953–955 (Sept.) 1947.

In hospitals where obstetric facilities are available, the anesthesiologist and the obstetrician cooperate to care for parturient women. The choice of the analgesic and anesthetic for use in obstetrics depends on several factors. They are: "1. What is the physiopharmacologic action of the agent on both maternal and fetal structures? 2. What fetal or maternal diseases or abnormalities exist which may alter the selection of certain agents? 3. What agent or agents and method are best suited to the emotional and physical status of the mother? 4. Is the method used one which will afford the greatest safety to the mother and the infant?" Adequate relief of pain without systemic reaction, promptness of action and an effective means of counteracting over-effect are the criteria by which the agents should be evaluated. The advisability of totally relieving the pains of labor has been seriously questioned.

Some of the many methods of analgesia and anesthesia which have been proposed for obstetric use are not practical because they are too complex and technical. During the first stage of labor amnesia and analgesia are usually sufficient. At present, the combination of scopolamine and pentobarbital sodium is one of most effective means of conducting the first stage. Combinations of demerol, scopolamine and barbiturates have more analgesic and amnesic action. Morphine and pantopon should not be used within less than two hours from the time of de-

livery because they cause fetal respiratory depression.

Rectal analgesia is a well-accepted method of analgesia. Ether in oil, paraldehyde, avertin, chloral hydrate and pentothal sodium are used as rectal analgesics. As a rule the use of intravenous anesthesia is not recommended for use in labor. Ether and chloroform are used extensively for delivery in the home. Many combinations of agents are used in hospitals. Ether, chloroform, divinyl ether, nitrous oxide, ethylene and cyclopropane may all be used for analgesia but are usually administered during the second and third stages of labor.

Regional anesthesia by one of many methods has been used. Certain technics, such as continuous caudal block, require specific training. Other methods, such as pudendal nerve block and infiltration require minimal specialized training. For cesarean section, the anesthetic which may be best for the mother may not be best for the baby. Prolonged general anesthesia leads to fetal respiratory depression. A combination of local infiltration with properly timed general anesthesia has been advocated by many. Continuous caudal and continuous spinal anesthesia have been used successfully. Of the inhalation anesthetics, cyclopropane is best for the baby. Resuscitation procedures are more common after general anesthesia than with regional or combined methods.

In the presence of the major complications of pregnancy such as heart, kidney or blood diseases, local or regional anesthesia is to be preferred to general anesthesia. 7 references.

F. A. M.

MONROE, R. R., AND DRELL, H. J.: *Oral Use of Stimulants obtained from Inhalers.* J. A. M. A. 135: 909 (Dec. 6) 1947.

Amphetamine, or benzedrine, is being used as a central nervous system stimulant. This substance is contained in inhalers in an impregnated paper folded in 8 sections and called "a strip," each strip containing 31 mg. of benzedrine. This is chewed, incorporated in chewing gum, swallowed whole, dipped in coffee or alcoholic beverages.

This study was made on personnel of a military prison where 25 per cent of the inmates used benzedrine for euphoria. Withdrawing of the drug caused weakness, depression, gastrointestinal disturbance and tremor. Massive doses cause agitation, restlessness, sleeplessness, talkativeness, flushed skin, profuse perspiration, dilated pupils, fine tremor, rise in systolic blood pressure and pulse rate, paranoid ideas and auditory hallucinations. The diagnosis is made by finding the drug in the urine. Treatment of acute amphetamine intoxication is the injection of ascorbic acid which causes deamination by the ascorbic-acid-dehydro-ascorbic acid system.

To prevent the occurrence of benzedrine intoxication, an inhaler containing a volatile local vasoconstrictor which would be inactivated or not absorbed in the gastro-intestinal tract should be developed.

J. L. D.

ISBELL, HARRIS; WIKLER, ABRAHAM; EDDY, NATAN B.; WILSON, JOHN L., AND MORAN, CLIFFORD F.: *Tolerance and Addiction Liability of 6-Dimethylamino-4-4-Diphenyl-Hepanone-3 (Methadon).* J. A. M. A. 135: 888 (Dec. 6) 1947.

In both man and dogs, tolerance to analgesia, sedation, miosis, depression of caloric intake and respiratory and circulatory actions develop following administration of Methadon. Strong physical dependence developed in intact dogs, spinal dogs and a chronic decorticated dog. Methadon com-