blood was given later. It is not entirely clear why transfusion reactions on this basis do not occur more often, if the above percentage of Rh positive and Rh negative individuals is correct. Wiener and Peters offer two possible explanations: (1) that not all Rh negative persons are able to produce agglutinins, (2) that subsequent transfusions of Rh positive blood are either not given or are not given at a time when a high titre of Rh agglutinins is present in the recipient's serum.

"Erythroblastosis foetalis, which includes fetal hydrops, icterus gravis and congenital anemia, has long been an etiological puzzle. . . . It was shown that ninety-one per cent of the mothers affected with erythroblastosis foetalis were Rh negative, in contrast to the fifteen per cent to be expected from the general population. In addition it was shown that one hundred per cent of the affected infants and their fathers were Rh positive. It is likely, therefore, that the Rh positive fetus stimulates the production of Rh agglutinins in the mother's blood. The agglutinins found in the mother gain access to the foetus, cause lysis of the fetal red cells and produce erythroblastosis foetalis.

"Ordinary agglutination technique will only rarely demonstrate the presence of Rh agglutinins. The reaction is most pronounced at refrigerator temperatures. Wiener and Roberts described a sensitive technique which is as follows: One drop of a two per cent saline suspension of donor's cells is mixed with two drops of the patient's serum, the mixture is chilled in water and centrifuged five times. The tube is gently shaken to resuspend the cells, and agglutination is read macroscopically and microscopically. A control of patients' cells and serum is run to rule out agglutination due to an increased titre of cold agglutinins.

"Indications for special studies to prevent reaction caused by Rh factors are as follows: (1) If repeated transfusions are required for the supportive care of any medical or surgical patient (i.e., blood dyscrasia, chronic blood loss, pre- and postoperative care); (2) Any transfusion during pregnancy or the puerperium particularly if a history of obstetrical complications exists.

"A list of Rh negative donors should be available on every obstetrical service."

"Two cases of transfusion reactions probably due to Rh factors are described. 13 references.

A. W. F.

HARBORD, R. P.: *Anaesthesia for Air-Raid Casualties.* Brit. M. J. 1: 550–552 (May) 1942.

The casualties resulting from an air-raid may be suffering from hemorrhage, established traumatic shock, or burns. Patients in a condition of shock are treated by rest, warmth, morphine, and a transfusion of plasma. If hemorrhage has occurred whole blood is given.

Deep anesthesia should be avoided. So should anesthesia so light that "it may result in shock by allowing the passage of noxious stimuli." Severely injured persons require little of the anesthetic agent, and the anesthesia should fit the patient rather than that the patient should be forced to fit the anesthesia. Respiration must not be embarrassed in these patients. Deficient oxygenation should not be allowed to occur. Spasm of the glottis should be treated by intubation.

The author discusses the technics of anesthesia which have yielded good results: semiclosed nitrous oxide-oxygen-ether, light open ether, ether by the absorption technic, the intravenous barbiturates, and induction by an intravenous barbiturate followed by anesthesia with nitrous oxide or cyclo-

propane. Spinal analgesia and chloroform have been found of value only in exceptional cases. The importance of being able to intubate the trachea skilfully is emphasized, and the author believes in intubation as prophylaxis rather than as treatment.

Where a patient has been buried under wreckage for some time he may be suffering from starvation as well as from his injuries. If a limb must be amputated to extricate him from the debris, the choice usually lies between open ether, intravenous morphine, and an intravenous barbiturate. The difficulties of induction of anesthesia in patients suffering from wounds of the face are discussed. Carbon dioxide should be used sparingly if at all in severely injured patients, but oxygen should be given after operation. Oxygen is of great value in the resuscitation of persons severely shocked.

N. A. G.

LEMMON, W. T., AND PASCHAL, G. W., JR.: *Continuous—Serial, Fractional, Controllable, Intermittent—Spinal Anesthesia: with Observations on 1000 Cases.* Surg., Gynec. & Obst. **74**: 948–956 (May) 1942.

"Since April 10, 1939, when we gave the first continuous spinal anesthetic, we have administered more than 1,250 entirely satisfactory anesthesias by this method. In this paper we are giving some of our observations and a statistical report on 1,000 cases. In this series of cases we have used novocaine (procaine hydrochloride) as the anesthetic agent. Our choice of this drug has been deliberate since it is the least toxic of all drugs used in producing anesthesia by injection into the subarachnoid space. . . . Safety and controllability are the two things we desire most in spinal anesthesia. . . . We believe, that by giving much smaller initial doses of the drug, it should increase the safety. . . . The toxic symptoms seen following injection of a drug into the subarachnoid space are not due to the drug that is fixed in the lipoid elements of the sensory and motor synapses producing anesthesia but are due to the absorption of the drug from the cerebrospinal fluid into the systemic (venous) circulation. . . . The respiratory center is the most vulnerable to attack. When and if toxic symptoms of an alarming character develop, the first thing to do is to withdraw rapidly the cerebrospinal fluid containing the toxic agent. The greatest concentration of the drug is in the vicinity of the point of the needle. The nerves promptly recover from the anesthesia. This observation was first made accidentally when a turned stopcock on the syringe permitted an unintentional escape of cerebrospinal fluid into the syringe with a subsequent loss of anesthesia. This phenomenon has since been confirmed on numerous occasions. Spinal anesthesia is maintained by the drug that is present in the cerebrospinal fluid and when the concentration of this drug falls below a definite level the anesthesia promptly wears off. After anesthesia is established it takes relatively small doses to maintain the anesthesia for any desired length of time. If we are doing serious technical operative procedures and it is important to maintain complete relaxation at all times, we give an additional dose of 50 milligrams of novocain (3 per cent) solution at the expiration of every 30 minutes. Otherwise, we wait for the initial or previous dose to show signs of wearing off before we give an additional injection. . . .

"With a single exception anesthesia was produced to the desired level and degree and the operation was completed under spinal anesthesia. The exception here referred to was a case in which the right middle and lower lobes were being removed for bronchogenic