pulses through the use of local or spinal anesthesia. Indications for the use of local or spinal anesthesia in shock are based on other grounds." 10 references.

J. C. M. C.

FLINK, EDWARD B.: *The Distinction of Hemolytic and Nonhemolytic Transfusion Reactions.* J. Lab. & Clin. Med. 30: 371–373 (April) 1945.

"The importance of immediate determination of the presence or absence of abnormal amounts of hemoglobin in the plasma following febrile transfusion reactions is stressed. Unless hemoglobinemia and hemoglobinuria are looked for, it is impossible to distinguish hemolytic from simple febrile reactions on clinical grounds alone."

A. W. F.

STRUMIA, M. M.; CHORNOCK, F. W.; BLAKE, A. D., AND KARR, W. G.: *The Use of a "Modified Globin" from Human Erythrocytes as a Plasma Substitute.* Am. J. M. Sc. 209: 436–442 (April) 1945.

"Outline of Composition of Hemoglobin. The hemoglobin content of normal human blood varies, but it is usually 14 to 16 gm. per 100 cc. Hemoglobin is very soluble in water, and consists of 3 components: iron, porphyrin and a protein, globin. Globin constitutes about 96% of the total hemoglobin. . . .

"When hemoglobin is broken down in the body, the 3 components are apparently split from each other. The iron is retained by the body for the formation of new hemoglobin. Some or all of the porphyrin, which has been identified as protoporphyrin, is converted to bilirubin. It may be assumed that the fate of the globin is similar to that of any other native tissue protein. The 3 components of hemoglobin can be separated chemically with relative ease. Mild treatment of oxyhemoglobin with acid readily cleaves the globin from the iron-porphyrin combination. Treating oxidized heme with a weak acid will give iron plus protoporphyrin. . . .

"Comments. The expression 'plasma substitute' used in this paper is not to be construed as meaning that globin solutions can replace plasma in all instances. At best, 'modified globin' solutions can be expected to replace plasma insofar as colloidal osmotic properties are concerned.

"It is estimated that every year nearly 1½ billion cc. of packed red cells may be made available from the preparation of plasma for the Armed Forces and for the civilian population. By a relatively simple process, this hemoglobin can be transformed into a 'modified globin' at a fraction of the cost of plasma production.

"From the amount of red cells mentioned above 375,000 kg. of globin can be prepared, with an osmotic power about twice as great as an equivalent amount of plasma proteins, that is, an osmotic equivalent of about 12½ million liters of citrated plasma. In other words, from a blood donation it is possible to obtain about 250 cc. of plasma (about 17 gm. of plasma proteins) and about 24 gm. of globin. This globin is equivalent in osmotic power to about 600 cc. of plasma. Thus from a single 500 cc. donation of blood it is possible to obtain the osmotic equivalent of about 4 donations.

"As yet, the properties of this modified globin have not been fully investigated. It has been ascertained that this material is: (1) safe; (2) capable of replacing lost blood volume in cases of severe secondary shock."

A. W. F.

BOYNTON, M. H., AND TAYLOR, E. S.: *Complications Arising in Donors in a Mass Blood Procurement Project.* Am. J. M. Sc. 209: 421–436 (April) 1945.