effect of shock upon the metabolism of specific isolated tissues. . . . It seemed to us advisable to examine the effect of shock on excised tissues, to learn whether, after a reasonable period of progressing shock, impairment of the enzyme and other systems concerned in cellular metabolism might be demonstrated. . . . Fifty-seven cats were used. . . . The quantities of oxygen uptake and lactic acid output by brain cortex, heart muscle, kidney cortex, and liver from cats in profound hemorrhagic shock were not significantly different from control values. The drop in the total resting metabolic rate commonly found in shock is therefore apparently not dependent upon abnormality in the peripheral cells in so far as this can be determined under the conditions of these experiments." 13 references.

J. C. M. C.

REA, C. E.: *Shock, Its Cause and Treatment.* Minnesota Med. **26**: 531–534 (June) 1943.

"Shock is a symptom-complex characterized by weakness, pallor, rapid pulse, sweating, low blood pressure, and loss of degrees of consciousness. . . . Up to 1930, the idea that a toxin was the cause of shock was generally accepted. . . . Perfusion experiments with blood from traumatized regions have failed to elicit any evidence for the presence of vasodilator substances in the tissues. Numerous investigations have repeatedly shown that histamine is not the sole causative agent in traumatic shock. . . . There is a definite relation between the local loss of fluid and the reduction of the blood volume present in traumatic shock. . . . Nervous factors are important in the etiology of shock. It is well known that rough handling of tissues, unskillful manipulation, faulty immobilization of fractures, fatigue, cold, fear, and pain all increase shock. Crile believed that shock was due to excessive painful stimulation which brought about exhaustion of the vasomotor centers. . . . It might be thought that anesthesia should lessen or actually prevent shock due to nerve impulses; however, recent experiments have shown that nerve impulses actually reach the sensory cortex in general anesthesia. They do not reach the brain with local or spinal anesthesia. In shock due to trauma, the deeper the anesthetic the more severe the shock. . . . If one determines how much blood an animal can lose before going into shock and then lets the animal recover, if a femur is fractured and the edges of the fractured bones rubbed together, the animal will go into shock when a much less quantity of blood has been lost. It is well known experimentally and clinically that if one injects local anesthesia at the side of the fracture, the incidence of shock is much lower. . . .

"The best way to treat shock is to try to prevent it by getting the patient in the best possible condition for operation, care in the selection of anesthesia, avoiding trauma to the tissues during the surgical procedure, etc. If the shock is primary in nature, as for instance after hearing some bad news, or immediately following the administration of a spinal anesthetic, etc., all that one has to do is to lower the head and wait a few minutes, and in cases of mild shock this is all that is necessary. In regard to spinal anesthesia, if a patient goes into severe shock vasoconstricting drugs do not do much good. Vasoconstricting drugs, as ephedrine, are most effective when given at the time the anesthetic is administered. After the patient has gone into shock from a spinal anesthetic one usually has to give intravenous fluids to overcome the shock. Occasionally one sees shock in patients brought back to the ward after an operation in which

cyclopropane has been used. This is usually a temporary affair and the blood pressure quickly rises when the patient is put into Trendelenburg position. . . . In treating shock it is important to try to get rid of the cause if possible, that is, stopping the source of bleeding, correcting improper splinting, etc. . . . The intravenous administration of whole blood is the best treatment in case of shock due to hemorrhage; next best is blood plasma or serum. If these are not immediately available, an intravenous injection of a 5 per cent acacia solution or physiologic saline may be given temporarily. . . . One has to give enough blood until the patient's blood pressure rises to over 100 mm. of mercury and his general condition is improved. . . . Plasma and serum of course have the advantage of not having to be cross-matched with the patient's blood. . . . The blood pressure gives the earliest, simplest, and most accurate indication of impending shock." 9 references.

J. C. M. C.

HENNIG, G. C.: *Reactivity of the Skin: Effect of Anesthesia and Shock on the Histamine and Allergic Responses.* U. S. Nav. M. Bull. 41: 698–707 (May) 1943.

"Human plasma and albumin are now being prepared in large amounts for the treatment of shock and burns by the military forces. However, there is great need for still larger amounts of some blood substitute of other than human origin which can be made readily available. For this purpose it has been proposed to substitute bovine albumin as a more abundant and more available source for meeting these needs. The question of the antigenicity of these foreign proteins naturally raises a practical problem. The importance of this question becomes even greater when it is realized that many patients will need repeated large amounts of these foreign proteins. It has been maintained that anesthesia protects against anaphylaxis, and it is possible that patients in severe shock do not react as strongly to reinjection of antigenic substances as do normals. It was the purpose of this study to ascertain with greater certainty whether patients under anesthesia or in shock who might be subjects for treatment with a protein blood substitute show any diminution in their reactivity as measured by their skin reaction to histamine or to natural allergens. . . .

"A histamine stock solution, supplied in 1 cc. ampules in a 1:1,000 dilution, was employed. This stock solution was diluted with physiological saline into three dilutions which were used for our series of tests. These dilutions were: 1:100,000, 1:1,000,000, and 1:10,000,000. Intradermal injections of 0.1 cc. of these particular dilutions gave skin flares which seemed to us to reach the smallest and largest size which could be measured with any degree of accuracy. . . . Dust, ragweed, timothy, peanut oil, codfish, and horse-dander solutions were used to test for natural sensitivity preoperatively. . . . With the dilutions used, the wheal did not enlarge to any great extent in most of the cases, nor did pseudopods form. For this reason the flare was measured rather than the wheal. . . . The histamine flare was found to be smaller in those patients who had received ether or nitrous oxide anesthesia for thirty minutes or longer. Intravenous pentothal anesthesia did not affect the size of the flare when used for 30 minutes. Spinal anesthesia likewise had no effect. Cases of shock uncomplicated by anesthesia showed some diminution in the size of the histamine flare, and those patients in whom ether anesthesia and shock were combined showed the greatest decrease in the size of the histamine