"Solutions of gelatin and of acacia in saline exert an osmotic pressure on capillary walls and have been used to restore water to the vascular tree from tissue spaces. Both of these have been developed to the stage where the former troublesome toxicities have been avoided and they have a place in therapy. The ideal substance to use is human plasma which is non-toxic if properly prepared, and will draw water into the blood stream by increasing the osmotic pressure of the blood. Both citrated plasma and serum from clotted blood are in general use today. Plasma diluted with saline, when injected will not raise osmotic pressure unless it is extremely low, and the saline will tend to pass into tissue spaces. It could be used to supply protein for replacement, but would only aggravate edema. Concentrated plasmas, developed by the dehydration of plasma to a powder, and resolution in less than the original volume of water, act best to raise osmotic pressure of the blood and withdraw water into the vascular tree. Bovine plasma has been tried intravenously on animals but it is quite toxic and as such cannot be used for humans. . . . Serum or plasma proteins are of two general classes, albumins and globulins. The albumins have smaller molecules and therefore exert greater osmotic pressures per unit of weight than the large molecules of globulins. Preliminary experiments show that the globulins are the cause of all anaphylactoid reactions to serum of other species, while the albumins are non-toxic. Methods of separation are difficult but not impossible. . . .

"Transfusions of whole blood must be mentioned to complete our examples of parenteral fluids. Here we give the cellular elements of the blood as well as the proteins, and so are able to combat hemorrhagic tendencies, treat anemias and leukopenias when they are present, as well as treat disturbances of water balance when plasma is not available. . . . The uncomplicated case requires at least 2500 cc. of fluid per day for water balance. If given parenterally this should be 1000 cc. of isotonic saline and 1500 cc. of isotonic dextrose in water. After fever or profuse sweating this should be increased at least another 1000 cc., preferably of the sugar solution. After vomiting or gastric drainage the excess volume lost should be replaced by an equivalent volume of isotonic saline. After diarrhea the excess volume excreted should be compensated by 1000 cc. or more of isotonic saline or 500 cc. of an alkaline solution and the balance of saline. Hypertonic solutions should be used exclusively to relieve cerebral or pulmonary edema. They have no place in the treatment of dehydration. Whole blood should be given only when extra red blood cells and hemoglobin, antibodies or platelets which disappear in stored plasma, or fibrinogen for clotting, are needed. For the prevention of shock concentrated plasma or plasma should be given in amounts sufficient to keep hemoglobin or red count from rising. If plasma is not available hypertonic solutions of dextrose or sodium chloride are of some help, dextrose being somewhat better than saline. When shock is present large amounts of concentrated plasma or plasma are needed to restore blood volume. Crystalloid solutions are of little value in shock once it has developed. Give fluids by mouth, by rectum and by clysis whenever this can be done. More important than the decision to give fluids, is the decision of what kind of fluid and how much to give." 12 references.

J. C. M. C.

BETLACH, C. J.: *Selective Anesthesia.* California & West. Med. 58: 16–18 (Jan.) 1943.

"Some of the factors which make selective anesthesia safer than large doses

of single anesthetics are: 1. Stimuli to the central nervous system are decreased or eliminated, thus diminishing the amount of general anesthesia necessary. 2. The exhaustion caused by nervous tension of some patients under local anesthesia alone is eliminated. 3. Patients having received small doses of anesthetics respond quicker, and normal reflexes return sooner. 4. Large doses of anesthetics, especially spinal for the poor-risk patient, are extremely dangerous. 5. Shock from deep cyclopropane and ether anesthesia is eliminated. . . . Selective anesthesia for the bad-risk patient is usually based on local anesthesia. . . . Operations on the skull and brain can be carried out under many combinations of anesthetics. . . . In operations on the eye when pentothal is to be used, it is helpful to use topical anesthesia also. This seems to prevent some of the sneezing and coughing sometimes encountered. . . . When pentothal is to be used for extraction of teeth in a noninfected area, a quick injection of novocain-adrenalin solution will cut down on the bleeding, allay some of the immediate postoperative pain, and decrease the total amount of pentothal required. . . . For poor-risk patients undergoing thyroidectomy, I feel that local anesthesia again is the basic anesthesia, with the order of anesthesia reversed; that is, the local is given after the patient is unconscious. . . . If pentothal is to be used, oxygen should also be given. . . . Heavy premedication plus local anesthesia is a good form of combined anesthesia which may be satisfactorily used in the nontoxic thyroid in the placid type of individual. . . . For extra pleural thoracic surgery, heavy premedication plus local plus nitrous-oxide and oxygen give a combination which allows the use of the electro-surgical unit. . . .

"Abdominal surgery offers the greatest opportunity for various combinations of anesthetics. Local infiltration and abdominal block form the basis for selective anesthesia in the poor-risk patient. . . . If pentothal is to be used, it is wise to give oxygen simultaneously. The addition of nitrous-oxide, not to exceed 50 or 75 per cent, will reduce the amount of pentothal necessary, and still allow good oxygenation to be carried out. Cyclopropane is better if more relaxation is desired. The adrenalin in the local anesthetic should be omitted if cyclopropane is to be used. . . . In the better-risk patient, small doses of spinal anesthesia plus cyclopropane is a very good combination for abdominal surgery."

J. C. M. C.

WIGGIN, S. C.: *Anesthesia for the Surgery of Trauma.* Am. J. Surg. **59**: 363–369 (Feb.) 1943.

"We are confronted with a problem quite different from the last war, namely, that of civilian casualties, besides the wounded soldiers. . . . Of great importance is the consideration of shock in these patients who have been subjected to loss of blood, trauma to the nervous system and tissue damage. This is treated with plasma, venoclysis, or transfusion before any anesthesia or surgery is considered. The tissues of the patient, who has recently been in shock, have already suffered impairment of function from anoxia. It is highly important that the anesthetist keep this in mind and furnish the highest possible concentration of oxygen during the operation. Preliminary preparation alleviates the fear of the anesthetic and operation. . . . These are the actual choices of anesthetics for the civilian casualty in peace time: First, intracranial injuries: If the patient is in poor condition, regional anesthesia is used supplemented with a 2½ per cent solution of pentothal sodium intravenously with oxygen. In better risk patients, intratracheal ether and oxygen are employed. Sec-