MEDICINE

Raising Blood Donations

Return of red blood cells to plasma donors would make possible 800% increase in plasma for armed forces through weekly contributions.

➤ DONORS of blood plasma to the armed forces via the American Red Cross program may in the future be able to give their blood every week instead of only once in two months as at present.

They could do this because after each donation they would get back their red blood cells after separation from the plasma.

As a result, 800% more plasma would be available for the armed forces, or the entire amount needed for military use in a year could be donated by about 120,000 instead of some 832,000 donors. (*Journal, American Medical Association,* Feb. 5)

The report telling of these possibilities covers studies at the New York University College of Medicine and the Sheepshead Bay, N. Y., laboratories of the U. S. Public Health Service, by Dr. Co Tui, Dr. F. C. Bartter, Dr. A. M. Wright, and Dr. R. B. Holt, with the technical assistance of Ina Ho and Nancy Baldwin. Electrophoretic studies were done in the laboratory of Dr. J. W. Williams, University of Wisconsin, by Dr. Mary L. Peterman, Dr. Margaret Bender and Miss Martha Blake Goodloe.

With the present blood-donation system, only the plasma is used and the red blood cells are discarded. This, the scientists calculate, means a waste of 825,000 pounds of human hemoglobin and more than 413 pounds of iron in the 5,000,000 units of plasma required by the armed forces this year.

The interval between blood donations now considered safe for the donor is based on the rate of regeneration of hemoglobin, red coloring matter and oxygen carrier of the blood. The total protein lost by each donor with each donation of a pint of blood is slightly over three ounces. If the red cells are reinfused into his veins, he is spared 80% of this drain and theoretically should be able to donate plasma five times as frequently as the present practice of once every eight weeks.

The effect of returning the red blood cells to the donors was tried on six volunteers. One of these gave three and two gave four full-sized blood donations in one week. The other three gave full-sized donations every week, one of them for nine and the other two for 12 weeks.

The plasma protein returned to normal within 48 hours after reinfusion of the red blood cells after each donation. Tests showed normal condition of the blood in other respects also.

For the immediate future, the doctors advise adopting the practice of reinfusion of the red cells to donors after each donation in regions where there is malnutrition among the donating population or where a large proportion of donors are women. This might be of practical advantage if it becomes necessary to establish blood banks in European countries for populations freed from the Nazis.

Shortening the interval between donations to one week is not advised, however, until further studies have been made. Such a short interval might cause a change in disease-resisting factors in the donor's blood which would be unfavorable to him and also might make his plasma less effective in helping the recipient to recovery. Further investigations along this line are projected.

Science News Letter, February 12, 1944

MEDICINE

Suction Machine Made From Two Bicycle Pumps

➤ HOW TWO bicycle pumps operating in reverse were made to substitute for an important but temporarily missing piece of operating-room equipment in a U. S. Army hospital in England is told by the War Department as an example of the resourcefulness of medical officers of the U. S. Army.

The missing equipment was the suction machine needed in many operations to keep the field of operation clear of blood and other fluid so the surgeon can see the tissues he is working on. This and other pieces of medical equipment and machinery were not immediately available when one of our Army hospitals was set up in England.

When several other makeshifts failed, Capt. Stanley Erpf, of the hospital's staff, went to shops in nearby towns and bought two bicycle pumps, rubber tire cement, the grip from a bicycle handlebar, and an assortment of nuts, bolts, washers and rubber, glass and copper tubing.

The washers in the bicycle pumps were reversed, so that air was drawn into the cylinder instead of being expelled. The two pumps were connected by tubing, and made to work together, forming a reciprocating type pump. By moving the bicycle grip back and forth rapidly, a vacuum is created in the infusion bottle. The force of this vacuum draws air through the tube that extends to the operating table, and any fluid getting in the way of the surgeon is drawn into the bottle.

Dr. Erpf's amused colleagues dubbed his gadget "Erpf's Folly" while he was assembling it. The captain had the last laugh, however, for the device worked and proved its value many times in the months before an electrically operated suction machine arrived. The hand-operated, homemade apparatus is still kept in good condition in case of emergency need.

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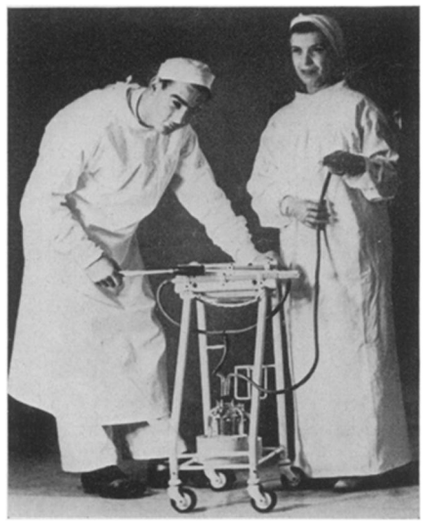

ERPF'S FOLLY — This homemade, hand-operated suction machine was made from bicycle pumps when the regular piece of necessary operating-room equipment had not arrived at a hospital in England. This official U. S. Army photograph shows the ingenious device designed and built by Capt. Stanley Erpf of San Francisco, on the staff of the hospital.