MEDICINE

Whole Blood for Pacific

Wounded men on hospital ships in the mid-Pacific can now have transfusions of whole blood shipped from the West Coast in lightweight refrigerators.

➤ WOUNDED men on hospital ships in the mid-Pacific and in the Philippines can now have transfusions of whole blood as a result of new methods developed to keep the blood fresh in its long journey from the West Coast, the Navy Department has announced.

The whole blood will be flown daily by the Naval Air Transport Service from San Francisco to Pearl Harbor and then on to island bases close to the fighting fronts.

Air shipment of whole blood from donors in the United States to wounded in the European theater started late in August. For the much longer flights across the Pacific and into tropical temperatures, however, special methods of refrigeration had to be developed.

Whole blood must be stored at temperatures between 40 and 50 degrees Fahrenheit from the time it is taken from a donor at the Red Cross donor station until it is used. Mechanical refrigeration in planes could not be depended on because electricity cannot be generated while planes are grounded.

Using plywood, aluminum and modern lightweight insulation material, a portable and inexpensive refrigerator was developed at the Naval Medical Research Institute at Bethesda, Md. With 19 pounds of water ice in a cylinder which can be reloaded or changed easily, this type of refrigerator holds the proper temperature for over 60 hours. Each one carries 24 one-pint bottles of whole blood.

Besides the new type of refrigeration, a method of prolonging the "life" of whole blood was developed. Until recently, whole blood could not be used safely longer than one week after it had been taken from the donor. This period has been extended to 21 days by means of the Loutit-Mollison or "ACD" solution, consisting of citric acid, sodium citrate and dextrose.

Dried blood plasma can be kept in good condition for years and is a great life-saver in the immediate treatment of casualties. In the case of serious wounds where there has been a great and rapid loss of blood, however, plasma alone will not suffice. Whole blood transfusions are essential to provide adequate oxygen-carrying capacity to the blood.

American Red Cross donor centers in San Francisco, Oakland and Los Angeles have been called on to supply a total of 300 pints a day of "O" type whole blood for the air shipments with the understanding that the amount would be increased and the project extended. "O" type is used for this purpose because it can be given to all casualties regardless of their own blood type.

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CHEMISTRY

Explosive in Rockets Is More Powerful than TNT

➤ A SMALL quantity of the explosive now carried in American rockets will blow a two-inch hole through five feet of reinforced concrete, states Maj. Gen. L. H. Campbell, Jr., Chief of Ordnance, in a report (*Army Ordnance,* Nov.-Dec.). Called "pentolite," the new explosive is 20% more powerful than TNT.

Pentolite is made by nitrating an alcohol which, in turn, is made by treating a mixture of formaldehyde and acetaldehyde with lime. It can be heated to a point below the boiling point of water and poured into artillery shells used for demolition work. It is also used as a booster, detonator, or filler in various other kinds of projectiles, including rifle grenades and antitank projectiles. It was employed to help clear the wrecked harbor of Cherbourg, France, Gen. Campbell reports.

Grandfather of Pentolite is PETN, or pentaerythritol tetranitrate, which was invented in 1891. Alone, PETN is 40% more powerful than TNT. Experiments conducted at Picatinny Arsenal at Dover, N. J., during World War I led experts to believe that PETN was too dangerous to manufacture because of its sensitivity to friction. However, by mixing the high-explosive PETN with the less-explosive TNT, they were able to produce safely a superexplosive, not as powerful as PETN, but more powerful than TNT.

Science News Letter, November 25, 1944

ADDS TO AIR SAFETY—This camera system provides a scientific method of determining the required runway lengths by recording and analyzing take-off and landing characteristics of airplanes (See SNL, Nov. 18, p. 325). In actual practice, the wind indicator unit would be located near the runway, while the camera would be located 1500 feet away from the runway.