

MEDICINE

Blood Plasma Split

Constituent parts give many aids to war wounded: albumin used for shock, fibrin foam sponges to stop bleeding and globulins for other medical jobs.

► PLASMA from the blood you donate to the Red Cross is not only being sent up to the life-saving zones right behind the fighting lines in dried whole form. Plasma is a quite complex substance, and can be divided into its constituent parts and these used separately for special purposes, much as milk can be separated into cream for butter, casein for cheese, milk sugar for medical purposes, and so on.

Recent advances in split plasma utilization were described before the Philadelphia meeting of the American Philosophical Society by Prof. Edwin J. Cohn of Harvard Medical School. The speaker gave special attention to the principal types of proteins in plasma, notably the albumins, the globulins and the clot-forming substances.

Albumins, which form a high proportion of the total plasma proteins, are the chief factors in plasma's shock-preventing value, primarily because the large size of their molecules causes them to attract and hold water and keep it from "leaking" out of the body.

Albumin concentrates as high as 25% are now being regularly used in war medicine, Prof. Cohn stated. Blood albumins at this concentration are of the same viscosity, or "thickness," as natural blood itself which makes them easy to use. Similarly concentrated whole plasma could not be used because of other substances in it which would make it too viscous. Blood albumins are easy to handle under field conditions, the speaker added. They do not spoil in solution, even at tropic temperatures, so they do not have to be sent out in dried form, as whole plasma does.

Another important group of plasma proteins are the globulins. They constitute a very small percentage of the total, but have a role far outweighing their small bulk because they are what carries the blood's acquired powers of resistance to disease. These also can be separated out for use in particular medical jobs.

A third plasma protein group includes the substances that cause clotting and hence stop dangerous bleeding. Fibrinogen and thrombin are prominent among them. Separated out in solid form, they

can be used during operations as absorbent wads, or sprinkled as powder, or spread as thin sheets. In the latter form, they have about the same stretchiness as nylon. Unlike surgical sponges, they do not have to be solicitously plucked out of the operational area before the patient is sewed up. Left in place, they are eventually absorbed through the body's normal physiological processes.

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Adapted Clothing

► AFTER THE WAR, it will be possible to look at a man in his working clothes and say with some assurance, "That man is a farmer," or a telephone lineman, or a tractor driver, or whatever he may be, just as we can now look at a man in uniform and tell whether he is a paratrooper, or a tank driver, or an aviator.

This will not be because the various trades and crafts will consciously choose distinctive costumes, as did the medieval guilds. It will be more because greater care is going to be given to designing work clothes for the special protection of the men in the jobs they have to perform, Col. Georges F. Doriot of the Army Quartermaster Corps told the meeting.

For generations, all kinds of workmen have tried to make overalls and jumper, or a loose-fitting suit of coveralls, meet the requirements of all kinds of jobs. As a result, they have been unnecessarily exposed to the elements, as well as to the scrapes and bumps of their occupations, with inadequate protection. Loss of uncountable man-hours through illness and accident has been one of the results. The Army started out with a similar one-uniform notion, and had to learn at high cost the need for giving fighters protection from the elements and from the unavoidable risks of service.

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Stars Near Galaxy Center

► MOST of the stars and the unorganized chaotic matter that together make up the particular galaxy of which our

solar system is a very small part are closer to its center than we are, the Philadelphia meeting was informed by a husband-and-wife team of astronomers, Prof. A. N. Vyssotsky and Dr. Emma T. R. Williams of the University of Virginia. In private life, Dr. Williams is Mrs. Vyssotsky.

Probably considerably more than 90% of all the matter in the galaxy is in the "down-town" direction from the position of our own sun, the two astronomers stated. They based their conclusions on recent measurements of the circling motions of the stars that have been photographed with two great telescopes, at the McCormick Observatory in Virginia and the Cape Observatory in South Africa.

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Single Sun Systems

► IF THERE ARE other planetary systems than our own, most of them must have a complicated time of it, studies by Prof. Peter van de Kamp of Swarthmore College indicated. Our sun is a single great glowing globe, and that's that: all the planets can go spiraling around it with no particular gravitational troubles. But evidence is increasing that single-star systems are the exception rather than the rule; many, perhaps most, of the stars consist of two, three or more suns circling about each other in more or less complex patterns. Prof. van de Kamp stated that the five stars nearest the earth average two component bodies apiece. What their planets (if any) do about such a situation was not discussed.

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ENGINEERING

Design Has Armor Built Right in Plane Structure

► DEFENSE is the theme of patent 2,346,809, granted to Robert J. Woods of Grand Island, N. Y., and assigned to the Bell Aircraft Corporation. Armor as applied to present-day warplanes is added after the plane is built, and thereby becomes so much extra weight, costly to carry around. It is Mr. Wood's idea to build armor plate directly into the structure of the plane, as wing beams, sides of fuel tanks and ammunition boxes, etc., thereby utilizing its structural strength as well as its resistance to attack by enemy missiles.

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