

MEDICINE

Powdered Blood Plasma May Replace Blood Banks

Ready for Instant Use Without Typing, Plasma Can Be Transported and Stored Without Change; Has War Use

A POWDER resembling powdered milk but with the vital properties of red blood is the new life-saving aid U. S. Army surgeons hope to have the next time American soldiers go into battle. Supplies of this powder, made from blood plasma, will, if it comes up to expectations, replace blood banks for blood transfusions in both military and civil practise.

Fluid blood plasma has already been shown to be as effective as whole blood for transfusions, Dr. John S. Elliott declared at the meeting of the Association of Military Surgeons of the United States in Cleveland.

Plasma is blood to which an agent has been added to prevent clotting and from which the red blood cells have been removed by centrifuging, somewhat as cream is separated from milk. It is a life-saving aid not only for patients who have lost blood from wounds, but for those who have been severely burned and those who are suffering from or in danger of shock.

Shock, a baffling and dangerous condition, is a "state of collapse affecting all the vital functions." It is a frequent cause of death in accidents, after severe burns, extensive surgical operations, virulent infections and severe intoxications. It was such a constant danger to the wounded during the World War One that committees in all nations were appointed to study it.

The most outstanding single factor in the production of shock is the decrease in the volume of blood circulating

through the body, Capt. Douglas B. Kendrick, Jr., U. S. Army, said.

"Replacement of lost fluid is by far the most important form of therapy known to prevent shock," he continued. "Early replacement is essential."

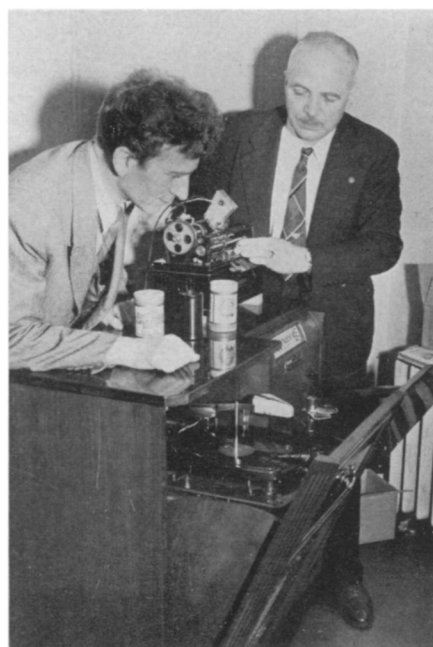
Plasma is as good for this as whole blood, both he and Dr. Elliott stated. For use in war, it is infinitely superior, because it can be safely stored for long periods, and can be transported by motor car, airplane, wagon, and aboard ship without alteration. It is ready for instant use, without blood typing procedures, and can be injected fairly rapidly.

The high mortality from shock could be greatly reduced, with the saving of many lives, if plasma were used to treat casualties as far forward as the battalion aid stations, Capt. Kendrick said.

Dried, powdered blood plasma, which can be easily and quickly made ready for use by mixing with water, has been developed by Dr. Max Strumia at the Bryn Mawr, Pa., Hospital. It has the advantage of being even more easily transported than fluid plasma. Experiments in a number of centers are now under way to test it and efforts are being made to find a way of producing it in large quantities.

If these succeed, the powdered plasma will probably replace both blood banks and the new plasma banks which the English are now using and for which Dr. William De Kleine, medical director of the American Red Cross, is now planning to enlist voluntary donors.

Science News Letter, October 19, 1940



PLAYS OLD RECORDS

Antiquated cylinder phonograph records are given new interest by modern reproduction methods. Here Percy Grainger, musician, and Elmer O. Thompson, inventor, are listening to some old recordings made by Mr. Grainger in 1905 to 1908.

ists hopefully recorded folk music and primitive songs—and then stored the records away silent, afraid to play them even once. But the engineers have succeeded in making the music sound as it really was sung 40 years ago, not the way the old tin-horn phonograph hoarsely croaked it out.

Among keenly interested participants in the demonstration was Percy Grainger, noted composer and pianist. Nearly 300 cylinder records of folk music from all over the world, which Mr. Grainger himself recorded, about 1905 to 1908, will be transcribed to launch the Library of Congress' new task of making old and silent records hearable. Mr. Grainger has kept his records unplayed.

The new machine, which will enable the American public to hear thousands of old American folk songs, Indian songs, and voices of personalities long deceased, is an invention from the Philco Corporation's laboratories. Produced in about two months' intensive research by Elmer O. Thompson, laboratory engineer, the machine transcribes the old cylinders without danger of scratching away valuable words or music, as ordinary needles would do in a few playings.

The machine represents another job found for the now familiar electric eye,

PHYSICS

Old Phonograph Records Get Back Their Voices

IN A PREVIEW in Washington, in a tiny, crowded room at the Library of Congress, engineers demonstrated that they can at last rejuvenate old wax cylin-

der phonograph records of 40 years ago.

Not merely have they found a way to play safely thousands of frail cylinders on which scientists and musical archiv-

● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by U. S. Coast and Geodetic Survey of the following preliminary epicenter:

Friday, October 11, 1:41 p.m., EST

Southern Chile. Latitude, near 45 degrees south. Longitude, 73 degrees west. Strong.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see *SNL*, Feb. 24.

or photoelectric cell. The photoelectric pick-up is placed on a standard dictaphone machine, replacing original equipment. The photoelectric pick-up is in turn connected to a recorder. Sound from the wax cylinder can thus be transcribed from the cylinder onto a flat disk type record, from which any number of additional impressions can be made.

Instead of the usual phonograph needle, which would gouge and destroy the sound groove of a frail cylinder, the device has a sapphire stylus which needs only to float gently in the grooves. As it does this, it sways a tiny mirror from six to seven thousandths of an inch thick. This mirror reflects light rays, directed on it by a tiny bulb, onto a photoelectric cell. The cell translates the light rays into energy which sets up the sound vibrations.

The new device reveals vividly that the weak feature of old-fashioned scratchy, gurgling phonograph music was due, not

to the recording itself, but to the reproducing machine.

The horn was too small to reproduce the lower frequencies, and the mechanized part would not reproduce the upper frequencies. Listening to an old cylinder record of "Rocked in the Cradle of the Deep," as played back on an old tin-horn phonograph, the quartet seemed to have trouble diving for low notes and voices faded in critical moments. The same record now transcribed to a flat

disk and played with modern reproducing equipment shows that the quartet was not floundering, or suffering from a bad cold. The music is heard, as people of the early twentieth century had no chance to hear it—though it was there all the time on the cylinder.

The Library of Congress hopes that Americans who have old cylinder records may add them to the musical archives for study.

Science News Letter, October 12, 1940

PUBLIC HEALTH

Plan Large Scale Tests for Infantile Paralysis Immunity

LARGE scale tests of the population for susceptibility to infantile paralysis may soon get under way as a result of research Dr. Charles Armstrong, of the U. S. National Institute of Health, reported to the American Public Health Association at Detroit. New knowledge of use in fighting the disease would be gained.

Dr. Armstrong's discovery that mice and cotton rats instead of the more expensive monkeys can be used for testing a person's immunity or lack of it to this crippling childhood ailment would make such mass tests possible. Search for a possible chemical remedy for the disease will also be speeded through this discovery.

The still unsolved mystery of why older persons and those living in institutions generally develop resistance to infantile paralysis may be explained by making tests on large numbers of the population. With monkeys only a few immunity tests can be made because of the expense. The largest number made in one study with monkeys was about 80, whereas Dr. Armstrong has already made 293 since discovering that cotton rats and mice can be used.

The test consists in mixing serum from the tested person's blood with infantile paralysis virus and injecting it into the rat or mouse or monkey. If the animal fails to get the disease, the person's blood contained virus-neutralizing material, indicating that that person was immune to the disease. Heretofore only monkeys were used because no other animal had been found susceptible to the disease except man and monkeys.

Frequent tests of a group of people checked against their histories of almost

unnoticed illnesses such as slight colds, or of contacts with infantile paralysis patients would also shed light on the question of how and why some people acquire immunity or resistance to this disease while others do not.

If resistance is acquired through age alone, as has been suggested by recent experiments, and not by building up resistance through a sort of natural vaccination with small doses of the virus, the mouse or cotton rat tests might show the exact age at which immunity does develop. Then scientists could study other changes occurring at such an age which might carry with them ability to develop resistance to infantile paralysis and from this, possibly, develop a means of protecting against the disease at any age.

These and other possibilities seem to open up from the beginning steps which Dr. Armstrong reported.

Science News Letter, October 19, 1940

No one has seen the bottom of an *oil well*, but a pressure core barrel may bring samples of the underground reservoir up to the laboratory for study.

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