

MEDICINE

Regional Centers for Blood

Blood products already have saved many lives. Patients in cities and hamlets will get its benefits soon when a nation-wide chain of blood centers is established.

By JANE STAFFORD

► MR. X, aged 45, was sick, could not eat, could not work, would soon die if help could not be gotten for him. He was a victim of poisoning. The poison came from his teeth which were abscessed and in bad shape. They had been getting worse for years. Any ordinary man would have had the bad teeth drawn years ago and stopped the slow poisoning.

But Mr. X was not an ordinary man. He was a hemophiliac. This means that he had inherited through his mother the kind of blood that does not clot normally when shed. It was not much consolation to Mr. X to know that men and boys in some of the former royal families of Europe were cursed with the same blood condition.

Dying of Poisoning

His dentist and his doctor knew that Mr. X was dying of poisoning. They knew the only way to save him was to get those bad teeth out, clean up the pockets of poisonous pus in his gums, and give him new teeth so he could eat real food that would give him back his strength. But they knew, too, that when he was a young fellow he had one tooth extracted and nearly bled to death afterwards.

Mr. X lives in a small town in western New York. Only 16,000 population, it is better off than many towns of its size. It has doctors, dentists, and a 150-bed hospital. But it is no medical center, where the latest scientific discoveries are available for treating the sick.

Yet there was a way to save Mr. X from his slow poisoning without risk of his bleeding to death. And because Mr. X lived within the Rochester Regional Blood Center area he was saved. Today he is up and about, has a set of new good teeth and "feels like a million dollars."

What saved his life were two products made from blood. One is called antihemophilic globulin. It comes from normal blood and aids in making hemophiliac blood clot temporarily. Mr. X was given

shots of this before his teeth were pulled. As a result, he did not bleed any more than an ordinary man would after having his teeth extracted. To make doubly sure Mr. X would not bleed too much, his gums were packed with fibrin foam. This is another product extracted from blood which makes blood clot as it oozes out of tiny blood vessels. Surgeons use it in many operations where bleeding is hard to control.

These two blood products did not cost Mr. X anything. He had of course to pay the doctor who gave him the products. But on his hospital bill were two lines that cost him no money, reading something like this:

Antihemophilic globulin from American Red Cross.

Fibrin foam for packing from American Red Cross.

The experience of Mr. X is almost unique today. Only in some of the large medical centers could it be duplicated very often. The blood products that saved his life are new and not in too abundant supply. But when the National Blood Program gets its projected nation-wide chain of blood centers established, Mr. X and others like him in big cities, small towns and on farms will receive its benefits.

Rochester Center

The first of these centers was established in Rochester, N. Y., in January. From Rochester bloodmobiles go out into the towns and villages throughout the 12-county region on regularly scheduled days. In each place visited a donor station is set up, like the ones which during the war collected 13,326,242 pints of blood for our armed forces. From these donor stations the blood is taken back to Rochester for testing, typing, and preserving treatment. Then it is returned to the hospitals and doctors throughout the



RED CROSS BLOODMOBILE—Mobile units such as this one entering Hornell, N.Y., transport technical equipment and supplies to set up temporary centers in outlying communities to collect blood for the regional center where it will be turned over to the doctors and hospitals of the region after processing.



CONVERTING BLOOD—Whole blood is converted into plasma from which life-saving blood-products are made.

region as they need it. When the whole blood is too old for use in transfusions, it is returned to the center at Rochester. Here the red cells and plasma are separated. From the surplus plasma are made the products such as those which saved Mr. X.

The existence of these and other life-saving blood products is due primarily to researches by Dr. Edwin J. Cohn of Harvard. Dozens of different components of blood are now known to exist. Many of these have been extracted and put to medical use. Part of the Red Cross National Blood Program's purpose is to assist scientists in finding more uses for these by-products of the blood it will collect. The substances are by-products, since they are separated from plasma after the whole blood has become too old for use in transfusions. Separation of the products and packaging for medical use will be done by pharmaceutical houses. The Red Cross will pay for this, though the products will be supplied without charge.

Collection of whole red blood, 3,700,000 pints of it each year, is the main object of the National Blood Program. The 3,700,000-pint figure is the amount medical authorities estimate are needed each year for peacetime use in saving the sick and injured.

Benefitting already from the National Blood Program are countless patients in the Rochester region alone. There is six-

year-old Bobby of Elmira. Like Mr. X, Bobby has hemophilia. He has been coming to the hospital for years for blood transfusions. Every time he falls down and scrapes his knees he is likely to bleed so much that he needs a transfusion. During 1946 he had four blood transfusions. He has had two with blood from the Rochester center since its establishment in January this year.

Aids Hemophiliacs

Now his parents and doctor need not worry about whether there will be blood when he needs it. Nor do they need to worry about the cost of the blood. Even better, they have learned now about the antihemophilic globulin which helped Mr. X. This material will not cure hemophilia. But it can be given to Bobby off and on to see him through the period of losing his baby teeth, having his tonsils out if necessary, and protecting him against the injuries any active boy is liable to.

Serum albumin is helping another child in the Rochester region. This material proved a great boon when it became available during the war, because it could be used as a substitute for blood plasma. It had the great advantage of taking far less space in transit than plasma.

As the war drew to a close, medical scientists were discovering new uses for serum albumin besides that of substitut-

ing for plasma in transfusions. One such use is for treatment of a kidney disease called nephrosis. A five-year-old youngster in the small town of Hornell has nephrosis. His doctor knew serum albumin would help him to recover. But the material as prepared and sold commercially is very expensive. Enough for one treatment costs about \$80. And the child will need many such treatments.

The family could not meet this expense. The hospital managed to get enough for one treatment, but that was the limit of its resources. When the Rochester regional blood center was opened, the hospital sent word to the child's doctor and parents that it could now get more serum albumin, without charge. The five-year-old was brought back to the hospital and got the equivalent of \$300 worth of serum albumin. When he needs more, it will be available.

Children are not the only ones being helped. A 71-year-old man got four pints of blood to see him through an operation for removal of an eye. A young woman victim of Hodgkin's disease is getting continued transfusions of blood so that she can go on taking nitrogen mustard treatment for her illness.



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*AIME, Metals Tech., Sept. 1947



Jrnl. Ad N-38A-247(1b)

Do You Know?

As much as 50 barrels of water may evaporate from the surface of the leaves of a large *elm tree* in a single hot summer day.

Corn-and-cob meal, made by grinding the corn and the cob together, has high value for *cattle feed*; the cob is found to be 64% as valuable as the grain itself for fattening purposes.

Barite is a mineral used as a weighing agent in heavy drilling oils, as a filler in rubber, a pigment in paints, a flux in glass melts, and in the manufacture of barium chemicals.

An old Indian belief that *beech trees* are never struck by lightning probably comes from the fact that wild beeches grow in groves with taller trees that are more apt to be struck.

Seismologists say that the *earth* shakes itself about 85 times a day; most of the shakes are little ones but not too small to be picked up by sensitive seismographs.

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A mechanical engineer comes in every week on his lunch hour for a transfusion. He has leukemia. The blood will not cure him, but it may help to keep him alive until a cure for this disease or an effective aid is discovered.

Three pints of whole blood before operation, and two pints immediately after and two pints daily for several more days were needed for another patient when his enormously enlarged spleen was removed. A 50-year-old woman suffered 12 years with ulcers from varicose veins on her legs. They are healing now, thanks to red blood cells sprayed on the

ulcers. The red cells were separated from whole blood returned to the Rochester center because it was too old for use in transfusion.

These are some of the special, unusual cases in which blood or its products are used. In the Rochester region, as elsewhere in the nation, come the ordinary emergency demands for blood to save an accident victim, a mother hemorrhaging unexpectedly in childbirth, a patient with a stomach ulcer that erodes a blood vessel and causes hemorrhage that could be fatal.

Second of three articles on blood.

Science News Letter, July 10, 1948

PSYCHOLOGY

Black Not Always Black

➤ BLACK is not always black, nor is white white.

If you have access to a projector for slides or color transparencies, you can prove this to yourself and your friends with a dramatic experiment. Just how it works is revealed by Dr. Hans Wallach of Swarthmore College, in the *Journal of Experimental Psychology* (June).

Cut a disk from black paper and hang it in the doorway of a room. Arrange your projector so that its light will be focussed on the disk and then will shine on the ceiling of the adjoining room out of sight of the "audience."

Now dim the light in the room. The disk, instead of being black, will appear white. But keep on shutting out all illumination until your room is completely dark, except for the illumination on the disk. Now that inky black disk will shine like a bright moon.

Suppose next you gradually cut down the light shining from the projector. What will happen? You may be surprised to find that it still looks luminous—not white or black—although as the light decreases, it becomes dimmer.

Whether an object looks white, black, gray, or luminous depends not only upon the illumination of the object and the light reflected from it, Dr. Wallach found, but upon the difference in light reflected by the object and its surroundings.

He tested this out and worked out the mathematics of the relations by using an ingenious combination of two projectors, one rigged up to project a disk of light on a white screen, the other fixed so that it would project a ring of light in such a way that it would form an outer edge for the disk.

When he kept the brightness of the disk the same and varied the brightness of the ring, he could at will change the appearance of the disk all the way from white to dark gray. The brighter the ring, the darker the disk would become. And when the ring

was made to look a dark gray, the disk then became white.

Cut out the ring altogether, and the disk ceases to look either white or gray and becomes a glowing moon.

In another experiment Dr. Wallach rigged up two sets of disks and rings, in which the area of the ring was the same as that of the disk. It was arranged so that in one set the ring was darker and in the other the disk was darker. The observer was allowed to vary the intensity of the second disk, and was requested to match the color of the two sets in this way.

It was found that when the colors matched to the observer's satisfaction, the proportion of brightness between disk and ring was just about the same in both sets, although one was much dimmer than the other. The small difference in ratio indicated that for the same intensity ratio, the object will appear a lighter gray if disk is brighter than the ring, than if the ring is brighter than the disk.

Science News Letter, July 10, 1948

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