HOW THEY *Tried to Save the Prima Donna Contralto of the Grand Opera*

Why the Transfusion of Blood from Madame Gerville-Reache's Husband to Her Own Starved Arteries Failed to Ward Off Death

PHOTO BY MATZENE CHICAGO.

Mme. Gerville-Reache in the Role of "Herodias."

The Operation, Its Method and Dangers

By Dr. John B. Huber, A. M.

THE death of Mme. Gerville-Reache, after three efforts to save her by blood transfusion, directs attention to the merits and the faults of this heroic operation. Theoretically a perfect treatment for certain crises, it is nevertheless a fact that in the practical working out it is very far from uniformly successful, nor is it without danger. Why this is so will be explained later.

Blood transfusion is not a modern invention. It was performed long before the Christian era, but in a crude way. The Roman poet, Ovid, relates how the sorceress, Medea, took blood from young, healthy men, mixed it with vegetable juices, and injected it into the veins of old men to renew their youth. Savonarola told of the transfusion from the veins of two young men for the benefit of Pope Innocent VII. But the operation in the past was always very dangerous; and not always successful by any means.

How is blood transfusion done by surgeons to-day? There are two operations: artery and vein transfusion, and the vein to vein operation. Various surgeons have devised methods peculiar to them. One technique for each kind of operation is here outlined.

In artery to vein transfusion the wrist of the blood giver and the patient's arm above the elbow are scrubbed with soap, water and alcohol. The radial artery, on the thumb side of the wrist—the one by which the doctor takes the pulse—is exposed and covered with a warm, moist saline compress. A ligature is placed over the patient's upper arm, tight enough to distend the veins. The vein selected is exposed by a cut along its course, brought to the surface of the skin and fixed there by two fine clamping forceps placed side by side, so that when the vein is opened lengthwise (longitudinally) between them, these clamps will control the cut edges. The ligature is then removed from the arm and the vein opened.

The donor's artery is now divided, the end nearest the hand is clamped; and its other end, nearest the trunk of the body, is seized with fine thumb forceps. Whilst the blood is streaming from it this artery —of the blood giver—is passed upward into the patient's vein about an inch. The two forceps upon the vein are now crossed, thus lapping their edges around the artery tight enough to prevent the escape of blood. The donor's pulse, that of his free hand, is counted and watched as long as the transfusion continues; and so a fairly accurate estimate is made of the total amount of the transfused blood, and the operator is assured that the donor is not losing as much as would endanger his life.

When the transfusion is finished the artery is withdrawn from the vein, tied, and the wound in the wrist is sewed up. The opening of the patient's vein is closed by ligature or simply by a pressure bandage as after any blood letting. The transfusion is generally continued half an hour or more until the pulse, blood pressure and other signs show a material change in the blood giver or patient, or both. From eight to twelve ounces of blood may safely be exchanged.

For vein to vein transfusion a thin glass tube three inches long is heated and bent into the shape of a wide U or of an S. The S tube is necessary when the arms of the donor and of the patient are lying side by side, the hands pointing in the same direction. The U tube is necessary when the donor's hand is pointed toward the patient's shoulder. The tube selected is sterilized by boiling; it is then dropped into melted paraffine; picked out with sterile forceps, and all excess of paraffine shaken from the calibre. Then the tube is laid in sterile gauze ready for use.

A vein of the patient's arm, above the elbow is exposed; two ligatures are passed around it, one in the upper, the other in the lower angle of the wound. The lower ligature is tied. Then a vein in the donor's arm is exposed and two ligatures are passed around it also. Here the upper ligature is now tied. The donor's vein is next opened to introduce the tube into its lower segment, and the lower ligature is tied to keep the tube firmly in place. Then the donor's arm is brought close to the patient's arm. Then the patient's vein is opened and the tube is introduced into the upper segment. The upper ligature is tied to hold the tube firmly in the patient's vein. From this on the procedure is practically the same as in the first operation.

What are to-day the dangers? For what diseases in the patient is blood transfusion done?

In other times, when there were not our modern hospitals nor our wonderfully made instruments, nor sufficient knowledge of chemistry, the physiology of the blood, pathology or bacteriology, and majority of transfusions were unsuccessful. Many accidents arose from blood clotting; from unwise selection of donors and of patients; from the patient's heart stopping by reason of a too sudden rush of the doner's blood into it, and so on. So that, with the advent of normal salt solution as a substitute for blood, the latter was no longer transfused. This transfusion of normal saline solution (one teaspoonful of salt to a pint of sterilized water—this being the proportion of salt normally in our blood) is still practiced; and with the greatest benefit in appropriate cases. But its benefits are too temporary to serve in all cases where the patient needs actual blood.

In blood transfusion, as it is done today, and by the methods here indicated, there is no danger of blood clotting; the operation is practically painless for both donor and patient; the blood lost by the donor is regained by the processes of nature in from four to five days; the amount bestowed is under the immediate control of the surgeon; and this rate of transmission is carefully gauged and kept within the limits of "physiological safety."

The greatest danger to-day and the greatest cause of failure is from "hemolysis." This is a degeneration of the blood and a destruction of the red blood cells.

Formerly it was supposed that the blood of the lower animals could be transfused; as in the case of a man who had hydrophobia, whose veins were opened and a lot of blood let. Then the blood from several lambs was transfused into him, but with no good results. The blood of calves has also been used, but unsuccessfully. A reason given for this is that the bovine blood contains particles of various kinds necessary for the development of such peculiar tissues as horns and so on; and that consequently these elements are hurtful when injected into human kind.

Certain it is that the serum—the fluid part of any given animal blood has the property of destroying the red blood cells when transfused into an animal of a different species. And this fact is important, because it is the office of these cells to convey the life giving oxygen to the bodily tissues.

So, all in all, as early as 1889 it was settled in medical science that the transfusion of the blood of lower animals into human veins is dangerous; and must never be employed.

The same process takes place when human bloods fail to blend. Occasionally, when the donor's blood is transfused into the human sufferer, hemolysis occurs. This contingency is not necessary fatal in itself; but it does render the transfusion futile. It is certain that there are definite differences in the chemical make up of each person. No man or woman is like another in the chemical content of their blood steams or anything else. It is the chemical differences no doubt that are the cause of hemolysis when blood from one human being is mixed with blood of another.

This, it would seem, was what happened in the case of Mme. Gerville-Reache. The blood given her by her husband and by her friends did not "mix" with her own, and hemolysis probably occurred.

There is also danger that disease may be transmitted to the already afflicted patient, in the donor's blood. Therefore, careful examination of the donor and preliminary testing of the bloods together to avert possible hermolysis, is made whenever possible; and when this is done the dangers indicated are minimized.

Pernicious anemia is an almost invariable fatal form of blood impoverishment, for which blood transfusion is done. But, sad to say, the course of the disease is generally not much modified by this operation, which is done for a last recourse and for a last hope. The same must be said regarding leukemia, a disease of the white blood cells, generally fatal. Patients with tuberculosis peritonitis (consumption in the abdomen), have been immediately improved by blood transfusion. Very weak sufferers from this disease have been transformed into "safe surgical risks" permitting the removal by operation of tuberculosis tissues from the body. And it looks as if blood transfusion might in the future have a special healing power in such cases. In the cases of kidney disease, blood transfusion is ineffective; but there have been great results in the dropsies of "hobnailed liver."

In hemorrhage, where blood losses are great, when transfusion has been done before the central nervous system has become damaged beyond hope by the blood loss, this operation has been a sure, specific remedy. Many a mother having, in the perils of childbirth, lost much blood, has has had a blessed restoration through the blood donation of a devoted husband. The life of many a precious infant has been saved through a father's timely offering up of his own life fluid. In typhoid hemorrhages patients have been transformed from a dying state to "safe surgical risks."

PHOTO © BY AIME DUPONT

Mme. Gerville-Reache, the Grand Opera Prima Donna Whose Husband's Blood Failed to Save Her Life.

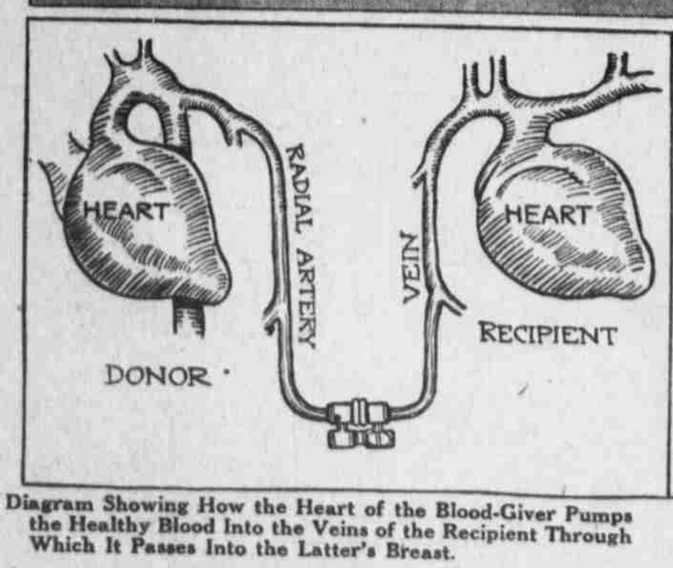

Diagram Showing How the Heart of the Blood-Giver Pumps the Healthy Blood Into the Veins of the Recipient Through Which It Passes Into the Latter's Breast.

Photograph of an Operation for Blood Transfusion in Which the Blood Is Passed Directly Into the Carotid Artery.

On New Year's Day the prima donna received a visit from her two young children. The excitement of the visit and other causes brought about a relapse, and Mme. Gerville-Reache's life was again in danger.

Once more Dr. Ramband offered his blood for transfusion. This time the operation proceeded until the doctor was evidently weakening seriously from loss of blood.

A friend of the family, another vigorous young man, Isidore S. Lehmann, then offered himself, and the operation was attempted, but his blood would not mingle with that of the patient. Another stalwart friend was then tried, and from him a quart of blood was transfused.

The singer rallied for a few hours, but then gradually grew worse and died.

Mme. Jeanne Gerville-Reache was very popular on the operatic stage. She had a rich contralto voice, a fine figure and a very winning appearance. Her family name from the French West Indian colony of Guadeloupe, although she was born in France.

She was first induced to take up operatic singing by Mme. Calve, whose singing style was somewhat like hers. Mme. Gerville-Reache made her greatest successes as Carmen, as Herodias in "Herodiade," and as Dalila in "Samson et Dalila."

Magnets to Pull Out Bullets, Armor to Stop Them

A CURIOUS combination of ancient and modern methods at the battle front is reported in L'Illustration of Paris. Powerful electro-magnets are being used to supplant wherever possible the regular tools of the surgeon in extracting bullets and shell fragments from the wounded. At the same time experiments are being carried on to see how far the old method of encasing the soldiers in armor will stop modern bullets.

In metal making foundries the electro-magnet has long been in use to draw out particles of metal, such as iron filings, which have penetrated the bodies of workmen. An invention by Dr. Rollet, of Paris, has extended the field of usefulness to heavier pieces of metal. The magnet has no effect, of course, on the bullets of shrapnel that are made of lead or upon the French bullet which is jacketed with German silver. Fragments of cast iron shells are, however very magnetic, and so is the German bullet that is covered with a coating of iron-nickel. The Rollet electro-magnet will draw out a bullet weighing ten grams at a distance of 41-5 inches.

Before the war broke out there were a number of "bullet proof" cloths invented. It was true that the bullet would not penetrate the cloth. Unfortunately, unless the protective covering was impracticably heavy, the blow given by the missile proved almost as dangerous as penetration would have been. What happened was that the energy of the bullet was transmitted to the shielding fabric, which in its turn delivered the blow to the soldier's body. The severity of the blow depended upon the velocity of the shield, and if the shield was very light the chest-wall received more or less injury. In order to be harmless it was found that the shield must weigh at least ten pounds. It is a repetition of the old circus trick of striking with a sledge-hammer an anvil on a man's chest. If in place of the anvil we substitute a thin metal plate, the blow would be fatal, and the sledge-hammer has about the same energy as a bullet at high velocity.

If the shield weighs but six or eight pounds, the blow of the bullet almost knocks a man down. The cloths consisted of expensively woven cotton and wire, and, of course, were rejected because cheap steel plates of the same weight were equally effective. The latter have been adopted, not to be carried all the time, since the weight is prohibitive, but for occasional protection lying down between advances before trenches.