Berlin Blood Bank

— First in Germany

BERLIN HAS established a blood bank, the first of its kind—so far as is known—in all of Germany. Because of the transportation and communication difficulties imposed by the blockade this newer method of storing blood for emergency transfusions has been highly useful.

The arm-to-arm method, an older process still common in Germany, goes back many centuries and well-authenticated records are available of transfusions performed as early as the 17th century. These early transfusions were generally carried out by passing blood directly from the artery or vein of one person (animals also were sometimes used) into the vein of the recipient. Such transfusions were attended not only with technical difficulties but also with grave risks, owing to the unsuitability of animal blood (the lamb was the favorite animal used for this purpose) and because of ignorance of the existence of different human blood types. Fatal reactions due to incompatible blood were frequent.

Successful blood transfusion was first made possible by the discovery of the four different types (A, B, AB and O) of human blood just after the turn of the present century. During the following decade much work was done to perfect a technique of transfusion by sewing the artery of the donor directly to the vein of the recipient. Several techniques using paraffin-coated glass tubes or multiple needles and pumping devices also were developed. These methods all shared the disadvantages of extreme technical difficulty, of not knowing exactly how much blood had been transfused, and also of difficulty in finding a suitable donor at the moment when the transfusion was required.

A solution to this last-named difficulty was found in 1914, when transfusions were performed for the first time with blood to which a sodium citrate solution had been added to prevent clotting. This opened the possibility of keeping the blood for a period of time prior to giving it to the recipient. Blood “banks” as such were a much later development. The Spanish Civil War showed the value of the procedure in connection with military operations.

HOWEVER, in Germany, as contrasted to the United States, the citrate method of transfusion has never enjoyed any great popularity. Blood banks were unknown although a plasma program was carried on during the war on a very much smaller scale than in the United States. The limitations of this system became especially apparent during the blockade of Berlin. Few donors had telephones and it was impossible to summon them by radio because there was no electricity during most of the day and night. Public transportation generally stopped at six o'clock in the evening and there was no way for the donors to reach the hospital even if they could be contacted. The last of the 2,000 units of plasma donated by the US Army in 1945 had been used up and there was literally no reserve of blood or plasma anywhere in the city for emergencies. The already overworked staffs of the city hospitals were sometimes used as donors but usually did not include persons of the rarer types of blood. An accident or surgical patient might easily have bled to death before a suitable donor could be found for a life-saving transfusion.

US Military Government therefore undertook measures to establish a reserve of citrated blood similar to blood banks in the United States. Detailed information as to the technical processes was provided. Large quantities of surplus special type bottles and other transfusion equipment were turned over to the German hospitals by the Army's 279th Station Hospital, where German doctors also observed typing and transfusion methods in the laboratory. After some initial opposition from entrenched conservatism was overcome, the idea took hold and was successfully carried out. Chief credit for this is due to the untiring energies of Dr. Wilhelm Heim, Chief of the Surgical Service of the Rudolf Virchow Hospital in the French Sector of Berlin, and also director of the city Blood Donor Center.

(Continued on next page)
THE ADVANTAGES of the citrate method of blood transfusion, now possible in Berlin, are numerous. Besides keeping a supply of blood of various types in stock, the blood is already typed and tested for diseases such as syphilis which are transmittable by transfusion. Quantities of blood are immediately available; citrated blood is as easy to administer as any other intravenous infusion, and the process can be started quickly and without technical difficulty.

The only objections to the method are that fresh untreated blood is more desirable for certain relatively uncommon diseases and that blood stored in banks can be kept only for a maximum period of two or three weeks. The latter difficulty can be overcome by planning the size of the blood bank to correspond to the expected needs, or by manufacturing plasma from blood whose expiration date is approaching. Plasma can be packaged in a sterile manner and kept for long periods.

Another innovation introduced into Berlin in connection with transfusions was typing for the Rh factor. This factor is present in the blood of approximately 85 percent of adults and absent in the other 15 percent. It is best known for its connection with a type of jaundice in new-born infants called erythroblastosis fetalis, which is seen in a small percentage of the instances where the mother is Rh-negative and the father Rh-positive. This factor is of importance in blood transfusions in two ways. First, the best hope of saving one of these jaundiced babies lies in replacing his blood with an Rh-negative transfusion. Secondly, an Rh-negative person rendered sensitive to the Rh factor (as for example, by previous transfusions of Rh-positive blood) may have a serious reaction if another transfusion of Rh-positive is given.

FAILURE TO TEST blood for this factor had undoubtedly been the cause of numerous transfusion reactions in Berlin among war veterans and obstetrical patients. This factor had previously been studied on a small scale in Berlin in connection with infants at the Kaiserin-Auguste-Viktoria-Haus in the British Sector, but had never been tested for as a routine measure in transfusion cases. Testing serum was donated by Dr. Louis Diamond, Boston Blood Grouping Laboratory, and the procedure was initiated in Berlin for the first time.

Arrangements were also made with a large biological manufacturing concern, The Schering Works in the British Sector, to manufacture a reserve of plasma for future emergency use. After the cells have been separated from the liquid portion of the blood (plasma) the latter is evaporated to dryness under a vacuum, and sealed in sterile glass flasks. It can be kept for many months in this form, and "reconstituted" for use merely by adding sterile distilled water.

THE PROGRAM has been beset by many difficulties, technical and otherwise. The Berlin system differs from blood banks in the United States in that under the existing German social insurance system there are practically no volunteer blood donors who "pay back" transfusions given to friends or relatives. Instead, there are several thousand registered donors who give blood regularly in return for a fee paid them by the social insurance. There has been great difficulty in obtaining the money to establish the desired reserve of blood and plasma and this was accentuated by the fact that before the establishment of the west mark alone in western Berlin, the donors were unwilling to give blood for east marks, the only currency the city was able to pay them.

Technical and financial difficulties remain, and the Berlin project is a long way from approaching the magnitude of blood banks in the United States. It is noteworthy, however, as the first blood bank in Germany, and as proof that recent medical advances in other countries can be introduced successfully in Germany.