A NEW METHOD OF BLOOD TRANSFUSION.

By A. E. WRIGHT, M.D. DUBL.

[From the Laboratories of the Conjoint Colleges of Surgeons and Physicians, Victoria Embankment, London.]

THE discovery by Arthus and Pages of the possibility of keeping the blood permanently liquid by precipitating the lime salts in it in the form of insoluble oxalates has opened a way for improving the methods of transfusion as at present practised. The demerits of the method in use can be very easily summarised. The injection of defibrinated blood is a dangerous method, since intravascular coagulations have been often observed to follow it. On the other hand, the method of arm-to-arm transfusion is one of extreme difficulty, and requires, if it is to be successful, the careful preparation of somewhat complicated apparatus. The merits of the decalcified blood of Arthus and Pages for purposes of transfusion, on the other hand, appear to me to be perfectly unique, as such blood is, as far as can be discovered, perfectly normal blood, except for the fact that it no longer contains any lime in a form available for the formation of fibrin, and the further fact that it has undergone a very trifling dilution (not more than one-tenth of its volume). It is therefore not a disintegrated blood like defibrinated blood, and, on the other hand, it will not clot unless we intend it to clot, and unless we, for that purpose, restore to it the lime salts which have been removed from it by receiving it into a solution of a soluble oxalate. In order now to ascertain whether these theoretical merits of decalcified blood for purposes of transfusion would be confirmed by experimental evidence, I undertook transfusion experiments with decalcified blood in three dogs.

The blood, after being decalcified, was in two¹ of the experiments drawn off from the animal upon which the transfusion was to be made, and was decalcified in the ordinary manner, and was then, after the lapse of ten minutes, reinjected into the circulation through the jugular vein. In the third case² the blood of another dog was employed. The operation, which was in each case performed under antiseptic precautions, was then terminated by the application of the necessary ligatures, and the closing of the wound. No pathological symptoms whatever were observed. In the case of one of the animals, who was twice operated upon by the reinjection of his own blood in the course of a fortnight, a rise of temperature of only 0.4° F. was recorded on the day following the second operation, and no changes in the blood corpuscles were detected upon microscopical examination. In the other cases the temperature observations were unfortunately omitted, but the animals were very lively, and fed well after the operation.

In suggesting the application of this method of transfusion in the human subject in cases where transfusion is indicated, a certain amount of caution will, of course, have to be observed. The blood would have to be collected in small portions from the vein of the person supplying it. I would further suggest that until information has been obtained as to the precise amount of soluble oxalate necessary to complete the precipitation of the calcium in human blood, small samples of blood should be drawn off as a preliminary operation into one-tenth of their volume of a 1, a 1½, and a 2 per cent.³ solution of oxalate of sodium. The blood should be thoroughly mixed with the oxalate solution as it flows from the vessel, for where this point has not been attended to, coagulation will often occur in blood, even in the presence of an excess of oxalate. When the correct addition of oxalate has thus been determined (the correct amount being naturally the least amount that will keep the blood perfectly liquid), the actual operation might be proceeded with. Even then, however, it will be expedient to draw off the blood in successive portions, and to keep these portions in separate vessels

for some ten minutes at the temperature of the body before proceeding to the injection. By this method any portions which showed any sign of coagulation can be easily eliminated, while the other portions are injected into a vein. An excess of free oxalate is to be avoided, though it need not, as far as I have been able to judge, be over-anxiously avoided. To the pharmacologist the method of transfusion here suggested would appear to be of an obvious utility, as the decalcified blood might be used as a vehicle for administration of drugs in pharmacological experiments.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

TREATMENT OF OUTSTANDING EARS.

SEVERAL communications on this subject have appeared in the BRITISH MEDICAL JOURNAL during the past year. I venture to suggest the following plan:

An elliptical piece of skin, with its long axis vertical, is removed partly from the skin behind the auricle and partly from its posterior surface, the breadth of the removed portion not exceeding 1 to 1½ inch, according to the size of the ear and the extent of the deformity. The next step is to completely divide and groove the cartilage of the concha at its most prominent part, taking care not to "buttonhole" the skin. Deep sutures, two or three in number, are then passed through the skin beneath the surface of the wound; when these are tightened the auricle lies closely to the side of the head, without the continued disfigurement of a "doubled-over" auricle. Healing takes place readily, and the sutures may be removed in a few days. There is only a small scar visible, as it lies in the natural fold of the part. The main points are to groove thoroughly the cartilage of the concha, as this is the chief cause of the "outstanding;" and to remove sufficient skin so as to prevent too great movement of the auricle when the wound has healed.

I adopted this procedure in the case of F.H.H., aged 20. The left ear was larger and more prominent than its fellow, standing away from the head almost at a right angle. By the patient the deformity was ascribed to the habit of a schoolmaster of "tweaking" the ear by way of punishment. Whether such was the cause or not I am unable to say, but by operating on the above lines I succeeded in obtaining a symmetrical appearance of the parts. In extreme cases not yielding to the ordinary methods of treatment, the steps above described should be taken in preference to merely stitching the opposed surfaces of skin together, since this plan causes considerable after-discomfort, and is often ineffectual and disappointing.

A. H. TUBBY, M.S., M.B. Lond., F.R.C.S. Eng.

Assistant Surgeon National Orthopedic Hospital;

Demonstrator of Physiology

Guy's Hospital.

Finsbury Circus, E.C.

ARSENIC IN SYPHILIS.

SEROY A. B., 30 years of age, and of good physique, suffered from well-marked secondary syphilis. He had extensive psoriasis, especially of the limbs. He had also a few ulcers of the hands and feet. He had much periosteal thickening of the shin bones with nodes. He had also some thickening of the bones of the forearms and of the flat bones of the skull. He complained of intense pains in the bones of the arms, legs, and skull, especially at night, which pain caused him to be sleepless. He had also a chronic ophthalmia, which presented nothing in particular. This man was treated for a considerable time with mercury and iodide of potassium (the latter drug in large doses) up to the constitutional degree. Though both agents were fully tried the curative effect was nil. After an interval the same agents were again tried without effect, though, as above remarked, the physique was very good. The agents failed to cure the psoriasis and the periostitis with the accompanying pain.

I then tried arsenic alone to the constitutional degree. For some time no evident effect was noticeable; but a few days

¹ The quantities of blood injected in these experiments was the amount of blood which it was found possible to draw off without causing the death of the animal by hemorrhage.

² The amount of blood injected in this experiment was 100 c.c., and corresponded to the addition to the circulating blood of about a third of its volume.

³ A solution of this last strength I have found to be quite strong enough to keep blood's blood perfectly liquid when properly mixed with it. It is therefore hardly to be anticipated that we should have to resort to any stronger solution in the case of human blood.