

haemolysis of incompatible or damaged blood cells produced immediate ill effects, the patient becoming distressed, with a rise of temperature and lumbar pain. Exactly how these effects were produced was uncertain. A patient who was in a precarious state might die as a result of them, however. Or he might survive this stage but die later from renal failure. In that event there was suppression of urine with progressive nitrogen retention. Urine passed during the twenty-four hours after the transfusion contained dark brown blood pigment. These delayed deaths were from renal tubule blockage by blood pigment precipitated during the excretion of haemoglobin. This lesion of the kidney (haemoglobin infarction) had been known for a long time, particularly in blackwater fever, where a uraemic death might be caused by it. The mechanism by which this precipitate was produced was first elucidated by Dodds and himself in 1925. Haemoglobin, being of lower molecular weight than the serum proteins, was excreted by the glomeruli when its concentration in the plasma reached about 0.3 gramme per 100 c.cm. Rapid haemolysis of about 1/40th of the total corpuscles of the haemoglobin derived from 50 to 100 c.cm. of blood would give this threshold value. The haemoglobin was excreted in solution in the glomerular filtrate, but this became concentrated in its passage through the renal tubules. If the salt concentration exceeded about 1 per cent. of NaCl with a pH of 6 or less, haemoglobin was precipitated as a granular deposit of haematin. These conditions occurred in the renal tubules during the excretion of an acid-concentrated urine, and the precipitate might block the tubules. If the urine was not acid no precipitate formed and the kidneys escaped damage. The reaction was quantitative, and if the precipitate was not too massive the kidney could expel it, as could be proved by the appearance of brown granular casts in the urine. In the presence of haemoglobinuria a markedly acid urine was "blackwater," while a neutral or alkaline one was red. Intravascular haemolysis might result from incompatible or damaged red cells. Red cells became more fragile the longer they were stored. Fragile red cells were liable to rapid haemolysis in the circulation, and blood stored too long contained both free haemoglobin and fragile red cells. Practical suggestions made by Professor Baker were: (1) Keep the urine alkaline during and for twenty-four hours after transfusion; examine it several times for haemoglobin after transfusion and watch closely the urinary excretion. (2) The use of stored plasma should be further examined; it would be as good as blood in probably 75 per cent. of cases where shock was the main feature, and appeared to be free from many of the risks of whole blood.

#### The Value of Plasma

Professor MAITLAND agreed with Professor Baker about the great value of plasma. It would keep for years when dried and sealed *in vacuo*; it could be collected in large amounts and reconstituted as needed with distilled water. It could also be filtered bacteriologically and its sterility guaranteed before drying, and this could not be done with whole blood. There seemed to be an important future for plasma transfusion. Dr. G. S. SMITH instanced a case of lipoid nephrosis in which the oedema settled after a transfusion of plasma with saline, and did not recur. He described cases which suggested that apparently normal stored blood at times was not satisfactory, and that stored blood should not be used for transfusion in blood diseases. Mr. WILSON HEY said that for shock or haemorrhage plasma did not appear to have advantages clinically over glucose saline, and was liable to cause a greater rise in temperature and pulse rate. Dr. M. C. G. ISRAËLS agreed as to the value of plasma. In most cases in which only one transfusion was required the erythrocyte-forming tissue was in a normal state, and plasma plus iron should give a rapid response. In cases of blood diseases stored blood should not be given except when the marrow was normal.

Mr. D. LLOYD GRIFFITHS asked why it was unnecessary to group the plasma in view of the fallacy of the "universal donor" theory. Dr. GOLDMAN, in reply, said that this theory was not really a fallacy, and where tragedies had occurred after the use of Group O universal donors it was because these had in reality not Group O but weak Group A.

## Correspondence

### Hospitals requiring Blood Donors

SIR.—The four London Blood Transfusion Depots established by the Medical Research Council receive daily inquiries from blood donors who are leaving the depot district, and who are anxious to offer their services to some hospital near their new address.

At the moment no list of hospitals which run transfusion depots is available, and the good will of possible donors is therefore lost. If any hospital or doctor responsible for such a depot will send name and address to Dr. Janet Vaughan, Emergency Transfusion Service, Social Centre, Slough, it would be possible to make a list of hospitals requiring blood donors: this would then be available for reference and a satisfactory transference could be arranged. Dr. Vaughan will supply such a list on demand to any medical officer who would like to have one.—We are, etc.,

H. F. BREWER,  
M. MAIZELS,  
J. O. OLIVER,  
J. M. VAUGHAN.

Slough, May 11.

### Treatment of War Hysteria

SIR.—Although I hesitate to criticize a method of treating war neuroses which has given such excellent results as those described by Dr. P. L. Backus in his letter (May 11, p. 788), it seems necessary to do so in the light of experience gained in the last war. During the first eighteen months in which I was engaged in treating soldiers suffering from functional nervous disorders I was as enthusiastic as Dr. Backus about the value of hypnosis. After a time, however, I found, first, that we were able to get equally good results with simple explanation, persuasion, and re-education without hypnosis and with no deliberate suggestion of any kind, and, secondly, that the most severe cases of hysteria reaching England were those which had undergone hypnotic treatment in France. I saw mass hypnosis practised in Malta, and although I was told of the remarkable results obtained by this means it appeared to me then, and I still think, that such a method must render the patients quite abnormally suggestible. When it is remembered that the actual hysterical symptoms are the results of suggestion, it is clearly desirable to reduce rather than to exaggerate the suggestibility of the patients.

Lastly, war neuroses should be recognized and treated in the earliest stages before they are fully established. This can be done by regimental medical officers and in field ambulances and casualty clearing stations. Simple methods, such as those which were found so effective in the last war, can be practised by men who have had no previous experience in psychotherapy, whereas the methods advocated by Dr. Backus require the services of experts who are comparatively few in number.—I am, etc.,

Oxford, May 12.

ARTHUR F. HURST.

### Chemotherapy of Cerebrospinal Fever

SIR.—The communication on the incidence and control of cerebrospinal fever by Dr. E. Ashworth Underwood (*British Medical Journal*, May 11, p. 757) deals in some detail with the results following the exhibition of sulphonamide drugs in the treatment of this infection. The occurrence of the disease among the military community in the different Home Commands has provided opportunity for extensive observations on the results of chemotherapy.

In January last a War Office memorandum on this subject was circulated, suggesting the lines on which these drugs should be administered. This was followed later by a second memorandum (*Journal*, March 23, p. 498) dealing with the use of sulphapyridine soluble in the treatment of fulminating cases and of cases in which the diagnosis had been delayed. In a series of 900 cases in which the treatment outlined in