The above experiments suggest that under conditions of low ionic strength complement proteins are absorbed by normal red cells, but it is not known at the moment what these proteins are—nor is it known that all the proteins so absorbed are C′ proteins. These results are of practical interest, as it may be possible to build up cells with a known complement constitution without having to use sensitized cells. Rapp and Borsos[1], when referring to their work, wrote: "The discovery that erythrocytes can be lysed at low ionic strength by complement in the absence of added haemolysin, may have a bearing on the auto-immune phenomenon". The finding that human red cells can take up proteins from their own serum (which appears to be complement protein) adds interest to this suggestion, and it is hoped that the phenomenon will be of both theoretical and practical value.

Note added in proof. P. L. Mollison and M. J. Polley (*Nature*, 203, 535; 1964) have recently made similar observations.

F. Stratton
Violet I. Rawlinson

National Blood Transfusion Service,
Roby Street, Manchester, 1.

[1] Rapp, H. J., and Borsos, T., *J. Immunol.*, **91**, 826 (1963).
[2] Stratton, F., Gunson, H. H., and Rawlinson, V. I., *Transfusion*, **2**, 135 (1962).
[3] Muller-Eberhard, H. J., and Kunkel, H. G., *Proc. Soc. Exp. Biol. and Med.*, **106**, 291 (1961).
[4] Hinz, C. F., and Mollner, A. M., *J. Immunol.*, **91**, 512 (1963).

A Lymphocytosis-stimulating Substance in Mongoloid Plasma

Recent investigations have again indicated that the thymus produces a hormone which stimulates the lymphoid tissues of the body[1]. In 1956, Metcalf indicated that the plasma of patients with lymphatic leukaemia contained a lymphocytosis-stimulating factor[2]. Metcalf's investigations on the extract from thymic tissue, as well as the work of other research workers, link the thymus with leukaemia[3,4].

It is known that Mongoloids combine a high incidence of leukaemia with a chromosomal abnormality[4]. This observation suggested that Mongoloid plasma might contain a lymphocytosis-stimulating substance. This communication reports the results of an experiment to investigate this possibility.

Ten ml. of whole blood was obtained by venepuncture from five Mongoloids ranging from 10 to 20 years in age. The sodium salt of ethylenediamine tetraacetic acid was used as the anticoagulant. Control plasma was obtained from a healthy individual. Plasma was separated by centrifugation, placed in sterile tubes and frozen at −15° C until used. All the plasma samples were cultured on blood agar, brain heart infusion and thyol to check for contamination.

Each plasma sample was injected into 12–18 *CFL* strain of white Swiss mice which were 24–36 h old. Each animal was given 0·015 ml. intracerebrally on the parasagittal plane midway between the ears using a sterile 27 ga. needle and tuberculin syringe. Each day, starting 24 h after injection, blood from 2 mice from each plasma group was taken for total and differential white blood counts (WBC). Blood was obtained by severing the jugular vein with a sharp razor blade. Blood films were stained with Wright's stain. Counts were not continued beyond 9 days.

All five Mongoloid plasmas caused a lymphocytosis. The lymphocytosis reached its maximum on the fourth or fifth day, after which it decreased to a stable plateau. In the control animals, the lymphocyte count changed very little or dropped slightly. This time-treatment interaction was statistically significant (Fig. 1).

The treatment with Mongoloid plasma resulted in a mean of 49·2 per cent lymphocytes (high, 86 per cent; low, 44 per cent); whereas the treatment with control plasma resulted in a mean of 39·5 per cent lymphocytes (high, 65 per cent; low, 36 per cent) over the 9-day period. This difference is statistically significant. These results are similar to those reported by Metcalf[2] with the exception that in this experiment the lymphocytosis reached its maximum level earlier.

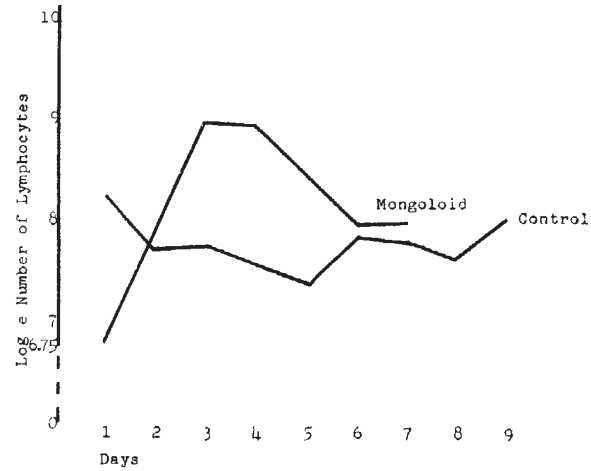

Fig. 1. Comparison of the number of lymphocytes of mice injected with normal plasma, with the number of lymphocytes of mice injected with Mongoloid plasma. The number of lymphocytes is expressed as the log

Visual observations, as well as the weights of some animals, revealed that the mice injected with Mongoloid plasmas were smaller and weighed less, on any given day, than comparable controls. Since care and housing were the same for all animals, this difference could only be attributed to the treatment.

The differential smears revealed that the mice injected with plasma from a 12-year-old Mongoloid had an extremely high number of rubricytes. Relatively fewer rubricytes were present on all the other Mongoloid blood smears. On the control smears, rubricytes were seldom found.

We thank Dr. J. H. Gruter for his help with the blood counts, and Dr. W. G. Stover, superintendent, Apple Creek State Hospital, for his co-operation.

Vera B. Gruter *
A. L. Trapp
V. L. Sanger

Department of Veterinary Science,
Ohio Agricultural Experiment Station,
Wooster, Ohio.

* Miss Gruter is in her third year of medicine at the University of Heidelberg, Germany.

[1] Osoba, D., and Miller, J., *J. Exp. Med.*, **119**, 177 (1964).
[2] Metcalf, D., *Brit. J. Cancer*, **10**, 169 (1956).
[3] Metcalf, D., *Brit. J. Cancer*, **10**, 442 (1956).
[4] Frei III, E., and Freireich, E., *Scientific American*, **210**, 88 (1964).

Effects of Adenosine Diphosphate and Adrenaline on Mean Platelet Shape

If small particles are suspended in a fluid in which there is a velocity gradient, non-spherical particles will become orientated whereas spherical particles will not; this orientation alters the light transmission through a suspension of such particles. Thus the turbulence produced by shaking a test-tube containing a suspension of rod-shaped bacteria can be seen as a 'swirl' whereas a coccal suspension shows no 'swirl'.

Zucker and Zaccardi[1] have claimed that platelets change their shape and become more nearly spherical when exposed to adenosine diphosphate (ADP). This observation can be substantiated and studied in some detail by the following technique. Fresh heparinized or citrated platelet-rich human plasma is placed in a cuvette at 37° C