tion and efforts were made to benzylate and acylate the other amino group, the desired product could not be obtained because of the ease of acyl migration. Similarly, efforts to aminate the alkyl halide corresponding to ABMC failed to give the desired material. The amino-alkylation of the benzylamide, however, succeeded readily as previously described.

In the rat uterus assay for antiserotonin activity[3] the hydrochloride of ABMC showed half maximal inhibition at 0·4 μg/ml. when the challenging dose of serotonin was 0·01 μg/ml. and was one-seventh as active as the corresponding dimethylamino compound described previously[3].

In the assay for antiserotonin activity in mice treated with 5-hydroxytryptophan[3,5] the new compound protected the mice from diarrhoea at ED_{50} of 30 mg/kg. In this very stringent test of ability to act in intact animals, the new compound was therefore more potent than its corresponding dimethylamino analogue, and showed a potency great enough to make it a useful pharmacological reagent. Nevertheless, it was in this test somewhat less potent than the highly active hydrazindole[1], the most active known antiserotonin.

To show that a compound lacks any effect on the central nervous system is not easy. Many analogues of serotonin cause mental disturbances, but these can often be detected only by an experiment in a human being. Nevertheless, some antiserotonins which affect the mental state of human beings have been shown to influence the performance of mice in a learning test[6], whereas other antiserotonins which do not cause marked psychiatric changes in human beings do not affect the outcome of this learning test in mice. The new compound was administered intraperitoneally to mice (75 mg/kg), and 30 min later the animals were tested for learning ability in the T-maze as previously described[6]. The average score for twelve treated mice was 7·6 and the average for normal mice was 7·5. It was clear that no effect on performance could be detected in this test. Similarly, visual inspection of the behaviour of mice treated with the new compound did not indicate alteration in behaviour. Under similar conditions mice treated with reserpine gave an average score of 8·3.

R. S. Dombro
T. van der Hoeven
D. W. Woolley

The Rockefeller Institute,
New York.

[1] Woolley, D. W., *Biochem. Pharmacol.*, **3**, 51 (1959).
[2] Woolley, D. W., *Biochemical Bases of Psychoses* (J. Wiley and Sons, New York, 1962).
[3] Dombro, R. S., and Woolley, D. W., *Biochem. Pharmacol.*, **13**, 569 (1964).
[4] Woolley, D. W., and Shaw, E. N., *Science*, **124**, 34 (1956).
[5] Woolley, D. W., *Proc. Soc. Exp. Biol. and Med.*, **98**, 367 (1958).
[6] Woolley, D. W., and van der Hoeven, T., *Science*, **139**, 610 (1963).

HAEMATOLOGY

Probable Significance of Some Morphological Variations in the Eosinophil Granule revealed by the Electron Microscope

This communication arises out of an incidental observation made during the examination of normal and neoplastic tissues of man and experimental animals under the electron microscope.

During the course of these investigations, eosinophil leucocytes were frequently encountered, and it was observed that some had granules with an electron-dense central band and a pale electron lucent periphery (Fig. 1*a*), while in others, these densities were reversed. That is to say, these granules had a central electron lucent band and an electron dense periphery (Fig. 1*b*).

A survey of the literature reveals[1-3] that some minor variations in the morphology of the eosinophil granule have been observed and recorded, such as two crystalloids

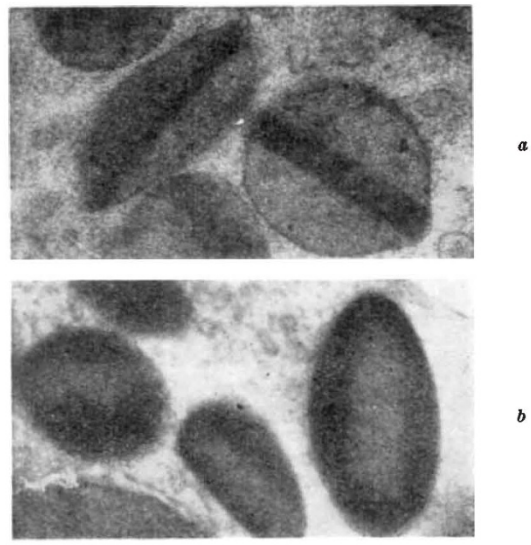

Fig. 1. Two varieties of eosinophil granules. *a*, × 40,000; *b*, × 30,000

in one granule, but this particular difference in the electron density of the crystalloid and its surround has not hitherto been appreciated. However, examination of the electron micrographs of eosinophils published in the literature shows quite clearly that these two varieties of eosinophil granule have been photographed. Thus eosinophils containing granules similar to those in Fig. 1*a* have been recorded on many occasions in the rat[2], guinea-pig[2,4], mouse[3] and man[5], while eosinophil granules similar to those shown in Fib. 1*b* have been observed by Florey in the rat[6] and by us in the guinea-pig.

We have not yet encountered an indubitable instance where both varieties of granules occurred in one eosinophil, but we have seen eosinophils, some containing one variety and some the other variety of granule in a single section of guinea-pig marrow. This would seem to exclude fixation and processing as the cause of the phenomenon, and also exclude the possibility that this is just a species difference.

An interesting question is raised by our finding of these morphologically distinct granules. Are there in fact two distinct races of eosinophils with different functions, or do the two types of granules represent eosinophils before and after fulfilling their function ?

F. N. Ghadially
E. W. Parry

Department of Pathology,
University of Sheffield.

[1] Braunsteiner, H., and Pakesh, F., *Acta Haematol.*, **28**, 163 (1962).
[2] Pease, D. C., *Rev. d'haematol.*, **10**, 300 (1955).
[3] Sheldon, H., and Zetterquist, H., *Bull. Johns Hopkins Hospital*, **97**, 135 (1955).
[4] Pease, D. C., *Blood*, **11** (1), 501 (1956).
[5] Goodman, J. R., Reilly, G. B., and Moore, R. E., *Blood*, **12**, 428 (1957).
[6] Florey, Sir Howard (editor), in *General Pathology*, third ed., 40 (Lloyd Luke (Medical Books), Ltd., London, 1962).

Thromboplastin-induced Hypercoagulability and its Prevention

It was shown in a previous investigation[1] that the plasma content of heparin co-factor (anti-thrombin II) is markedly decreased during the first post-operative week. This decrease could be prevented by intravenous administration of 15,000 international units (I.U.) of heparin to the patients at the beginning of the operation. It was therefore suggested that the decrease in co-factor is an expression of anti-thrombin consumption when thromboplastic activity is released into the blood stream from the operative region.