failure. The average discrepancy between the two methods in 12 cases was 50 ml. A low value of 27.5 ml/kg was obtained in one normal subject using ^{125}I HSA compared with a value of 50 ml/kg using $^{99\text{m}}\text{Tc}$ HSA.

The 30 μCi dose of $^{99\text{m}}\text{Tc}$ HSA used produces a smaller radiation dose to the whole body including the blood and to the thyroid and would be suitable for sequential plasma volume measurements and measurements in pregnant women.

Reference

Beazley, J. M., Matthews, J. C., Leaver, E. P., and Smith, G. M. (1968). Placental localisation using $^{99\text{m}}\text{Tc}$ labelled serum albumin. *J. Obstet. Gynaec. Brit. Cwlth*, 75, 470.

Effects of Natural Oestrogens on Blood Clotting—a Double-Blind Cross-over Trial

L. POLLER, J. M. THOMSON, AND J. COOPE (Department of Haematology, Withington Hospital, Manchester) A double-blind cross-over study on the effect of natural oestrogen on blood clotting and platelet aggregation has been performed on a group of 30 women. It had been claimed that natural oestrogen did not have the harmful effect of synthetic oestrogen on blood coagulation.

The women were randomly divided into two groups, the first group received natural oestrogen (Premarin) for three months and then for a further three months received a placebo, whereas the second group received the placebo first.

Significant acceleration of the prothrombin time and factor VII and X assays occurred with natural oestrogen administration but the intrinsic tests were not accelerated at the three-month stage. The changes are similar to those which occur after three months' synthetic oestrogen/progestogen oral contraceptive administration.

Endocrine Assessment of Threatened Abortion

R. E. REWELL (Department of Pathology, The United Liverpool Hospitals, Liverpool) At the end of pregnancy human chorionic gonadotrophin (HCG) and human percentileactogen (HPL) in the blood fall sharply. Since the half-life in the circulation of HPL is much shorter than that of HCG, it is the former that would be expected to be more useful in assessing whether or not a threatened abortion will in fact take place. Several small series have confirmed this, eg, Genazani *et al* (1969), though their

patients threatened to abort for much longer than happens in Liverpool before this became inevitable.

Blood levels of HPL and HCG were measured on admission to hospital for threatened abortion. Women admitted for therapeutic abortion were used as controls. A highly significant difference was found between the mean levels of both hormones for women who in fact aborted and for those whose pregnancy continued: the differences between those whose pregnancy continued and the controls were not significant. Further, it is possible to calculate the changes of abortion taking place from the level of either hormone, but unexpectedly HCG gives a more accurate figure (analysis of results by Mr M. C. K. Tweedie). Using both levels a still more accurate assessment emerges.

This work was partly supported by a Research Grant from the former United Liverpool Hospitals.

Reference

Genazani, A. R., Aubert, M. L., Casolif M., Fioretti, P., and Felber, J.-P. (1969). *Lancet*, 2, 1385-1387.

An EM Study of Human Thymus

W. JONES WILLIAMS, D. L. JONES, AND K. THOMAS (Pathology Department, Welsh National School of Medicine, Cardiff) In a fine structure study of human, normal, hyperplastic, and tumour thymus, we demonstrate similar cell types though they are present in varying proportions. The mixed thymoma differed only in showing increased numbers of mitosis and predominance of large lymphocytes.

We describe, for the first time, in postnatal human thymus, the presence of nuclear pockets in lymphocyte nuclei. We also found that both lymphocytes and epithelial cell nuclei contain nuclear bodies. It is likely that both are features of actively metabolic cells.

Three varieties of lymphocytes are present—small, large, and 'activated'. In addition, occasional plasma cells suggest the presence of B type lymphocytes.

We consider that epithelial cells have a functional as well as a structural rôle. There appears to be a continuity between mucoprotein-containing epithelial cell cytoplasm and extracellular material, which is taken up by macrophages, all in close contact with lymphocytes.

Some mucoprotein-containing macrophages are converted into foam cells. These features are most prominent in the

thymoma. The possible significance of these features in relation to humoral epithelial/lymphocyte interaction will be discussed.

Gaucher's Disease with Biclinal Gammopathy

MORVEN MACDONALD, MARGARET MCCATHIE, M. J. W. FAED, R. PRINGLE, H. B. GOODALL, J. S. BECK, G. R. TUDHOPE, P. E. G. MITCHELL, A. J. J. WOOD, W. GUTHRIE, AND D. SHAW (Pathology Department, Ninewells Hospital, Dundee) The association between Gaucher's disease and monoclonal gammopathy is well documented (Pratt *et al*, 1968). The present case appears to be the first in which Gaucher's disease is associated with biclinal gammopathy. A woman aged 48 complained mainly of tiredness and was found to have pinguiculae, splenomegaly, raised serum acid phosphatase, and low β -glucosidase activity in cultured skin fibroblasts. The blood showed pancytopenia with dimorphic red cells. The marrow showed typical Gaucher cells and atypical degenerate foamy forms; excess of two types of plasma cells, large and small; transitional megaloblasts and giant metamyelocytes. Serum proteins (9 g per 100 ml) included two abnormal bands on electrophoresis, one IgC and one IgA.

Anaemia was partly corrected by oral iron and folic acid, but hypersplenism persisted, and thrombocytopenia and leucopenia necessitated splenectomy. Two weeks after operation the serum IgG was at the preoperative level but IgA was halved.

With fluorescent anti-IgG and anti-IgA sera two populations of plasma cells were identified—one predominantly in marrow, producing IgG; the other in marrow and spleen, producing IgA.

Galactocerebroside, one of the lipids in reticulo-endothelial cells in Gaucher's disease, is known to be strongly antigenic because of its ability to produce plasma cell proliferation when injected into mice. Could leakage of this or other lipids from the foamy, degenerate Gaucher cells have stimulated the production of the two clones of plasma cells in this patient?

Reference

Pratt, P. W., *et al* (1968). *Blood*, 31, 633.

Dissociation of Carboxyhaemoglobin in the Cadaver

H. M. RICE (Department of Pathology, General Hospital, Nottingham) Many