Fentazin (perphenazine), a phenothiazine, increases circulating prolactin levels by inhibiting prolactin inhibiting factor. (Pearson *et al.*, *Trans. Am. Physicns*, 1969, **32**, 225). Female Sprague–Dawley rats aged 30 days were started on daily subcutaneous injections either of Fentazin (5 mg/kg body weight) or vehicle (0·2% citric acid). Both groups of animals received DMBA (5 mg i.v.) when aged 50 days. The *in vitro* metabolism of [^{3}H]dehydroepiandrosterone and [^{3}H]testosterone was determined in adenocarcinomata subsequently appearing in the rats.

Adenocarcinomata from the Fentazin treated animals displayed greater metabolism of testosterone than those from control animals whereas the transformation of dehydroepiandrosterone was similar in both groups. The increase in testosterone metabolism was largely accounted for by a significant increase in 5-α-reductase activity. These results suggest that prolactin may modify the intracellular environment of steroid hormones in rat adenocarcinomata.

TRIPLE CHEMOTHERAPY IN ACUTE NON-LYMPHOCYTIC LEUKAEMIA, J. J. Fennelly and L. O'Connell, Our Lady's Hospice, Dublin.

Thirty-two patients with acute non-lymphocytic leukaemia (22 myeloid, 2 monoblastic, 3 myelomonoblastic, 2 promyelocytic, 3 blast crisis) have been treated with combined daunorubincin 1 mg/kg i.v. × 1 cytosine arabinoside 2 mg/kg × 5 and vincristine 1 mg i.v. × 1 in 5-day cycles and followed by 6-mercaptopurine and cyclophosphamide when remission was induced, with reinduction at 3-monthly intervals. Sixty per cent of patients went into full remission, which has lasted from 6 months to 2 years. Two patients with acute promyelocytic leukaemia developed coagulation problems which were controlled by EACA and then went into full remission. Two patients with acute monoblastic and myelomonoblastic leukaemia went into full remission on this programme.

One patient who was extremely ill during induction of remission developed a severe neuropathy. Alopecia was a problem with higher dosage of daunorubicin and cardiotoxicity occurred in 2 patients. Reinduction at 3-monthly intervals with triple chemotherapy was smooth and in our opinion contributes to the prolonged remission in these cases. Age group did not significantly affect remission rate.

FAMILIAL HODGKIN'S DISEASE, J. J. Fennelly and A. McBride, Our Lady's Hospice, Dublin.

Three girls in one family developed nodular sclerosing Hodgkin's disease in 1967, 1970 and 1973 respectively. In addition, other members have had multiple viral infections, including infectious mononucleosis and herpetic infections. An intensive study of chromosomes HL-A typing, blood groups, immunoglobulins immunity (DNCB Mantoux test, lymphoblast transformation) has been carried out on all siblings (5) and parents and is presented, in addition to complete studies of viral antibodies, with emphasis on EB virus. The triple occurrence in this family at such time intervals suggests that some genetic factor, *i.e.* depressed immunity must in these cases provide an underlying milieu in which a viral infection may manifest itself as Hodgkin's disease.

USE OF THE CARCINOEMBRYONIC ANTIGEN AND SERUM ENZYME CHANGES IN THE DETECTION OF METASTATIC INVOLVEMENT OF THE LIVER, L. Steele, E. H. Cooper, A. Munro Neville and M. S. Losowsky, Department of Cancer Research, University of Leeds, and Chester Beatty Research Institute, London, and Department of Medicine, St James's University Hospital, Leeds.

The combination of estimations of carcinoembryonic antigen (CEA) with certain serum enzymes (γ glutamyl transpeptidase (γGT) and leucine aminopeptidase (LAP) can enhance the separation of controls from patients with primary colorectal cancer and those with metastatic involvement of the liver.

γGT contributes to this discrimination in both the primary and secondary case. The mean values were: (i) control 13·94 $\pm$ 7·65; (ii) primary 21·65 $\pm$ 12·20 and (iii) metastatic 139·34 $\pm$ 96·22.

On the other hand, the LAP was elevated only in metastatic involvement of the liver and did not rise before the γGT exceeded 100 units: (i) control 41·55 $\pm$ 9·20; (ii) primary 40·27 $\pm$ 14·38 and (iii) metastatic 96·81 $\pm$ 50·39.

The combination of CEA and γGT was particularly advantageous for separating pelvic or local recurrence from hepatic metastases. In the former there was a moderate rise of CEA but little increase of γGT whereas in hepatic metastases the γGT was elevated. These tests, when considered with relevant clinical history, can readily distinguish hepatic metastases from non-malignant disease of the liver. Approximately 10% of outpatients who were symptom free and without apparent recurrence showed a moderate elevation (40–100 units) of γGT without corresponding increase in CEA, when examined 3 months to 13 years after excision of the primary. The significance of this biochemical abnormality is, as yet, unknown.

A COMPARISON OF PHOSPHATE BONE SCANNING AGENTS IN HUMAN MALIGNANT DISEASE, D. L. Citrin, R. Bessent, J. Tuohy, P. Crumlish, W. R. Greig and L. H. Blumgart, University Department of Medicine and Surgery, Departments of Nuclear Medicine and Radiology, Royal Infirmary, Glasgow, and Department of Clinical Physics and Bio-Engineering, Western Regional Hospital Board, Glasgow.

Bone scanning is recognized to be more effective than radiology in the demonstration of skeletal metastases. The established bone scanning agents, strontium-87m and fluorine-18, are not entirely satisfactory. Recently, technetium labelled phosphate compounds—polyphosphate, pyrophosphate and ethane hydroxy diphosphonate—have become available for skeletal scanning. We have now performed over 200 consecutive studies in man and no toxic effects have been noted. A study of the relative efficacy of these agents in patients with metastatic disease, and in normal subjects, is described. Adequate visualization of the skeleton has been obtained and comparison of the scans and x-rays suggests that these compounds are of definite value in the investigation of malignant disease of the skeleton.

THE RELATIONSHIP BETWEEN CELL SURVIVAL, CHROMOSOME ABERRATIONS AND DNA REPAIR IN TUMOUR CELL LINES OF DIFFERENTIAL SENSITIVITY TO X-RAYS AND SULPHUR MUSTARD, D. Scott, M. Fox and B. W. Fox, Paterson Laboratories, Christie Hospital, Manchester.

Cultured Yoshida lymphosarcoma cells resistant (R) to treatment with sulphur mustard suffered much less chromosome damage than sensitive (S) cells in spite of equal alkylation of DNA, RNA and protein in R and S cells. The R and S cell lines were equally sensitive to x-rays and sustained the same amount of chromosome damage. DNA repair synthesis was equal in R and S cells after sulphur mustard or x-ray treatment.

Much less chromosome damage was found in L5178Y mouse lymphoma cells resistant to x-irradiation than in radiation-sensitive cells but the amount of DNA repair was similar.

Thus, drug and radiation resistance is accompanied by, and perhaps mediated through, a reduced amount of induced chromosome damage but is not quantitatively related to DNA repair capacity.

MECHANISM OF ACTION STUDIES WITH IRCF 159: EFFECTS ON THE GROWTH AND MORPHOLOGY OF BHK-21S CELLS, T. C. Stephens and A. M. Creighton, Imperial Cancer Research Fund, London.

The effects of IRCF 159 on macromolecular synthesis in cultured cells led to the suggestion of a possible radiomimetic action (Creighton and Birnie, *Int. J. Cancer*, 1970, **5**, 47). We have found a dose-dependent inhibition of the growth (cell numbers) of BHK-21S cells approaching 100% at >100 μmol/l (27 μg/ml). Continuous exposure to a range of doses >5 μmol/l produced a hyperbolic decrease in survival (colony forming assay). Such a response is generally associated with antimetabolites but in this case the hyperbolic curve seems more likely to be caused by a protective effect which is seen with ICRF 159 at high doses (*ca.* 400 μmol/l).

Time lapse cinemicrography has shown that the increase in cell numbers is inhibited due to an interference with cytokinesis. However, the cells continue to grow and accumulate DNA, RNA and protein and many become multinucleate. Comparative studies indicate that this cell line is particularly sensitive in this respect. Cells with a similar multinucleate morphology were obtained following treatment with x-radiation