Current interest in the epidemiology of childhood cancer stems largely from the variations in frequency observed, particularly between continents (Miller, *Int. J. Cancer*, 1972, **10**, 675), with the consequential possibility of identifying environmental agencies in its causation.

A series of 2000 cases from the Birmingham Region have been classified according to their histogenesis into 8 broad categories. When the numbers by age of onset are studied there are marked differences; in no category is the rate of occurrence constant throughout childhood, rather rates either decrease or increase sharply with age. Further the rates of change are very different, giving rise to curves characteristic for each type of malignancy. When categories are sub-divided into cell types it is found that within each, the patterns of behaviour are very similar, and in some this suggests a relationship with other malignancies. In general, the sexes show a close resemblance, making the divergencies which do occur the more remarkable.

LUNG CANCER IN MINERS. D. J. B. ASHLEY. Pathology Department, Morriston Hospital, Swansea.

Lung cancer is seen less frequently in miners than in men who work in other occupations. This difference does not appear to be related to the extent of cigarette smoking or to death at an early age from chronic occupational respiratory disease, and is an advantage which is shared by workers in the wool and cotton industries.

Two hundred and fifty-eight instances of lung cancer in miners were compared with just over 2000 instances in non-miners at a single hospital in South Wales. In the case of miners the lesion was less likely to be resectable than in non-miners, and was more likely to be of the undifferentiated, small cell type. However, if resection was possible the prospect of survival was much better in the miners.

It is suggested that the lung changes induced by dust may give a local enhancement of the defence mechanisms against carcinogenesis.

GENETIC MARKERS FOR LEUKAEMIA. D. K. O'DONOVAN and J. BELL. Department of Medicine and Therapeutics, University College, and Our Lady's Hospital for Sick Children, Dublin.

In a clinical survey of 50 consecutive patients with acute leukaemia, developmental defects and anomalies were recorded. There was a striking absence of all the major developmental defects, as illustrated by the absence of mental retardation and congenital heart disease. There was a 30% incidence of minor anomalies of development in the fifth finger, the fifth toe and facial asymmetry. The frequency of such anomalies was at least 10 times greater than that seen in control groups. The frequency was approximately the same in both myeloblastic and lymphoblastic leukaemia. Some of the anomalies observed are similar to, but more obvious than, those previously noted with simple goitre and hyperthyroidism. The evidence does not suggest that in leukaemia such anomalies are inherited by a dominant autosomal gene. It appears more likely that the defects arise at the very early stages of development (?) partial nondisjunction. The relationship to Down's syndrome will be discussed.

***IN SITU* HYBRIDIZATION OF VIRAL NUCLEIC ACIDS IN TUMOUR CELLS.** J. K. MCDOUGALL, P. H. GALLIMORE, A. R. DUNN and K. W. JONES. Department of Cancer Studies, The Medical School, Birmingham.

The use of radioactive complementary RNA (cRNA) transcribed *in vitro* to detect virus nucleic acid in infected cells by the *in situ* method has been reported (McDougall, Dunn and Jones, *Nature, Lond.*, 1972, **236**, 346). This molecular hybridization technique has recently been used in the study of cells from tumours with proven or possible virus aetiology (Orth, Jeanteur and Croissant, *Proc. natn. Acad. Sci., U.S.A.*, 1970, **68**, 1876; Zur Hausen and Schulte-Holthausen, *Oncogenesis and Herpesviruses*, 1972. Lyon: I.A.R.C., p. 321).

In this study adenovirus type 2 or type 12 cRNA, transcribed *in vitro* using *E. coli* RNA polymerase, was hybridized to adenovirus transformed and tumour cells. Autoradiographic grains found over cell nuclei indicated that the cRNA hybridized only to cells transformed by the homologous virus and not to control cells. Preliminary results indicate an association between virus and host DNA.