has been the successful collection of large numbers of mitotic cells over a 3-4 hour period using a constant gentle washing procedure for large monolayers. The arrested cells show almost perfect metaphase synchrony and pass out of mitosis synchronously with similar kinetics to isotonically collected mitoses.

AGGLUTINATION OF NORMAL AND MALIGNANT CELLS BY CONCANAVALIN A IN RELATION TO CELL SURFACE STRUCTURE. N. E. PAYNE, P. WHUR and R. T. ROBSON. Cell Biology Unit, Marie Curie Memorial Foundation, Research Department, Oxted, Surrey.

Our Ehrlich ascites tumour cells do not aggregate in vivo. However, when washed and resuspended in tissue culture medium aggregation occurred at 37°C and the cells are agglutinated by concanavalin A. When pre-incubated in trypsin inhibitor (soybean) the cells show markedly less tendency to aggregate but in the presence of concanavalin A agglutination is greatly enhanced. This suggests that trypsin inhibitor interacts with a cell surface component, possibly a protease.

In related studies, concanavalin A agglutination was investigated using trypsinized BHK 21 cells. After exposure to trypsin these cells become agglutinable, but lose this property, apparently as the cell coat is resynthesized. The time course of this event is compared with polyoma-transformed BHK 21 cells, which remain agglutinable after coat resynthesis.

EXAMINATION OF EXFOLIATED CERVICAL CELLS BY THE SCANNING ELECTRON MICROSCOPE (SEM). J. F. MURPHY, J. M. ALLEN, J. A. JORDAN and A. E. WILLIAMS. Departments of Obstetrics and Gynaecology and Microbiology, University of Birmingham.

This study examines the ability of the SEM to differentiate exfoliated cells from the cervix uteri into benign and malignant types.

Three basic methods were used to obtain cell samples: (1) the cells were scraped from the cervix, examined by phase contrast microscopy and then processed for examination in the SEM; (2) cells were washed from the cervix with tissue culture medium and similarly treated and examined; (3) a membrane filter was used to remove cells from a colposcopically directed area on the cervix.

The results using techniques 1 and 2 often showed good cell preservation but were not sufficiently reproducible to be of clinical value. The membrane filter technique provided much more satisfactory results though there was some loss of surface detail at higher magnification.

THE TEMPORAL AND SPATIAL DISTRIBUTION OF OESOPHAGEAL CANCER AMONG MINEWORKERS IN SOUTHERN AFRICA. J. S. HARINGTON. National Cancer Association of South Africa, Johannesburg and N. D. McGlashan, University of Tasmania, Hobart.

The initial analysis of cancer among miners recruited from several rural areas of southern Africa (Robertson et al., Br. J. Cancer, 1971, 25, 395) has been tested for significance of time trends and spatial distribution. 48.8% of all cases of oesophageal cancer diagnosed in this medically well recorded population of 2.9 million men came from home addresses in the Xhosa-speaking Transkei, and a further 18.5% from neighbouring areas of the Eastern Cape Province, mainly the Ciskei, also a Xhosa area. Only 4.3% of oesophageal cases came from Mozambique. In contrast, 68.6% of cases of liver cancer occurred in Mozambique miners and only 10% in miners from the Transkei.

Regressions of annual rates per 100,000 employees for the Transkei and Eastern Cape for the 8 years, 1964-71, have been found to be similar and 7 times as high as those for all other areas of recruitment. Within the Transkei the districts with the highest rates, and significantly higher case numbers, lie in the extreme south-west. The spatial and temporal patterns, taken together, emphasize the high incidence both east and west of the Kei River. They suggest that the populations there are under uniform conditions of environmental risk and provide basis for aetiological enquiry amongst these general Xhosa populations.

CHILDHOOD CANCER: AN EPIDEMIOLOGICAL STUDY. J. POWELL. Birmingham Regional Cancer Registry, Queen Elizabeth Medical Centre, Birmingham.