Several reports have appeared on the association of mycoplasmas with neoplasms, but the significance of these associations is poorly understood. Some mycoplasmas have properties in common with tumour inducing viruses such as Rous sarcoma and polyoma. At the meeting, W. Russell discussed the transformation of *BHK*21–*C*18 hamster fibroblast cells by mycoplasmas which closely resembled the transforming pattern of tumour viruses. In contrast to virus transformations, however, cells transformed by mycoplasmas showed no evidence of mycoplasma antigens or transplantation immunity, while tumour formation was not induced in hamsters inoculated with *M. fermentans*. Imbalanced nucleic acid metabolism in infected fibroblasts (see also Russell, W., *Nature*, **212**, 1537; 1966) might permit genetic changes which could produce neoplasms: such a role for mycoplasmas in oncogenesis is at present entirely speculative. In defining the current position on mycoplasmas and human leukaemias, R. J. Fallon concluded that there is no established cause and effect relationship even when mycoplasmal antibodies are associated with the leukaemic condition. The question of crypto-mycoplasmal infections not detected easily by ordinary culture methods may be significant here. The failure to isolate mycoplasmas from tissue cultures or rheumatoid synovial membranes probably reflects exacting nutritional requirements which would favour the establishment of obligate parasitism. The induction of, and the means of identifying, crypto-infections are important areas of investigation in attempting to elucidate the relationship, if any, of mycoplasmas to these types of diseases.

Fluid Logic

Some 360 delegates met at Cambridge last week at a conference on fluidics—the second of its kind to be held in Britain. The conference was organized by the British Hydromechanics Research Association in conjunction with the College of Aeronautics, the Institution of Mechanical Engineers, and the Society of Instrument Technology.

Fluidics is an abbreviation of the two words "fluid logic" and stands for one of the newest technological tools mainly concerned with small devices without mechanical parts in which, for example, flows can be switched by low pressure impulses, and in which small pressures can be amplified or compared so as to form the *and*, *or*, *nor* types of decisions. The technique offers a means of controlling processes and operations of devices which are insensitive to extremes of temperature, corrosion and the like, and which are also cheap and rugged. Many control problems are implicitly concerned with fluidics in any case, so that fluid logic is often a natural choice of a means of control, whether the fluid is sulphuric acid, radioactive liquid, burning gas, or simply air. Fluid logic devices have already been used successfully in the measurement of angular rate, high temperature, and also in controlling turbine speeds.

The fifty or so papers presented at the conference at Cambridge provided a comprehensive picture of what has happened since the first developments in fluidics seven years ago in the United States. Fundamental and industrial applications were dealt with in the papers presented, and particular topics discussed included the application of fluidics to nuclear plant and machine tool operations of various kinds. It is encouraging that interest in fluidics has roughly doubled in the past 18 months, at least if interest is accurately reflected in the number of papers presented at the first and second conferences. The universities, the Ministry of Technology, the professional institutions and some sections of British industry are well aware of the challenge and the potential rewards of fluidics, but it is worrying that substantial sections of British industry are apparently unaware of the new technique.

Ultra-centrifuge Anomalies

When sedimentation and diffusion coefficients are calculated from ultra-centrifuge experiments, certain assumptions are usually made. Originally these were that there is a sharp free boundary between solvent and solute, that the ultra-centrifuge reaches a constant angular velocity immediately after starting and that the sedimentation and diffusion coefficients are independent of concentration. A solution due to Fujita and MacCosham used a realistic boundary condition instead of the sharp free boundary, and the assumption about instantaneous speed-up is incorporated by assuming the centrifuge to have started at an intermediate time equal to two-thirds of the time needed for acceleration. Speaking at a meeting of the physical biochemistry group of the British Biophysical Society, Dr. V. D. Barnett, of the University of Birmingham, suggested that even these modifications may not be enough to give consistent values for the coefficients.

Using an improved estimation procedure (based on a linearized least squares approach) which gives more accurate estimates of the coefficients, and calculating them for different times rather than for only one Schlieren frame, he had obtained estimates of the different coefficients of the process which showed an unexpected time-dependence. In an attempt to resolve this anomaly by relaxing the assumption of instantaneous starting, Professor H. E. Daniels, also of the University of Birmingham, has developed an expression in the form of a power series which describes the concentration gradient profile during the acceleration phase. Combining this with the solution for the profile after the switch-off in the constant angular velocity phase produces the solution for any general time. It is hoped that this modified solution will resolve the earlier anomalies, and data are being analysed to confirm this. In the discussion of Dr. Barnett's paper, some speakers expressed the fear that it may invalidate much previous work carried out with the ultra-centrifuge.

At the same meeting of the Biophysical Society, Dr. S. P. Spragg and Dr. R. F. Goodman, of the Department of Chemistry at Birmingham, discussed the problems associated with the acquisition of data from an ultra-centrifuge by an "on line" computer. Using an absorption technique, pulses are fed directly into the computer through a photo-multiplier, and are stored by the computer only when they are significantly different from the previous pulse. This means that the computer will only store useful information, and by pausing at certain points along the scan can improve the signal to noise ratio significantly.