surpasses any of them at these wavelengths—at the infrared wavelength of 22 μm its flux density is thirty times that of the otherwise comparable Seyferts NGC 4151 and NGC 1275. But the placing of constraints on the model for the emission is of more general interest than its applicability to Seyfert, for the infrared emission from Seyfert galaxies is likely to arise by a similar mechanism to the unexplained infrared emission from quasars.

The infrared emission from extragalactic objects such as quasars and galaxies has previously been interpreted either in terms of synchrotron emissions from electrons, or by thermal emission from a shell of dust grains surrounding a compact source of energy. Neither view is entirely satisfactory, the synchrotron mechanism because an unusual spectrum of emission would be required which, although not totally impossible to obtain, would place difficult constraints on the behaviour of electrons in extragalactic objects which would be hard to fulfil. On the other hand, the dust model is usually regarded suspiciously because of the fear that time variations of the infrared emission would one day show it to be untenable, even though the observational evidence has not been convincing.

In the dust model, a central source in the nucleus of the Seyfert galaxies is taken to emit energy in the form of ultraviolet radiation, or possibly as particle radiation, which is thermalized by the shell of dust grains around the central source. The grains reemit the energy, chiefly in the infrared. But as Low and Rieke point out in their article, and as others have, of course, done before them, short-term variability of the emission will place constraints on the size of the dust shell, the constraints becoming more severe as the time scales are reduced from months to days.

According to Low and Rieke, the observations reported this week are consistent with an optically thick shell of dust having a diameter of the order of 3 parsec (about ten light years) containing dust at 400 K, or an optically thin shell having a diameter less than about 0.3 parsec at a temperature greater than 1,200 K. So, in addition to verifying the variability by continuing the observations on NGC 1068 and other Seyferts, astronomers will want to discuss whether these size and temperature constraints can be met.

DEVELOPMENTAL BIOLOGY

Embryologists Meet in Glasgow

from a Correspondent

THE tenth international conference on embryology, which took place in Glasgow on August 30 to September 3, was well run, with only three principal speakers in each session. Each speaker therefore had enough time to develop an argument and could speak to a relatively fresh and attentive audience. The sessions included oogenesis, genetic interactions in development, the control of protein synthesis, the development of pattern and neuroembryology. There was also a film session, several meetings of discussion groups and about ninety demonstrations.

Dr. F. H. Ruddle (Yale University) showed that the assignment of linkage groups to particular human chromosomes was proceeding rapidly. In his work he uses the technique of intraspecific somatic cell hybridization and half-selection to produce hybrids in which the expression of particular differentiated traits can be examined. For example, in a hybrid derived from a mouse renal adenocarcinoma (RAG) and a human fibrocyte (Wi 38), cells were either deficient in esterase-2 activity, which is characteristic of the human parent, or possessed it, which is characteristic of the mouse parent. On prolonged cloning, the ES–2$^-$ strain occasionally reverted to ES–2$^+$, but ES–2$^+$ never reverted. Ruddle concluded that it was possible that the expression of the mouse phenotype could be controlled by the presence or absence of a human chromosome, either C8 or C9.

Dr E. Sidebottom (University of Oxford) uses hybrids between chicken erythrocytes, which do not normally show nuclear activity, and HeLa cells in combination with antisera to human nucleoli, nucleoplasm and cytoplasm. He was able to show a good correlation between the renewal of DNA and RNA synthesis by the reactivated chick nucleus and the appearance of chick antigens on the cell surface shortly after the reappearance of chick nucleoli. He found that although human nuclear material occasionally appeared in chick nuclei, human cytoplasmic material never did. Similarly, in mouse–human hybrids he demonstrated the synthesis of a human enzyme under the control of mouse nuclear material.

Dr P. J. Bryant (University of California, Irvine) discussed the properties of *Drosophila* imaginal disks—the segmented larval tissues from which adult structure develops. Each disk is a more or less tubular structure which is folded and attached by a stalk to the epidermis. After the last moult the disks evert, unfold and differentiate to produce a segmental structure such as an eye or a limb. He used genetic mosaics, made by irradiating flies heterozygous for "yellow" and "singe" (pale cuticle and bent bristles). This leads to somatic crossing-over in cells of the imaginal disks, some of them becoming homozygous by recombination so that the characters are expressed. Adults therefore have patches of pale cuticle and

Selection in Quasar Redshift Measurements

IN the flurry of publications concerning the observed clumping of quasar emission line redshifts at certain values, very little attention has been given to the problem of selection effects. Nobody would argue against the suggestion that the observations favour some values of redshift (z). But it is a different matter when the question of periodicities in the favoured values of z are considered, and this is an opportune time for R. C. Roeder's analysis in next Monday's *Nature Physical Science*.

The most well known and least questionable region of favoured redshifts lies around $z=1.95$. Various authors have claimed that other peaks in the histogram of quasar redshifts can be related to this peak and one another, with a "periodicity" in z of 0.06. Other workers have argued with equal conviction that the statistics are inadequate to support such a claim, and the possibility of selection effects has also been raised, although not usually in any explicit form. Roeder's work now suggests that in some objects there are simply more spectral lines to measure—in a few cases at the other extreme redshifts have been claimed on the basis of the "identification" of only one line in the spectrum of a quasar.

The correlations observed by Roeder are statistically significant, and of course if there are more lines to measure at some redshifts then it is easy to understand why more quasars have had their redshifts measured at these values. It seems that the "ease of measurement effect" may be related to the movement of spectral features across the optical window as z increases. Most notably, the deficiency of redshifts measured at $z=1.25$ could be attributed to the shift of Mg II out of the window, and the rise at $z=1.8$, peaking around $z=1.95$, could be attributed to the shifting of Lyman α into the window.