

factors, such as respiratory mechanisms and leaf resistance to the diffusion of carbon dioxide, for an answer to these seeming anomalies.

VIROLOGY

Sudden Death in Infancy

from a Correspondent

THE very sudden and unexpected death of a previously healthy infant—the so-called cot death—occurs more frequently than deaths in childhood due to road accidents. Yet the true cause of these cot deaths is rarely established although several theories are being examined. It may be caused by an overwhelming virus infection, or an allergic reaction possibly to regurgitated milk entering the trachea, or it may simply be that very young infants do not adapt sufficiently quickly to mouth breathing when their nasal passages are blocked.

A group of workers from Newcastle and Gateshead have studied fifty-one cases of sudden and unexpected deaths in infants (Ferris *et al.*, *Brit. Med. J.*, 2, 439; 1973). They were looking for a link between virus infections of the respiratory tract and sudden death in infants under a year old, and therefore excluded all infants known to have been unwell before their deaths, those with any obvious defects such as congenital heart disease and those who at post-mortem were found to have any disease which could account for their death.

Their investigation of the fifty-one remaining unexplained deaths involved histological examination of lung tissue and attempts at virus isolation and identification. The viruses looked for were those known to produce respiratory illnesses in children—respiratory syncytial virus, influenza A, and parainfluenza types 1 and 3.

Each slide of lung tissue was examined by two pathologists independently and complete agreement reached on their classification. The samples fell into three groups: the largest group of thirty-three cases showed changes of a type which have been widely accepted as characteristic of cot deaths, the main feature being a large volume of fluid in the alveoli of the lungs. These lung changes are similar to those found in children whose cause of death was thought to have been an acute allergic reaction. But in the Newcastle cases there seem to have been no obvious factors which could have provoked such reactions. No viruses were isolated from this group.

The second largest group contained sixteen infants whose lungs showed a breakdown in the lining of the smallest bronchial tubes and infiltration of lymphocytes. Viruses were isolated

from thirteen of these cases, chiefly the respiratory syncytial virus.

Group three showed the appearances of bronchopneumonia, a bacterial infection. There were three children in this group, from two of which respiratory viruses were isolated.

So the chief point is that in a third of these cases of cot death viruses were isolated and seem to have been the cause of death because the viruses were not of the type expected in the lungs of healthy children. But clearly this is not the whole story, for it looks as if some kind of unexplained allergic reaction is involved in a proportion of cot deaths. Physicians are, however, no nearer a way of anticipating and preventing these tragic sudden deaths.

MARS

Mariner Results

from a Correspondent

THE Royal Society discussion meeting arranged by the British National Committee on Space Research on May 15 and 16 showed how drastically Mariner 9 has changed our view of Mars. Mariners 6 and 7 saw a cratered planet like the Moon except for some evidence of erosion, but Mars is now seen to be much more varied and to have many features in common with Earth.

A preliminary geological map of the whole planet, prepared from Mariner 9 photographs, is now available. Only half of the surface, mostly in the southern hemisphere, is substantially cratered. The surface in the south is more than 3 km higher than in the

north and it is deduced that in the southern half of Mars the crust is ancient, low density, "continental" material. Thus about half of the surface of Mars is "continent", making it intermediate between Earth and Moon. It may be that the fraction of continental material might be a measure of the crustal stability of a planet.

It follows that martian material is not of uniform composition and so it seems that, like Earth and Moon, differentiation occurred early in the planet's history. In support of this view, spectral analysis shows the atmospheric dust to be 60% silica, and some very ancient volcanoes can be seen.

Volcanic activity that is geologically more recent covers a large area, and several volcanoes are similar to terrestrial shield volcanoes. The largest, Nix Olympica, is 700 km across and more than 24 km high. Three smaller shield volcanoes are aligned along the edge of the "continent". In the same region a vast canyon up to 6 km deep, 200 km wide and about 3,000 km long dissects the highest part of Mars. These observations suggest that some recent crustal movement of the type seen on Earth has occurred.

The entire surface has been modified by erosion and the most effective agent is wind. The martian atmosphere, almost wholly carbon dioxide, circulates due to differential solar heating, but it is only 0.5% as dense as Earth's atmosphere and so allows sharper temperature gradients to develop, resulting in generally stronger winds. Occasionally the winds become so strong that the lower atmosphere is filled with dust, although

Archival Records Hint at Nature of OH471

AS expected, the discovery that the QSO OH471 has a redshift of 3.4 has caused a flurry of activity among observational astronomers. In *Nature Physical Science* next Monday (June 11), Kraus, Gearhart and Ehman present flux density data for the object going back to 1963, while in this issue of *Nature* (page 336) Wampler and colleagues report that they have found a redshift of 3.53 for the "blue stellar object" OQ172.

Clearly, the discovery of one high redshift object has indeed paved the way for other similar discoveries. But what of the observations of OH471 going back over ten years? It is certainly an almost unique event in radio astronomy that records of this kind have immediately been available for an object of newly discovered significance, although in the case of optical astronomy objects such as 3C273 can be examined on plates dating back to the latter part of the nineteenth century. The relevant radio data have been preserved, together with

other data from many objects, in the Ohio State University Radio Observatory archives.

It is only a pity that such foresight has not been rewarded with more dramatic discoveries than that OH471 is not variable. The flux density has been measured at 1,415 MHz, 612 MHz and 2,650 MHz. With a density of about 2 f.u. at the lower frequencies and 1 f.u. at 2,650 MHz and above, the spectrum is of the centimetre excess (CE) type, and might have been expected to show variability.

The archival records dash these hopes; the range of the (averaged) flux densities is only from 3.2 ± 1.2 f.u. to 2.09 ± 0.6 f.u., which can be interpreted as indicating either no significant change or a slight decrease over the period 1963–70. Although this is slightly disappointing, the availability of these records will ensure that any variation of the source will become apparent much more quickly than it would if monitoring was only now beginning.