EPIDEMIOLOGY

Enteritis in Manchester

THE issue of the thirty babies who have recently died at two Manchester hospitals has been linked with the apparently similar case at Teesside in 1967, when fifteen babies died of gastroenteritis, and the phenomenon of transferable drug resistance. Discussion is not helped by the absence of two relevant documents, the report of the inquiry into the Teesside outbreak, which has been suppressed in spite of the Minister of Health's earlier announcement that it would be published, and the report of the Swann committee on drug resistant organisms and the use of antibiotics in animal feeding stuffs, which is still in preparation.

Nonetheless, fears that Pandora's box is about to be re-opened and let loose a succession of drug resistant germs are premature, to say the least. The matter of drug resistance, in this particular instance, seems to be a red herring. What has happened is that one of the many apparently harmless strains of the common intestinal bacterium *E. coli* now seems to belong to the half dozen or so that cause gastroenteritis. Why this particular strain, designated 0114, should suddenly have become a pathogen is a matter for speculation, but an obvious possibility is that it was imported into Britain from elsewhere. *E. coli* 0128, which infected the Teesside babies, belongs to the group of well known pathogenic strains for which standard serological tests are available. In common with many other bacteria, the hospital outbreaks of *E. coli* 0128 and 0114 are resistant to some antibiotics. Antibiotics, however, are a secondary factor in the treatment of infantile enteritis.

The gastroenteritis cases occurred at two Manchester hospitals, Booth Hall and Monsall, at each of which fifteen babies have so far died. Dr S. I. Jacobs, the bacteriologist at Booth Hall, applied the routine tests available at the hospital, which included screening for the usual pathogenic bacteria and viruses. As the hospital housed some older children with primary atypical pneumonia, the presence of mycoplasma was also considered and the paired sera test was used to check for signs of recent viral infection.

All these standard tests proving substantially negative, faecal samples were sent to the Central Public Health Laboratory at Colindale. Because of a research project in progress there, a full range of the hundred or so *E. coli* agglutinating sera was available and the serotype 0114 was identified in the samples. It appears that *E. coli* 0114 is the cause of the gastroenteritis although by the nature of the circumstances the case is hard to prove.

The bacterium is sensitive to two antibiotics, which is fortunate but of entirely secondary importance. The primary method of treatment is to replace the body fluids which the infants have lost through diarrhoea, by feeding either intravenously or with a diet that is easy to absorb.

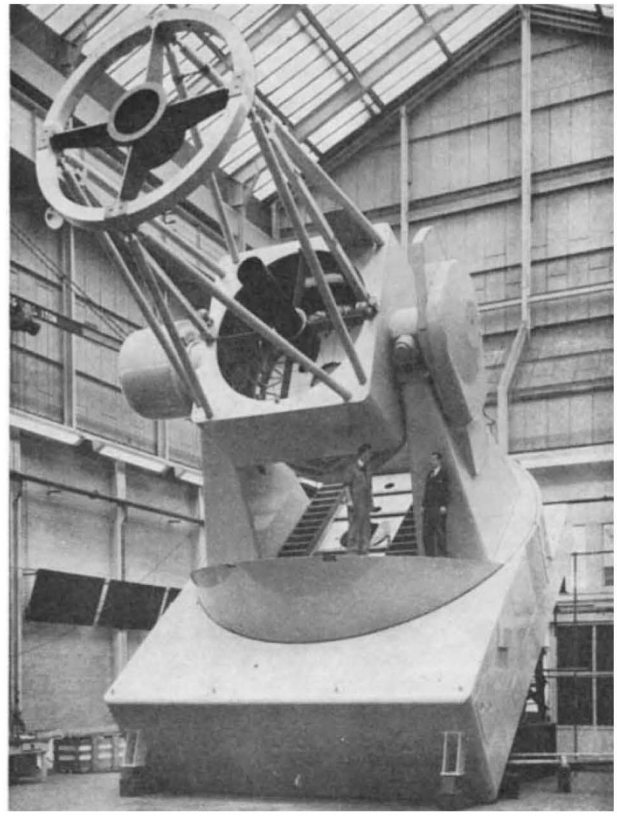
The Swann committee, due to report later this year, is expected to recommend restrictions on the antibiotics presently used in animal feeding stuffs. Indiscriminate use of antibiotics can encourage the evolution of resistant strains of bacteria, a danger that is compounded by the ability of certain kinds of bacteria to transfer drug resistance factors during sexual configuration. A mechanism for the rapid spread of resistance throughout a bacterial population raises obvious fears that new antibiotics may be rendered useless faster than they can be discovered. The question of drug resistance, however, is quite separate from that of the appearance of a new serotype.

ISAAC NEWTON TELESCOPE

Cloudy Skies in Sussex

THE largest optical telescope in Western Europe—the 98 inch Isaac Newton at Herstmonceux in Sussex—has now been operative for more than sixteen months, but of the 487 nights between December 1, 1967, and March 31, 1969, only fifty have been completely clear. Of the remainder, 138 were partially clear, enabling some observations to be made; on 298 nights the usual inclement British weather conditions prevailed and no viewing at all was possible, and on one night there was an instrument failure. Sixty-one per cent of the nights were unsuitable for viewing. Last summer was notoriously wet in Britain, but even in the sunniest of years Sussex is not the ideal site for a £1 million optical telescope.

Time on the telescope—which is intended to be a national instrument for general use—is allocated by a panel of the Science Research Council, which also allocates time on the 74 inch Radcliffe telescope at Pretoria. But before September 1968, applications for time on the Isaac Newton were discouraged (see *Nature*, **219**, 1101; 1968)—between September 1968 and September 1969 six university astronomy groups have or will have been allowed time. The Royal Observatory,



Isaac Newton 98 inch telescope before dispatch to the Royal Greenwich Observatory, Herstmonceux, England.

Edinburgh, for example, has had two periods of seven nights. One of these occasions gave only two nights of partial viewing, the other five being cloudy. The other period was a little better with an average of two hours' total viewing time each night for four nights; the fifth night afforded a mere ten minutes' break in the cloud and the other two were totally overcast. This group's principal interest is the recording of the spectra of faint stars for which at least an hour's continuous viewing is necessary to obtain a reasonable spectrum. The best spectrum obtained by one of the Edinburgh astronomers after seven nights was an 81 per cent exposure. He did manage to obtain some other spectra but often with exposures as low as 26 per cent.

The other time allocations are two nights for the infrared group of Queen Mary College, London, two periods of seven nights for Oxford University, three nights in May and six more nights some time during the summer for the Cambridge Observatory pulsar group, and ten nights over three months has been allocated to Dunsink Observatory, Dublin. This is a total of forty-nine nights on about twenty of which some viewing should be possible. At all other times the Royal Observatory, Greenwich, has had sole use of the telescope. Outside groups, however, are being recommended to apply for three times the amount of time they need and all applications were accepted. Not surprisingly, applications to the SRC's Large Telescope Users' Panel, which last met on April 8, are increasing.

The instrumentation of the telescope is still not yet complete—the long awaited Coudé spectrograph has now taken second priority to an image-tube spectrograph which it is hoped to install in early 1970.

Under the present system of time allocation, expert and highly paid astronomers are taken away from their jobs to operate equipment which can be run equally well by proficient technicians. According to one astronomer at the Royal Observatory at Edinburgh, one way of making more efficient use of the large telescope would be to abandon the present system and commission the Royal Observatory at Herstmonceux to take the spectra or observations, a service for which the outside groups would pay.

TECHNOLOGY

How to Innovate

TECHNOLOGICAL innovation and the growth of the national economy was the subject of a symposium at Churchill College, Cambridge, last weekend, attended by eminent industrialists, civil servants, educationalists and administrators from Europe, North America and Japan. The meeting, held under the auspices of the Science of Science Foundation, a body devoted to promoting research and discussion on the impact of science on people, was to discuss attitudes antipathetic to change in all sectors of society. The conclusion was that if technological innovation is to be allowed to occur on any worthwhile scale it must penetrate the whole fabric of social, cultural and educational life.

The symposium was inspired by the awareness that a country like the United Kingdom can only survive as a trading nation through the stimulation of technological innovation. Many ideas were put forward as to why the conditions necessary for innovation to prosper are so elusive, but it was accepted that the traditional remedies of increasing scientific and technological manpower are very wide of the mark. Such increases of manpower, of course, often help innovation, but the real barrier to a sustained economic growth through technological innovation was felt to embrace social and cultural ideas just as much as those of science and technology.

To illustrate this view, Professor K. Oshima from the University of Tokyo delved into the anatomy of Japan's successful economic growth since the end of the Second World War, and he attributed the technological boom at least in part to the difference in cultures represented by the new technical products on the Japanese market, such as cameras and transistor radios, and the traditional pre-war goods. People tend to be perturbed by an erosion of traditional culture through innovation, he claimed, as has occurred in the west, but are much more willing to accept innovations as novelties.

The need for innovation in social and managerial problems was a recurring theme throughout the symposium. Dr H. Wolff of the Medical Research Council claimed that what is needed is a technological Dr Spock, who could produce the culture for a technological age. Dr A. Knoppers, vice-president of Merck and Company, stressed that management must decide what form innovations should take and whether a company should plump for totally new ideas or for new types of existing products. Management must also find out more about how research works and research management should have a greater say in top management.

The role of environment in the total innovative process was mentioned, and it was pointed out that policies such as moving industries to development areas, while being clearly beneficial in some respects, may well inhibit innovation. A technological arena suited to the characteristics of a particular country or region should be chosen, and the Netherlands was cited as a successful example. Too much central control of the economy was also considered detrimental to innovation, as was any "one buyer only" market, because it forced industries into taking unacceptable risks.

The symposium was followed on Monday by the fifth annual Science of Science Foundation lecture, given at the Royal Institution by Dr Robert A. Charpie of the Bell and Howell Company of America. As a sequel to the symposium, Dr Charpie discussed the role of technology in the international economy, and gave several examples of how the benefits of technology can be measured. The expansion of the synthetic fibre business, for example, in the United States had generated large savings of foreign exchange.

Dr Charpie attempted to describe the type of man who will make discoveries. He will probably be anti-establishment, he thought, and will be happier dealing with things than with people. He will be more familiar with the product than the market. Dr Charpie considered that a major reason for the success of the United States in technological innovation is that there is plenty of risk capital about for new projects. The US tax laws, whereby an investor gains considerably by investing in projects with a long-term rather than a short-term gain—as is the pattern with new technologies—were considered by Dr Charpie to be crucial to this success.