

consisting, among others, of the chief veterinary officer and the directors of the Animal Virus Research Institute at Pirbright and the Microbial Research Establishment at Porton. The association also asks that the Ministry of Agriculture veterinary staff be brought up to the levels recommended as long ago as 1954 in the Gowers report. The ministry is understaffed at present, and more than 85 per cent of the 270 qualified staff now employed are over 40 years old.

No Substitute for 300 GeV

NUCLEAR physicists in Britain may take some crumbs of comfort from the knowledge that the British decision not to support the European 300 GeV accelerator does not extend to the rest of the programme of the European Organization for Nuclear Research (CERN). This includes the development of equipment which in many ways can be considered equivalent to a conventional accelerator of 1,700 GeV, and may to some extent at least compensate physicists for the disappointment they are feeling just now.

According to the half-yearly report, work on the intersecting storage rings is coming on well and should be finished on schedule during 1971. What is more, the budget for the project is being adhered to, a factor worth noting as escalation of the cost of CERN projects is one of the criticisms the organization has had to face in the past. As Professor Brian Flowers said at the CERN Council meeting, the intersecting storage rings will give European physicists a unique instrument which will enable some further advances to be made in the physics of very high energies.

It is clear, however, that the intersecting storage rings are only a poor substitute for the 300 GeV accelerator. For one thing, they are far less versatile and can only produce collisions between two beams of protons. Another factor is the difficulty of recognizing the products of the collisions. In a conventional accelerator the secondary particles may have some of the high kinetic energy of the bombarding particles, and come off in more or less the same direction as the primary beam. Detection should be far less easy in the new equipment. Secondary particles will tend to have lower speeds and may be ejected in any direction. Although European nuclear physicists will be pleased to have this machine at their disposal, they are not going to be satisfied with its limited capabilities as a substitute for the 300 GeV accelerator.

More Power for the Ministry

A REPORT submitted to the Minister of Agriculture in January recommended that the National Institute of Agricultural Botany should be more closely associated with the ministry. In a written reply to a question from Mr Tony Gardner on June 28, Mr Cledwyn Hughes, the Minister of Agriculture, said that the report is now under consideration. On the same day Sir Harold Sanders, chairman of the council of NIAB, informed the annual general meeting of fellows of the institute about the recommendations.

NIAB, set up forty-nine years ago, tests new crop varieties and seeds which are sent from plant breeding stations in Britain and abroad. Recommended lists of varieties are published, in accordance with the institute's aim of improving the yield and quality

of farm crops by encouraging the use of better varieties and seeds. The need for changes in the organization of NIAB has been precipitated by the effects of the Plant Varieties and Seeds Act of 1964, which gave plant breeders rights to control by licence the sale and reproduction of their own varieties. The act made provision for an index of varieties to be set up, and for statutory trials to be carried out on varieties submitted either for a grant of rights or for inclusion in the index. Because the systematic botany branch of NIAB undertakes these tests, for which it is ideally qualified, the institute now has members of staff who are responsible to the Controller of Plant Variety Rights.

To remove this dichotomy of responsibility, a joint review group with members from the ministry and from the council of NIAB recommends that the minister, who is responsible to Parliament for the proper functioning of the Act, should have increased representation on a council which would have general direction of all the institute's work. This council would consist of eight members appointed by reason of their posts, including the Controller of Plant Variety Rights and the director of NIAB; five members selected by the Minister of Agriculture—at present he approves the chairman and appoints three other members; eight nominees of various bodies such as the National Farmers Union; five members coopted by the council, and two elected by the fellows. The changes involved would produce a council whose members shared a greater variety of expertise in science and agriculture than before. This council would be able to carry out a wide range of functions in conjunction with the Ministry of Agriculture. Thus the council would have control over the statutory trials which it now carries out on behalf of the Controller of Plant Variety Rights.

To complete the connexion with the ministry, the incorporation of all staff into the Civil Service has been recommended. As yet, it is not possible to see how this recommendation would be affected by changes arising from the Fulton Report on the condition of the British Civil Service.

Repairs at Jodrell Bank

AFTER more than ten years of nearly continuous operation, Manchester University's Mark I radio telescope at Jodrell Bank is due for an extensive overhaul. The sum of £400,000 has been allocated by the Science Research Council to cover the cost of repairs and engineering modifications. With the great success in radioastronomy over the past few years, Sir Bernard Lovell has obviously found this new sum far easier to raise than the £663,000 spent on building the telescope in the 1950s. At that time, he received only half of the total cost from the government—the Department of Scientific and Industrial Research. The Nuffield Foundation contributed a further £205,000, but the remaining sum was made up of money from a Manchester University appeal, a grant from the United States National Aeronautics and Space Agency and a personal gift of £25,000 from Lord Nuffield.

There have been no breakdowns since the telescope came into operation in 1957, but in 1967 fatigue cracks appeared in the cones carrying the 800 ton bowl to the trunnions on the tower structures and immediate action is needed. In addition to removing the stresses on the tracks and in the steelwork, engineering modi-

fications are planned which will significantly improve the performance of the telescope at shorter wavelengths. Full theoretical efficiency is hoped for in the 18 to 21 cm range, of particular importance in determining the distribution of hydrogen.

The United Kingdom Atomic Energy Authority has agreed to act as agents for the project. The AEA can be required by the Minister of Technology to work in fields outside atomic energy and has already been required to undertake research and development in the field of radio telescopes.

Slow Conversion

A MODERATE but welcome endorsement of SI units has now been handed down by the Units and Usage Committee of the US Bureau of Standards, which recommends a period of transition during which old and new systems can be used side by side. These recommendations are set out in the NBS *Technical Bulletin* for June 1968.

The committee recognizes two distinct uses of figures in NBS publications—descriptive data and essential data. Thus it would have authors write “the interferometer mirror mounted on a 1 inch rod (descriptive), was advanced in 10 nanometer increments (essential)”. During the transition period, the NBS says, descriptive data should be expressed in the most convenient way, and translation into SI units is not essential; the most appropriate units are those best understood by the expected readers. An author who uses non-SI units may, if he wishes, give SI units in parentheses.

With respect to essential units, the committee considers that results reported in scientific papers require more rigorous standards of units than results reported in technological papers. Thus, during the transition period, it recommends that in technological papers essential data be expressed in the units customarily used in the relevant branch of technology, with SI units given in parentheses or in parallel columns in tables. In graphs used as the primary means of presenting data, the coordinates should have a second set of markings in SI units. If graphs are used to indicate trends or are supplements to tables, SI units are not necessary. Authors are, however, recommended to use SI units for these data as soon as the extent of the use of this system in the appropriate branch of technology makes SI units an efficient means of communication.

In purely scientific papers, NBS authors will have to use SI units. Values in other units may be given in parentheses if the author feels that this will aid communication with the reader. Data which are used generally in both science and technology should be expressed in SI units with an indication of conversion factors into technological units, or with parallel columns of converted values. The committee stresses that these recommendations will apply only until the SI units have become familiar.

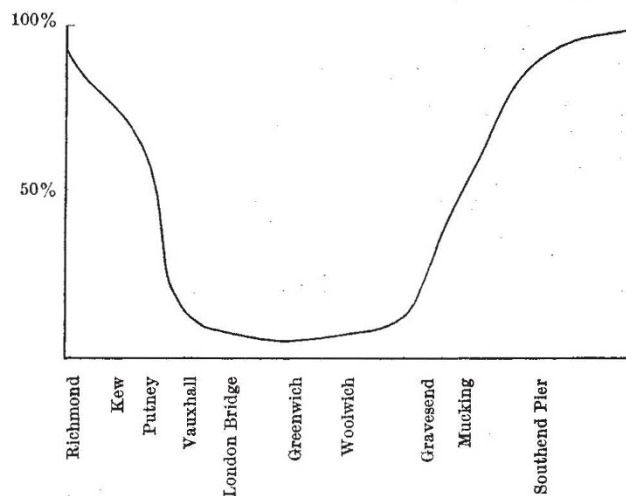
Poisoned Chelmer, Cleaner Thames

DEAD fish were found in the River Chelmer in Essex on the morning of June 29. On sampling the water, the Essex River Authority found cyanide at concentrations of 0.2 parts per million near the main intake of the Chelmsford Corporation's water works. By the evening of the same day, the authority had traced the

source of cyanide to a sewage works which discharged its effluent into the river. The cyanide apparently reached the sewage works from a plating factory, where it was presumably released by accident. The bacteria in the biological filters at the sewage works were killed, but their demise was not noticed until after that of the fish.

No less commendable than the speedy action of the Essex River Authority is the longer term effort of the Greater London Council to purify the Thames. The GLC is not so optimistic as to admit that the Thames has been getting cleaner every year, as indeed seems to be the case, but it does say that the pollution figures for 1967 represent yet another improvement and show the Thames to be cleaner than at any time during the past 70 years.

The index of pollution is the extent to which the water is saturated with dissolved oxygen. Water is deoxygenated by the bacterial breakdown of organic products in sewage effluent. Recent improvements in the purification plant at three of the GLC's main sewage works has had its effect on the oxygen sag curve, the variation of oxygen content with distance downstream. Until 1965, the percentage saturation has been about 70 per cent at Richmond, dropping to 5 per cent at Putney. During its passage through inner London, the Thames is virtually without oxygen;



Variation of oxygen content along the Thames as a percentage of saturation during July-September 1966.

saturation begins to climb only at Woolwich, nearly 20 river miles east of Putney. The sag curves for 1966 and 1967 represent a small but steady improvement. No one is more heartened at this turn of events than the fish, which last year allowed themselves to be caught as far downstream as Fulham Power Station. A carp and a roach were taken this year at Milbank, but these presumably had come down river at high tide and were not living in that stretch of the river from choice.

A century and a half ago, salmon were common in the Thames. In nostalgia for those days, a member of the House of Lords recently offered a considerable sum of money to the first person who could catch a salmon from Westminster Bridge. Oxygen saturation at this splendid site is about 10 per cent, whereas salmon probably require about 30 per cent to survive. Nor can salmon be expected in London until the upper reaches of the Thames are stocked with them. Much