MOLECULAR BIOLOGY

Living with Shortage

from our Cell Biology Correspondent

LOCAL millionaires and the US cancer charities have not been falling over each other in the rush to give funds to the Cold Spring Harbor Laboratory, as everyone hoped they might when Professor J. D. Watson achieved a personal ambition and succeeded Dr John Cairns as director of the laboratory. Nevertheless, at a time when everyone else is finding federal funds hard to come by, Watson has persuaded the National Science Foundation to give him a large grant, roughly $1·5 million spread over five years, to set up the nucleus of an animal virus group. And by all accounts, recruiting is in full swing. In addition, Cairns has received lifetime support from the American Cancer Society and an experienced administrator formerly at an American university in Istanbul has joined the laboratory.

In the past, the annual Cold Spring Harbor symposium volume has, of course, brought cash as well as reputation to the laboratory and Professor Watson is intent on expanding the book publishing side of the business for both reasons. The first step, a new abstracting service covering meetings held at Cold Spring Harbor and elsewhere, was announced recently. So far, apart from the annual symposium volume, which is the best $20 worth a molecular biologist can buy, booklets containing the abstracts of the other meetings held each year at the laboratory have been given to participants and anyone who wrote asking for them. The problem, however, has been that only those in the know have realized that this service is available. Now the laboratory's abstracting service is offering to anyone, for $12 a year in the United States and $15 a year overseas, a complete set of abstracts produced in the familiar format. Between now and June 1970, each subscriber will receive abstracts of the August 1969 tumour virus meeting, the 1969 phage meetings and the lactose operon meetings, all held at Cold Spring Harbor. These three abstracts are available immediately and at least two others are to come, the European phage meetings being held this year at the University of Sussex and, of course, the 1970 Cold Spring Harbor symposium abstracts. If it does nothing else, the new service should put an end to the queues in the world's less affluent laboratories for the one copy of the abstracts that the local star brought back with him from Long Island.

While Cold Spring Harbor and US molecular biology flourishes, the Kendrew Report and the British Biochemical Society's commentary on it (*Nature*, **223**, 989; 1969) point to the comparatively unhealthy state of the industry in Britain. A one-day meeting of the British Biophysical Society, to be held on September 22 at Queen Elizabeth College, London, has the gloomy task of discussing the future of biophysics in the United Kingdom. Professor R. Burge, who is in the process of grafting an undergraduate biophysics department to his physics department, makes no secret of his concern for the future of the subject in British universities. The topics to be covered—EMBO, undergraduate and postgraduate teaching courses, job prospects in industry, the universities and the research councils, and biophysics in the United States (several of the participants have been at the recent Boston biophysics meeting)—underline this. And judging from the very impressive list of participants, most of Britain's leading molecular biologists and biophysicists, especially those who are sticking it out at the universities rather than retiring to the seclusion of a research council laboratory, share Professor Burge's unease. Perhaps if enough of them stand up to be counted they will not go unnoticed by the universities and, more importantly, by the UGC. That, after all, is probably the chief object of the exercise because the submissions for the 1972–77 quinquennium are now being drafted.

SOIL SCIENCE

Soil Surveys Continue

THE Soil Survey of England and Wales, with headquarters at Rothamsted Experimental Station in Hertfordshire, aims to describe and classify the different types of soils in selected areas of 38 square miles in each county. Maps at a scale of 1 : 25,000 are then published and are accompanied by memoirs or bulletins which describe the properties of the soils and the geography, geology, climate, vegetation and land use of the district surveyed. According to the Soil Survey's latest annual report, surveying is now in progress on eighteen maps in fifteen counties. Work carried out in 1968 included a start on the first three 1 : 25,000 maps representative of Cheshire, a survey of 20 square miles in the south of Westmorland, the preparation of a map of Buckinghamshire at a scale of 1 : 250,000, and the completion of the mapping of the Eccles North area of Norfolk.

Other investigations included a calculation of the extent of the occurrence of the principal soil types in England and Wales. Of the six principal soil types in lowland areas, brown earths are by far the most important, especially in southern England, and they cover more than two-fifths of the area. Gley soils come next in importance, especially in northern England and Wales. Calcareous soils, organic soils, podzols and alluvial soils occur much less often.

WATER POLLUTION

Cleaning Up the Trent

ABOUT 16 per cent of the total effort of the Water Pollution Laboratory in 1968 was spent on studies of the effects of pollution on streams, especially the River Trent (*Water Pollution Research 1968*, HMSO, 17*s* 6*d*). The laboratory and the other authorities concerned are trying to find ways of using the river more effectively to meet the growing demand for water in the Midlands and in the eastern part of England. The demand for water in this area by the end of the century is likely to be about 500 million gallons a day —about the same as the present daily supply to the Greater London area—and the total expenditure is expected to be more than £500 million.

The trouble is that the Trent's catchment area is in a very heavily populated industrial area, and the river is therefore so badly polluted at its source that its water cannot be treated by normal methods. The Water Pollution Laboratory is, however, seeking methods for predicting the effects of pollution discharges on the quality of water elsewhere in the river

system. This problem is complicated because the river has many tributaries with differing levels of pollution and hydraulic regimes, while the whole system receives the discharges of a large number of industrial and sewage effluents, some of which can individually have a significant effect on the pollution of the system. Work has begun with analyses by the Trent River Authority between 1964 and 1966, but there will also be detailed surveys of badly polluted stretches beginning with the tributary River Tame.

Among purification processes and sludge treatments, the laboratory is investigating reverse osmosis in collaboration with the Process Technology Division of the UK Atomic Energy Research Establishment, Harwell. The AERE is developing the membranes and the laboratory is examining their performance and stability. Experiments with small test cells have shown that water of good quality can be produced, although membranes at present available are eventually attacked by bacteria. Preliminary trials have shown that it may ultimately be possible, by using reverse osmosis in combination with purely physical and chemical processes, to treat sewage to a more rigorous standard.

NUCLEAR ENGINEERING

No Joy at La Crosse

THE unhappy story of the La Crosse Boiling Water Reactor Project was the subject of an investigation by the Joint Committee on Atomic Energy in May this year, and the report of the hearing now published (US Government Printing Office, $2·25) indicates that some very costly lessons have been learnt about the handling of contracts for new reactors. The La Crosse project, a part of the second round of the AEC's demonstration programme, seems to be a splendid example of how safety regulations for reactor design can clash with the short term interest of an individual company, and of how accepted inspection procedures can turn out to be inappropriate to new or experimental projects, even when the construction companies are of high repute.

The Congressional enquiry arose because the AEC's financial assistance for the project exceeded the estimated figure of $9·2 million by about $4 million, or 44 per cent. This was greater than the allowed leeway of 15 per cent. The Joint Committee on Atomic Energy was informed at the inception of the project in 1961 that the 50 MW reactor would be completed by August 1964 and would be handed over to the Dairyland Power Co-operative by September 1966. In fact, there was a delay of two years, and costs were much greater than expected.

Much of the delay arose because the AEC evolved new and tighter safety controls when Allis-Chalmers, the main contractor, decided not to continue in the nuclear business. The Atomic Energy Commission also admits that the policy of purchasing fairly standard equipment from reputable concerns and deferring the testing until the hardware actually entered the reactor plant had to be paid for dearly.

Mr M. Shaw, director of the Division of Reactor Development and Technology at the AEC, described to the joint committee the many problems that had beset the project. There were difficulties with the control rod drives, delays in starting work by subcontractors, snags in building the reactor pressure vessel, delays in procuring and installing additional safety components and systems as a result of revised safety regulations—it was a long list that only escaped being an obituary notice by the professed determination of Allis-Chalmers to finish the project, come what might. The control rod drives in particular were causing acute problems.

The history of the decision to install an alternative core cooling system in the reactor is rather confused. There was some suggestion that Allis-Chalmers should have realized at the outset that an alternative cooling system was advisable for the La Crosse reactor to insure against a possible core meltdown. As it found out, the design had to be changed half way through to incorporate an emergency cooling system. Plainly there was also some failure of communication between the AEC and Allis-Chalmers on the evolution of ideas relating the effects of a loss of coolant to the changing safety requirements. Although the whole disaster was sparked off by an unfortunate combination of events, it is clear from the report that much could have been done to mitigate if not avoid the delays that ensued. A tighter control on safety and testing factors by the AEC was signalled, and Allis-Chalmers was criticized at the hearings for mishandling the design and construction.

RESEARCH AND DEVELOPMENT

New Zealand

THE Department of Scientific and Industrial Research of New Zealand has just issued its annual report for the year ending March 31, 1969. The report shows that the department spent a total of $8,155 million (NZ) during the year, one third of it on the chemistry division, the Physics and Engineering Laboratory and the Geological Survey.

DSIR supports research directly through its own laboratories in agriculture, ecology, food technology, industry and the earth sciences, as well as making grants for research conducted in universities, industrial research associations and other bodies. A striking example of the industrial benefits derived from it in the past year is the setting up of a new process for the manufacture of high quality steel. The company, NZ Steel Ltd, will soon start manufacturing steel from ironsands, which will be reduced to pellets of impure iron in coal fired furnaces, and then turned into high quality steel in an electric arc furnace. The research on which this process is based was carried out by DSIR in conjunction with NZ Steel.

An important change of organization in DSIR is the decision to transfer to it the Industrial Development Department of the University of Canterbury. This unit was established in 1948 and has previously received DSIR grants and fees. Its incorporation in DSIR should integrate it more closely with similar units in the department and encourage greater attention to research and development work. It will also provide headquarters in the South Island for expanded research facilities to industry, already provided by DSIR at Wellington and Auckland. Under DSIR the unit will operate as the Christchurch Industrial Development Division.