

ductivity of land under cultivation with that of natural communities under the same zonal conditions. Studies of primary production are to be made of tundra, nine types of forest zone, wooded and normal steppe, and in both desert and mountain districts. There is to be a major effort on soil ecology.

The freshwater productivity (PF) programme is also comprehensive. It appears to be organized largely from research already going on. One series of surveys is concerned with representative waters at all trophic levels to build up an integrated picture of typical freshwater communities. Fourteen sites have been chosen; they include Lake Baikal, Lake Sevan (in Armenia), Lake Fahrakush in Azerbaidjan, several lakes in Byelorussia, others in Karelia, tundra lakes, and also reservoirs on the Volga and Dneiper, and the Irkutsk and Bratsk reservoirs on the Angara river, eastern Siberia. A second group of some 20 sites has been chosen to define particular problems relevant to IBP. Two aspects of pollution receive special prominence: the effects of thermal pollution from power station cooling (to be studied in the Ukraine and Moldavia), and the biological factors governing the self-purification of rivers which is being concentrated on the River Daugava in Lithuania. Several exercises in computer modelling are also in hand.

The marine productivity section (PM) is split up into work on the Soviet Union's inland seas such as the Black Sea, White Sea and Caspian (5), study of the biological structure and productivity of "the World Ocean" (19), and survey of the biological resources of the World Ocean (7). (The number of topics listed under each of these themes is given in brackets.) Soviet oceanographic ships will clearly be covering great distances during the five years of IBP. The least developed section in the programme—apart from the UM section—is terrestrial conservation. The Soviet Union has a rather active and forward-looking conservation policy, but the impression is that the conservation authorities are labouring under the massive inventorial work landed on them by the IBP.

Academics on the Air

In the spring of 1969, Professor Walter Perry, now at Edinburgh, will take charge of the Open University, as its first Vice-Chancellor. Professor Perry faces a considerable task, for, in addition to the problems involved in getting an organization for higher education off the ground, he has the added complication of having to put it on the air. The planning committee has produced an outline of the form the university courses should take (see *Nature*, 217, 997; 1968), but the detailed planning will be in Professor Perry's hands. In the meantime, the background work in London is continuing. The pilot study for the survey of potential students has now been made and the complete survey will shortly be made in six different areas, with results coming through in the autumn. This would seem to be a vital task as there is otherwise no definite information on the numbers, age and interests of possible students. A crucial factor in the costs of the university—the fees which will have to be paid to the BBC for broadcasting courses—has yet to be settled, but costings are expected this week.

Professor Perry, who is 47, is at present professor of pharmacology at Edinburgh. Since 1967 he has been vice-principal of the university with special responsibility for postgraduate education, and with a hand in both financial planning and broad administrative problems. From 1947 to 1952 Professor Perry was on the staff of the Medical Research Council. The following six years were occupied with the Department of



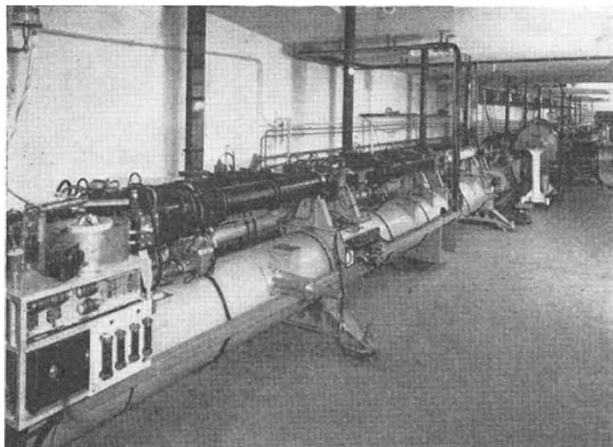
Professor Walter Perry.

Biological Standards at the National Institute for Medical Research, during which time the Salk Institute vaccine for polio was introduced, and as director of the department Professor Perry was responsible for checking the vaccine. In 1965 the MRC set up a unit of brain metabolism research with Professor Perry as its honorary director.

Glasgow Linac

THE University of Glasgow now has the most powerful electron linear accelerator in Britain, a 100 MeV machine at the university's new Kelvin Laboratory, opened on June 10 by Professor P. M. S. Blackett, president of the Royal Society. The linear accelerator is to be used chiefly for research into nuclear structure, where beams of electrons have a number of advantages as probes. Work on the laboratory started in 1963 and was completed in March last year. Since then, the university has developed the instrumentation of the accelerator and carried out a number of experiments with it.

The accelerator itself was built by Vickers Engineering and has three acceleration sections, with provision for a fourth to be added in the future to increase the energy the machine can attain. Radio frequency energy for the accelerator is supplied by three klystrons operating at a peak power of 20 MW, and is transferred to the machine by a number of waveguides. Because of heating of the klystrons and waveguides, the accelerator produces pulses of electrons lasting only a few microseconds, with intervals of several milliseconds



100 MeV electron linear accelerator at the Kelvin Laboratory of Glasgow University. The electron injector is on the left; vertical waveguides carry radio frequency power to the accelerator.

between pulses to allow the equipment to cool down. A vacuum is maintained inside the machine to avoid electrical breakdown and to prevent scattering of the electrons. Electrons leave the machine through a metal window, and are used directly in experiments, or pass through a magnetic dispersion system to select the required energy from the beam.

Good News for Sheep

For the past seven years or so veterinary surgeons and immunologists at the Wellcome Research Laboratories, Beckenham, have been busy perfecting a vaccine which simultaneously immunizes sheep against seven diseases caused by members of the genus *Clostridium*. The most successful answer they have come up with so far is the 'Omnivax' system—demonstrated at the Burroughs Wellcome centre at Frant on June 10.

The vaccine has a long history: Burroughs Wellcome and Co. introduced the first commercially available vaccine for sheep in the 1920s, but it was not until 1961 that the first multi-component, seven-in-one vaccine was developed against struck, lamb dysentery, black water, tetanus, pulpy kidney, braxy and black disease. Together, these diseases have caused sheep losses costing almost £1 million. This vaccine has, however, two disadvantages. First, it is a complex of antigen and an aluminium adjuvant, the aluminium frequently causing an inflammatory reaction at the site of inoculation, leaving a persistent nodule. Second, it is necessary to inoculate five times in two years, which is both time-consuming and costly. The new system gets over both these problems: it incorporates an oily adjuvant which does not produce an inflammatory reaction, and a single injection administered to lambs at 10–12 weeks gives protection for at least two years.

The 'Omnivax' system has two components. The first dose of the white, milky, oily adjuvant is administered by a veterinary surgeon to ensure that the inoculation is made at precisely the right site—straight into the abdominal cavity. Other veterinary vaccines are commonly injected subcutaneously. The second component, 'Omnivax' clostridial vaccine (aqueous), is administered subcutaneously by the farmer twelve

to two weeks before lambing to ensure that a high level of antibody is passed on to the suckling lamb.

Using an automatic syringe which dispenses 2 ml. doses to each sheep from a 100 ml. polythene container, veterinary surgeons have vaccinated up to 200 sheep an hour with the oily adjuvant. The cost of material to confer complete immunity on lowland ewes for a period of five years using the new system is estimated to be 4s. 6d. This compares with 5s. 9d. to 8s. 6d., which is the cost at present of the ten inoculations needed to confer the same immunity using conventional vaccines. On top of this there will be an additional cost to the farmer of £4 4s. per hour for the services of the veterinary surgeon, as laid down by the British Veterinary Association; this cost will, however, vary according to available facilities.

Designed primarily for the breeding stock, the 'Omnivax' system gives the farmer greater flexibility in the timing of his vaccination. It will no longer be necessary to gather the flock specially for vaccination; it can be arranged to coincide with weaning, worming and other routine husbandry.

Hope for Battered Babies

THE National Society for the Prevention of Cruelty to Children is in the process of setting up in Britain a special research unit to investigate the "battered baby syndrome"—a phenomenon that has been studied in the United States for the past seven years. The unit, composed of three social workers and headed by Miss Joan Court, a psychiatric social worker, will begin operation in October and expects to combine research and casework in intensive work with a small number of families, 35 to 40. The families will probably come from within a small area so that a caseworker may be available on a 24 hour basis over a period of three to five years.

A book on battered children recently published in the United States (*The Battered Child*, edit. by R. E. Helfer and C. H. Kempe, University of Chicago Press, 1968) reviews the work being done on this subject in America and estimates that between two and three thousand young children are injured each month and usually one or two are killed every day in the US from non-accidental repeated physical abuse by parents or guardians. Taking these estimates as a guide, there are probably three to four hundred cases in Great Britain each year, though most of these probably go unrecognized and unreported.

Dr Helfer, a paediatrician and one of the editors of the book, stresses that the people who inflict these injuries on their children come from all walks of life, and there are indications that the situation is found in all countries. From the psychiatric studies made so far, it would seem that these are not cases of pre-meditated torture or death, but only occur when a child is unable to satisfy an adult's emotional needs. These adults, instead of providing for the emotional needs of their child, expect the child to satisfy their needs and therefore anticipate that the child will be able to do things it is as yet physically unable to do; this causes them, in moments of stress, to attack the child. Studies made seem to indicate that adults who batter their children were battered themselves as children, indicating a continuing and self-perpetuating syndrome.