

SCIENCE IN THE TROPICS

UNDER the general title "Science in the Tropics", the annual seminar held at the Institute of Commonwealth Studies recently concluded its fourth year of discussions on the impact of the natural sciences in the tropical countries of the Commonwealth. It was agreed that in some fields of research Britain can contribute much in the way of one-time capital efforts, such as soil and plant-disease surveys and malaria campaigns, but that in the long term, the problem of providing the right incentive to take up scientific studies and to apply them effectively is still largely unsolved. The proportion of 1:40 of scientists to technical assistants in one commodity research station was quoted as reflecting the danger of lowering the standard of work that could be done. These stations must of necessity work in isolation from the daily life of the community, although it is the community which must willingly support research and from which the research workers must eventually be provided.

Public relations maintained in a variety of ways, from the inculcation of ideas in early education to frank glamorization and acknowledgment of the work of the scientist, were variously advocated for accelerating the progress of science in tropical countries. The provision of funds for these activities presupposes an awareness by the politician and the administrator of the losses caused by ignorant cultivation, diseases and pests of crops and human beings, and lack of knowledge about their control. The principle of wise investment, either by governments, individuals or co-operatives in scientific research and still more in extension work, involves the denial of present consumption for inassessable future benefits. With alarming increases in population resulting from health campaigns and improved economic systems, many tropical countries will be forced to develop scientific methods capable of producing dramatic increases in food or cash crops. The whole problem of family limitation will have to be faced squarely, especially in India and the Far East.

Scientific studies of diet and nutrition will enable better use to be made of existing crops or to shift the emphasis on to crops of better nutritional value. The education of women in this and other domestic fields was stressed several times during the discussions.

But it was clear that at present the number of research scientists coming forward is hopelessly inadequate to cope with the problems, especially on the continent of Africa, and the only recourse is to invoke massive aid from the older established scientific centres of Europe and America. Such aid is necessarily only forthcoming when the problems have already become sufficiently acute to attract general attention.

Other topics discussed included the important part played by commercial firms in bringing modern applications of science, in the shape of machinery, fertilizers, fungicides and insecticides, to the tropical cultivator. Even in this field the recovery of very large development costs is endangered by commercial competition, and this tends to set back the advance of many scientific applications.

The seminar was under the chairmanship of Dr. W. F. Jepson, of the Imperial College of Science and Technology, London, and the opening speakers were Dr. Herbert Greene, of Rothamsted Experimental Station, on soil studies; Mr. George Ordish, of Imperial Chemical Industries, Ltd., on the economics of tropical research and extension work; Prof. B. S. Platt, of the London School of Hygiene and Tropical Medicine, on nutrition research; Dr. C. G. Johnson, of Rothamsted, on commodity research stations; Mr. V. L. Griffiths, of Oxford, on early education; Prof. G. Macdonald, director of the Ross Institute, on public health; Dr. F. P. Coyne, of Imperial Chemical Industries, Ltd., on the introduction of pesticides into the tropics; and Dr. J. C. F. Hopkins, director of the Commonwealth Mycological Institute, on the impact of plant diseases.

W. F. JEPSON

THE NATIONAL RESEARCH DEVELOPMENT CORPORATION

THE report and statement of accounts* of the National Research Development Corporation for the year ended June 30, 1957, covers the eighth year of the Corporation's activities and notes an encouraging rising trend in the royalty income. All sixteen electronic digital computers commissioned by the Corporation are in operation and the Pegasus computer has proved a most successful and popular design. A new project under consideration is concerned with construction of computers several hundred times faster than those at present available. A patent pool has been created for electronic digital computers and, as a member, the Corporation has made all its patents which bear on digital computers available through the medium of the pool licence. Eight scholarships, each for three years, have been made available at the University of Manchester for postgraduate training of computer engineers and

programmers, and four annual scholarships at the University of Cambridge for postgraduate students taking the diploma course in numerical analysis and automatic computing.

The Packman potato harvester has been further improved so as to reduce crop damage, and the National Institute of Agricultural Engineering completed development work on its small potato harvester. The design of a complete full-scale prototype regenerative mechanical transmission system is well advanced, and extension to cream of a process developed at the National Institute for Research in Dairying whereby freshly pasteurized milk is treated with ultrasonic waves poured into polyethylene bags and quickly frozen promises to solve the serious problem presented by rapid deterioration of cream in transport and storage. A valuable by-product of the liquid gases plant project has been the development of a stabilized high-speed air bearing.

Development projects noted for the first time in the report include work on the production of aldo-

* National Research Development Corporation. Report and Statement of Accounts for the year 1st July, 1956, to 30th June, 1957. Pp. 30. (London: H.M. Stationery Office, 1958.) 2s. net.

sterone by a tissue incubation technique invented at the Middlesex Hospital Medical School; a three-year programme of research and development on the selective removal of gold from cyanide liquors with ion exchange metals; hydrogen-oxygen fuel cells, including the construction of prototypes and the development of high-pressure electrolyzers; the development of improved types of exchange membranes and electro-dialysis cells for the purification of salt and brackish liquors and other uses in the chemical, food and antibiotic industries and the treatment of effluents; the development of a groundnut harvester designed by the National Institute of Agricultural Engineering; and the design and construction of a prototype rolling mill to enable thin strip to be rolled in a few passes to thicknesses down to 0.0001 in. Work at the National Institute for Research in Dairying and at the Courtauld Institute of Biochemistry on the structure of mirecsterol

and at the University of Cambridge on the stability of towed flexible oil barges and methods of preventing their tendency to 'snake' is also being supported.

Of the 631 inventions communicated to the Corporation during the year, 240 were from Government departments and research councils, 100 from universities, 54 from Commonwealth official organizations, 16 from industrial research associations, and 213 from private firms and individuals, of whom 192 were within the United Kingdom and 17 others within the Commonwealth. Of patent rights assigned during the year, 105 were from Government departments and research councils and 26 from universities, while at the end of the year the Corporation held 701 United Kingdom granted patents and 373 patent applications, on which 335 licence agreements were in force, as well as 942 overseas patents and 1,054 patent applications.

THE GRASSLAND RESEARCH INSTITUTE*

THE removal of the Grassland Institute from Drayton to Hurley was completed in September 1955 and the staff has been able to settle down to its programme of research designed to secure a basis for the future progress of pastoral farming in Britain. Research is being carried out by five departments and three units, which together constitute a team working on problems centred on the grass/legume sward involving four main aspects concerned with its development, potential characteristics, level of productivity and its utilization at all times of the year.

The object of the Herbage Agronomy Department is to study ways and means of extending the season during which pasture can be offered to stock. It is also concerned with the influence of management on grass production. Experiments in animal agronomy are concerned with all phases of beef-cattle production from rearing trials to carcass quality studies. Grazing experiments with sheep and pigs and the effect of poultry management on the white clover content of grass/clover swards are also included in the programme. The influence of the botanical composition on soil fertility, the utilization management

and the use of nitrogenous fertilizers is being studied by the Ley Agronomy Department. Development of methods for estimating pasture intake by grazing animals, and investigations of the composition of nitrogenous and carbohydrate constituents of herbage plants at different stages of growth are the concern of the Department of Biochemistry and Animal Nutrition. The study of grassland necessitates a sound basic knowledge of the growth and development of different grass species and it is the aim of the Plant Physiology Department to provide this information.

The Unit of Microbiology has so far studied the fungal population of decomposing tissues of ryegrass, but doubtless there will be many other problems that will repay investigation. A station of this kind would not be complete without adequate facilities for statistical consultation and advice, which is provided by the Statistical Unit. Besides its advisory function, the Unit is investigating the particular requirements of experiments carried out at the Station. The Extra-Mural Unit carries out experiments at a considerable number of centres, particularly on the production of winter grass and early bite. The long-term effect of different fertilizer-levels on productivity of leys is being studied.

* Grassland Research Institute. Experiments in Progress No. 9: Annual Report for 1956. Pp. viii+61. (Hurley, near Maidenhead: Grassland Research Institute, 1957.) 5s.

LABORATORY ANIMALS

IT is essential that laboratory animals should be bred under stringent conditions, with due regard for their genetic and other characteristics, their freedom from disease and for other factors which may influence the experimental results obtained. The International Committee on Laboratory Animals, founded in December 1956 as an independent body supported by Unesco (*Nature*, 179, 240; 1957), issues a *Bulletin* on the subject in March and September of each year, the second issue of which (March 1958) has recently been published.

At its meeting last December the Committee recognized the importance of primary type-colonies of breeding stock of known genetic and other controlled characteristics and undertook to help in their selec-

tion and establishment. It also recommended the production, translation and distribution of technical manuals on the care of laboratory animals, the preparation and distribution of films and the establishment of a specimen programme of courses for laboratory technicians. It was recommended that scholarships and fellowships should be awarded in the field of animal care, production, genetics, nutrition and disease and the Committee undertook to help both applicants for such awards and those who might make applications.

Surveys have been completed of the production and use of laboratory animals in the Benelux countries, India, Italy, Japan, Scandinavia, Switzerland and the United Kingdom, and a critical analytical