

The grant to the University of Bristol for field studies on the employment of elderly workers has been renewed for two years at the rate of £3,700 a year.

Among grants for the Commonwealth overseas, which totalled £32,741, may be mentioned a further £800 to the Departments of Anthropology and Anatomy, University of Sydney, in support of the expedition to the Western Highlands of New Guinea; £20,000 over three years to the Central Pedagogical Institute, Allahabad, in support of its work in teaching English; a further £3,500 to enable the Smuts Archive Trust to complete its work; £3,600 over two years to the University of the Orange Free State in support of research on soil organic matter; £1,800 over three years to the Plant Physiological Research Institute, University of Pretoria, for research on amino-acid metabolism and other aspects of the assimilation of nitrogen; £2,450 over three years to the University College of the West Indies for marine biological research; and £8,000 to the Uganda Foundation for the Blind for capital expenditure and maintenance costs over two years of a scheme for the training and employment of the rural blind.

Travel grants included one to enable Dr. L. Guttman to visit cities in six of the Australian States to advise on the development of spinal centres and on facilities to be provided for vocational training of the physically handicapped.

Only one medical fellowship was awarded in 1956, but the dental fellowships and scholarships scheme continued to attract a high standard of applicant and three fellowships and two scholarships were awarded. The schemes for biological and sociological awards continued unchanged. One bursary in biology was given and one scholarship in sociology. The regulations for the Royal Society and Nuffield Foundation Commonwealth Bursaries have been slightly altered to make it clear that applicants should hold salaried posts to which they will return and that they will draw their salary while away. The Foundation arranged with the Indian and Pakistan Governments to provide two travelling fellowships annually from each country to members of the administrative class of the Civil Service for study in the United Kingdom, but otherwise policy for awards from the Commonwealth countries was unchanged. The scheme for overseas farmers is to be enlarged by an additional award, and with the National Research Council of Canada, the Foundation is to provide travel grants to enable senior lecturers or professors to visit the smaller Canadian universities.

THE DEFENCE STANDARDS LABORATORIES, AUSTRALIA ANNUAL REPORT

THE broad function of the Defence Standards Laboratories in Australia is the application of scientific knowledge and research within the fields of chemistry, physics, metallurgy and engineering to the problems arising in the design, development, manufacture, inspection, storage and use of defence material. In addition, as the name of the establishment indicates, it is concerned with the maintenance of standards of measurement and of quality, its own being based on the national standards held by the National Standards Laboratory, Sydney, and on the specifications prepared and issued by the Standards

Association of Australia. In the annual report of the Laboratories for the year ended June 30, 1956*, an account is given of the general activities of the establishment and of the more important projects and investigations either completed, or in which significant progress was made during the period under review.

Recruitment during the year both in the professional and other staff was not sufficient to maintain strength, and the total staff at Maribyrnong, Victoria, and the two inter-State branches (Alexandria, New South Wales, and Finsbury, South Australia) decreased from 594 to 577, reflecting the general shortage of scientific and technical man-power in Australia. The organization consists of a chief superintendent, Mr. A. E. Dawkins; deputy chief superintendent, Dr. F. A. Fox, appointed in February 1956; and four divisions—materials and explosives, protective chemistry, metallurgy and engineering, and physics.

In the Chemistry Division work was done on the analysis of gases by interference refractometry; the determination of small quantities (of the order of two micrograms) of acetone in air; the determination of oxygen and nitrogen in metals and alloys and the recrystallization of barium sulphate. New forms of titanium esters were developed for use in paints, and standard soils for the testing of dishwashing detergents and for metal-cleaning preparations were investigated. In biochemistry a study was made of the organophosphorus compounds which are used as insecticides and plasticizers and in medicine.

The Metallurgy Division was mainly concerned with the production and processing of pure chromium and chromium alloys. Investigations of their properties and structure were largely confined to attempts to elucidate the nature and cause of the lack of ductility of the chromium-base alloys at room temperature. A study was commenced of the embrittlement of the metastable beta-phase alloys of titanium. Other investigations included the lost wax process, corrosion problems associated with iron and steel in cooling waters, cadmium plating, and lead in chromic acid.

The diverse activities of the Physics Division covered the fields of chemical physics, radiological physics, metrology and temperature measurement. Improvements were made to the microwave spectroscope and nuclear spectrometer parts were constructed and tested. The new technique of microwave observation of detonation announced in the 1954-55 annual report was further improved. An apparatus was devised which enables the thermal conductivity of gases and vapours to be determined from the equilibrium temperature attained by a platinum spiral immersed in the fluid, and measurements were made on pure gases and on binary mixtures. In connexion with the study of the accuracy and reproducibility of temperature measurement at the triple point of water, the performance of the Laboratories' Smith resistance thermometry bridge was improved by the use of a stable decade resistor for calibration purposes. A new type of multi-cell inert dry battery composed of ordinary cells made inert by dehydration under heat and vacuum was developed and this is discussed in some detail in the annual report.

Various other miscellaneous investigations included research on xerography; the effects of climates in different parts of Australia on the durability of paints

* Annual Report of the Defence Standards Laboratories for the year ended 30th June, 1956. Pp. iv+44. (Maribyrnong, Victoria: Defence Standards Laboratories, 1957.)

films; the priming of wood; the weathering of textiles; viscometry; and mathematical studies. The report concludes with lists of the various personnel and their status, the numerous publications by members of the staff of the Laboratories and the names of the various governmental and other committees on which the establishment has been represented.

GEOGRAPHY IN JAPAN

THE International Geographical Union normally sponsors a World Congress every four years, the last two being held at Rio de Janeiro (1956) and Washington (1952). Although much scientific work is being carried on continually through a series of a dozen Commissions, the Executive tried the experiment of holding a Regional Conference of more limited scope than a main Congress, and with a definite field of work. Following the success of the first such Regional Conference on Africa at Makerere in 1955, the Executive gave its support to the proposal of the Japanese National Geographical Committee under the chairmanship of Prof. Fumio Tada (University of Tokyo) that it should organize a Regional Conference in Japan. The Conference was held during August 28–September 3, with the support of the Science Council of Japan and of numerous universities and municipalities at Tokyo and Nara. The programme, which also included a symposium on South-East Asia and a range of papers in nine sections, centred on the problems of monsoon Asia in general, and Japan in particular, and afforded to the eighty delegates from overseas an opportunity of seeing and appreciating the work of Japanese geographers.

The Conference was preceded by two long excursions, to Hokkaido and northern Honshu, and followed by three others to central and western Japan. The substantial guide books prepared for these excursions were arranged to form a complete regional geography of Japan which, together with a summary volume, afforded the first geographical description of Japan in English written entirely by Japanese authors. Although summaries of original papers in Japanese have long been added in a Western European language (in recent years usually in English), the main work of Japanese geographers has remained little known to Western workers. A comprehensive exhibition of the maps published officially by the Geographical Survey Institute under the direction of Akira Watanabe (one of the secretaries of the Conference) showed examples not only of the large range of geographical and geological maps, but also of many specialized cartographical experiments which have scarcely been seen outside Japan, including a number still in manuscript. The delicacy of old Japanese art is reflected in the many beautiful examples of modern map production and printing. In a country where pressure of population on limited land resources is so extreme that each acre of cultivated land must support six or seven persons in food, it is natural that special attention should be paid to the accurate portrayal of land forms and land use.

In particular, Japan has accepted the principle that to map accurately the existing use or non-use of land is an essential prelude both to understanding the present position and to planning for the future. By mid-1957 no less than 300 sheets on the scale of

1:50,000 of the land use map had been completed—roughly a third of the whole country excluding Hokkaido. This work is financed in the main by the prefectural governments, and the maps, undoubtedly the finest and most detailed produced anywhere in the world, have not been placed on public sale. The classification of land use follows the scheme advocated by the World Land Use Survey and Commission of the International Geographical Union, but with many refinements to meet local conditions. In a country primarily dependent upon rice, there is an important distinction between paddy lands and land for other crops; the determining factor both in this case and in other forms of land use is often degree of slope. Accordingly, experimental maps have been produced, also on the scale of 1:50,000, of slope, land-form and valley-density. The slope map displays seven categories of slopes ranging from more than 40 deg. to less than 3 deg. The valley-density maps shows valleys revealed by air photographs to be suffering from gullying and degradation, and records the number of such valleys per square kilometre. The land-form classification map is an ambitious attempt, combining a classification based primarily on different types of hill lands, uplands and terraces and lowlands with a symbolic representation of surface geology and a scheme of minor physiographical regions. An explanation published (in English) in the *Bulletin* of the Institute in March 1955 urges that such work must precede soil surveys as understood in other countries and of which Japan has published also one experimental sheet (1953). The dependence of Japan for protein on fish has led to much attention being given to the mapping of details of the sea floor and of marine deposits around the islands. The numerous other fields of original study were well shown in the 130 papers contributed to the nine working sections.

A volume of abstracts was printed in advance, and it is planned to publish a comprehensive report of the Conference. Among the foreign participants were the president of the International Geographical Union, Prof. Hans Ahlmann (Sweden), the two immediate past-presidents, Prof. L. Dudley Stamp (United Kingdom) and Prof. G. B. Cressey (United States), the secretary-treasurer, Prof. Hans H. Boesch (Switzerland), and the past vice-president, Prof. G. Kuriyan (India). L. DUDLEY STAMP

MAKING AND BREAKING POLYMER MOLECULES

RECENT advances in polymer chemistry of especial current interest were reviewed under the title "Making and Breaking Polymer Molecules" at the second session of Section B (Chemistry) of the British Association held in Dublin on September 9. At the invitation of Dr. J. W. Cook, president of the Section, Prof. C. Kemball took the chair and introduced the following contributions: "The Mechanico-chemistry of Polymers", by Dr. L. Bateman (British Rubber Producers' Research Association); "Stereospecific Polymerizations", by Prof. H. F. Mark (Polytechnic Institute of Brooklyn); "Synthetic Polypeptides as Models for Natural Proteins", by Dr. C. H. Bamford (Courtaulds, Ltd., Maidenhead); and "Plastics for Use; Designing Molecules for Particular Purposes", by Dr. C. W. Bunn (Imperial Chemical Industries, Plastics Division).