

purifying the crude metal and the Kroll process, consisting of preparation of the chloride and its reduction by magnesium. He looked forward to elimination of the intermediate production of crude metal in the iodide process, and to a continuous iodide process with a travelling filament. In the discussion mention was made of the possibility of thermal reduction of zirconium chloride with hydrogen, a method which has been used in Germany for titanium.

Finally, it remains to mention a paper on spectrographic control in metal refining, in which Mr. D. M. Smith outlined factors affecting choice of technique and detail of method. Mention was made of the complementary nature of chemical and spectrographic methods of analysis, and this aspect also received attention in the discussion.

Over such a wide field (in some of which relatively few people are experienced) the amount of discussion was naturally variable, but those who attended had an opportunity, which can only rarely be repeated, of hearing about the refining of a large variety of metals from the actual practitioners. It is to be hoped that the complete record of the proceedings will be published as soon as possible, for it will form an authoritative account of modern practice in a most important branch of industry.

13/6

SCIENTIFIC AND INDUSTRIAL RESEARCH IN NEW ZEALAND

THE twenty-second annual report of the Department of Scientific and Industrial Research, New Zealand, covering the year 1947-48, is much less detailed than previous reports, although the activities of the Department have expanded during the year, to meet the marked increase in the immediate demand for scientific assistance from State departments and industry and in an attempt to anticipate the scientific needs of the next decade. Both the accompanying Minister's Statement and the Secretary's report refer to difficulties experienced through the limited number of qualified scientific workers, as well as through lack of suitable accommodation. Nevertheless, arrangements have been made for officers to take courses of studies in overseas institutions and to attend scientific conferences abroad. Increased collaboration between various branches of the Department and with other State departments has diminished the handicaps of shortage of staff and accommodation. Besides the formation of a Hop Research Association, a Leather and Footwear Research Association, which will extend the scope of the existing Leather Research Association, was formed during the year.

Regional soil surveys have been completed over extensive areas in South Island, and more extensive surveys undertaken for special purposes in North Island. Pasture research has been extended to hill-country areas and intensified on flat country, while progress is reported in pasture-management research and in the understanding of the nutrition requirements of ordinary pastures. The new wheat variety, "Hilgendorf" has provided the Dominion with a grain of exceptionally high protein quality with no loss of yield. A comprehensive study of frost damage has been inaugurated in fruit and horticultural crop areas, while soil and manurial investigations are assisting in the extension of the tobacco crop and improving its yield. Chemical studies of tobacco leaf

correlated with quality tests are throwing much light on the smoking quality of New Zealand-grown tobacco; much useful new knowledge has also been gained on the propagation and management of the native fibre plant *Phormium*, the source of New Zealand flax.

Arrangements have almost been completed for establishing, under Canterbury University College, an Industrial Development Department which will provide service, development and research for South Island manufacturers. Extensive geophysical surveys have been carried out for the State Hydro-electric Department in connexion with foundation studies for the construction of dams on the Waikato River. A feature of the work of the soil physics section of the Soil Bureau has been investigations of foundations for large buildings, factories, mills, earth dams and tanks. The fruit research activities of the Department have been reorganised and consolidated into a branch under a director, and special attention has been given to research problems affecting building and civil engineering.

An investigation on anomalous radar propagation carried out jointly by the United Kingdom and New Zealand Governments at Ashburton concluded its field work. The Plant Chemistry Laboratory and the Dominion Laboratory have installed a plant for the preparation of antibiotic substances and small amounts of penicillin have been made. Further points from the reports of the research committees which may be mentioned include the establishment of an Aeronautical Research Committee; the recommendation, as a result of biological tests on their toxicity against insects by the Plant Diseases Division, of six chemicals and proprietary mixtures for use as timber preservatives; further work on the refrigerated gas storage of apples; and trials of D.D.T. sprays both for their effect on the cold-storage quality of apples and for control of codling moth.

The Industrial Psychology Division commenced a survey of the present trend towards decentralization in New Zealand industry and investigated the use of psychological techniques for selecting personnel in some of the skilled ground-staff grades of the Royal New Zealand Air Force. At the Cawthron Institute, studies on tomato soils and on the incidence of 'cloud' in Nelson tomato-houses continued, while at Canterbury Agricultural College the fungus responsible for prevalent foliage disease of field and garden peas was isolated and studied. In the Agronomy Division, 'Agroxone' has replaced 'Sinox' for routine spraying of nucleus-seed crops of linen flax and linseed for control of weeds.

33/6

SCIENCE MASTERS' ASSOCIATION SUMMER MEETING

BY kind permission of the Admiralty and of Rear-Admiral H. W. Faulkner, and on the invitation of the host-master and staff, the Science Masters' Association held a summer course on "Science and Sea Problems" at the Royal Naval College, Dartmouth, during the first week of August. The course consisted of lectures by some of the leading members of the Royal Naval Scientific Service and of displays of experimental work both by members of the College and by the general members of the Association. In addition, visits were paid to the Royal Naval