

further to promote better economic use of our pastures, the Grasslands Division has continued to breed, test, and multiply improved strains of grasses and clovers. Studies of the best utilization of these by the animal, direct and through conservation, as silage or hay, are proceeding with the realization that the potentialities of our grasslands for food-production are as yet very imperfectly understood and offer good fields for further exploitation. The Agronomy Division is pursuing similar investigations in connection with arable supplementary fodder crops, both alone and in association with pastures, and for the whole range of arable crops continues to produce supplies of high-quality seeds for certification. The work of the Entomology Division, now that improved methods for control of the insect pests of brassica crops are generally established, has been focused on grass-grub, the major insect pest affecting pastures. Already this Division has devised successful means for controlling the grass caterpillar, but it is realized that grass-grub control will prove a much more difficult task. The Plant Diseases Division has dealt with a wide range of diseases affecting crops, and noteworthy success has attended methods for overcoming a group of bacterial diseases with copper sprays which hitherto had appeared ineffectual. Ready means have also been devised for the control of moulds which stain plaster walls and others which attack fabric materials. Through the regular chemical, physical, and biological testing of sprays this Division renders sound service to the fruitgrowers of the Dominion.

The amount of collaboration between various Divisions of the Department has extended markedly during the year, almost every problem attacked involving joint effort on the part of officers from various branches. Noteworthy in this respect is the work on fruit research, where the Plant Diseases Division, in addition to doing work on disease control, has produced and tested large numbers of fruit-tree stocks, and handed these over to the New Zealand Fruitgrowers' Federation for multiplication and issue as certified stocks, thereby helping provide trees of known quality for the future orchards of the Dominion. In association with the Plant Chemistry Laboratory, this Division is starting the investigation of antibiotics: in particular, their value for controlling plant and animal diseases and the exploration of the New Zealand flora for possible new useful strains of antibiotics. The problem of yellow-leaf disease of phormium is being dealt with by the Plant Diseases, Botany, and Soil Survey Divisions, and preliminary results indicate the disease as occurring on soils where other plants appear to suffer from mineral deficiency. The relation of phormium to shortages of trace elements is being followed up. The Botany Division has now amassed a great deal of valuable information on the propagation, establishment, and management of phormium plantations, while the detailed economic characters of each variety now in use have been worked out and reported on. This new information provides much that will be useful in placing the phormium industry on a sounder basis in the future.

Various branches of the Department have been conducting researches on the use and application under New Zealand conditions of many of the newer chemical materials produced abroad, such as D.D.T., Gammexane, Sinox, &c., as these substances have distinct potential value in many spheres.

Wheat research has proved singularly valuable during recent years of difficulty and scarcity. Knowledge gained over the years has enabled the bread quality to be maintained at a high nutritive level, despite grain injury through bad harvests. When scarcity of wheat demands an 80 per cent. flour-extraction, a machine devised by the Institute will render this readily possible without loss of nutritive quality in the flour. A new high protein wheat bred by the Institute has continued to show its quality in extended tests.

Tobacco research has revealed a variety which possesses good resistance to black root-rot, a disease which is appearing now in certain types of soils, while promising results are attending some trials of a new type curing-kiln which is being made in collaboration with the Chemical Engineering Section of the Dominion Laboratory.

The Dairy Research Institute is proceeding to incorporation in order to enable it to function more readily in the interests of the industry it serves. Quality and manufacturing problems continue to be in the forefront of the investigations, as it is