

*Agricultural Botany.*—Large numbers of grasses, clovers, weeds, and other agricultural plants have been received for identification and report. This identification work is not confined to the mere naming of the specimens, but in all cases details concerning their utility or otherwise are supplied. Investigations on the grasslands of New Zealand have been continued, and many points on the care and maintenance of pastures have been studied. The information that has been accumulating for many years past on this subject is now in a form that admits of publication.

*Entomology.*—The amount of correspondence dealing with insects increased considerably, and dealt with insects infesting live-stock, orchards, gardens, forest-trees and forest products, and field-crops. From this information, combined with field-work, it has been possible to bring the data regarding insect pests in New Zealand up to date. A number of additional species have recently become prominent as being destructive. Several investigations were carried out, the more important being those dealing with sheep-maggot flies, apple mealy bug, and wood-boring and other insects infesting forest-trees and forest products. A special feature in the control of injurious insects has been inaugurated by which beneficial insects are bred out in large numbers in the laboratory for distribution each year in districts where required. A start has been made with the steel-blue ladybird beetle for the control of the golden-oak scale. The parasite of the sheep-maggot flies, consignments of which were received from Mr. W. W. Froggatt, of Sydney, was distributed in the Marlborough District. Another ladybird beetle is being collected, and further consignments introduced for the control of the apple mealy bug. It is hoped to successfully introduce from America the parasite for the pear-midge, and also another species for the golden-oak scale. This work is at present limited owing to the lack of facilities, but as soon as a suitable insectary can be established operations will be greatly extended, and it is hoped to deal not only with live-stock and orchard pests but also with those infesting forests and field-crops. The insect collections have rapidly extended, and it will not be long before a very representative collection is established.

*Plant Pathology.*—A large number of specimens of plants infected with fungous and bacterial diseases was received to be dealt with. These included fruit-trees and fruits, vegetables, hedge-plants, agricultural crops, cereals, forest-tree specimens, and various diseased agricultural weeds. A marked falling-off in the amount of fireblight material would appear to indicate that the virulence of this organism is decreasing considerably. As a result of publications on the part of the staff large quantities of fungi have been sent or brought in for determination. A survey of the diseases infecting fruit-trees has been made, and the subject brought up to date for publication purposes. Vegetable-diseases have received considerable attention, and those of hedge-plants and shelter and forest trees are now being worked up. In collaboration with the State Forest Service a systematic survey of the fungous diseases of indigenous trees is being made, and numerous specimens are being forwarded for identification by the forest rangers. The diseases of cereals, root crops, and grasses are being systematically worked over. During the past season the cereal-rusts were carefully studied, and their distribution and economic importance determined. The fungous diseases of agricultural weeds have been studied with a view to determining whether any may be utilized in control. The specimens in the herbarium have increased to such an extent that an extension had to be built to contain them, and the increased area provided should suffice for two or three seasons. Considerable space will then be required for further extension.

*Cool Storage of Apples.*—A considerable amount of research work into the cause of "flesh-collapse" in cool-stored apples has been undertaken, and numerous suspected causes have been negatived. The line that at present holds out some promise is that of the determination of the optimum minimum temperature at which to store New Zealand apples, and experiments have been established in cool store to ascertain whether flesh-collapse is due to a too low minimum temperature in view of the lengthy hours of working that are customary in certain stores and ships.

*Bee-diseases.*—The recent work of Dr. Rennie bearing on Isle of Wight disease called for a pronouncement as to whether *Nosema apis* existed in New Zealand. The stomachs of some five or six hundred bees from various parts of the Dominion have now been examined, and the presence of this protozoon has been determined in the Auckland, Bay of Plenty, Taranaki, and Wairarapa districts.

*Fermentation of Honey in Store.*—An inspection and report was made with a view to bettering the conditions under which New Zealand honey was being stored prior to export. A yeast has been isolated from honey, and its power to ferment under various circumstances is under test. With regard to the exposure of honey to the air for the purpose of increasing its specific gravity, experiments have now shown that honey acquired more moisture from a damp atmosphere than it could dispose of in the same time under absolutely dry conditions. Specific gravity, ash constituents, and temperature in relation to fermentation, reaction and temperature in relation to granulation, heating as affecting colour, and other matters are being studied.

*Yellow-leaf Disease of Phormium Tenax.*—The remedy suggested for this trouble is the selection of resistant types. The seeds of what are believed to be respectively resistant and non-resistant varieties have been collected, and seedlings raised therefrom. A number of these have been handed over to the Flax-millers' Association experimentalist for test in the field. Others have been planted out at Plimmerton under varying conditions. The distribution of the disease has been further worked out in the North Island, and further inoculations have been made. An improvement in the general position is noted.

*Dairy "Starters."*—Further work has been completed in the selection and regeneration of certain organisms employed in the production of wet starters for cheese and butter making.

*Lectures and Publications.*—Apart from routine and investigational work generally great demands have been made on the Laboratory for extensional services, and many lectures have been given by the Biologist and staff during the year in all parts of the Dominion. A large amount of matter dealing with various branches of the work has been contributed to the *Journal* by different members of the staff.