(*b*) Bacterial-wilt of beans: Tests are in progress of varieties reported from abroad as being immune to this disease.

Seedling-vigour: Experiments on the effect of organic-mercury dusts and of nodule organism inoculations on pea-seed have yielded conflicting results—in some cases remarkable improvement in crop being obtained, in others little or none. The probable reason for this lies in the balance of seedling vigour and soil flora as governed by temperature and moisture, and this aspect will be considered in conjunction with the general investigation of soil flora now being undertaken.

(5) *Diseases of Tomato and Tobacco.*—(*a*) Damping-off of seedlings: The investigations on methods for the prevention of this trouble, continued from the previous season, have now been completed, and the results published for the guidance of growers.

(*b*) Leaf-mould of tomatoes: The experiments on methods for the control of this disease on tomatoes under glass have also been completed and the results published.

(*c*) Virus diseases: "Spotted-wilt" has been found to occur on tomatoes throughout the North Island, but has not been reported from the South Island. The same virus has been proved to cause the disease known as "Black-wilt" of tobacco, prevalent in Auckland and Bay of Plenty tobacco-growing areas. "Mosaic" of tobacco is becoming steadily more prevalent in New Zealand. Experiments are in progress on its persistence in the soil and on its host range and means of transmission.

(6) *Fruit-diseases.*—(*a*) Strawberry virus: It has been found that this disease may be transmitted by in-arching of runners. Some two thousand plants are under observation at the Station in connection with this disease.

(*b*) Strawberry root-rot: This is the most serious disease of strawberries in New Zealand. Up to the present, attempts to find the causal agent have failed.

(*c*) Bacterial disease of passion-fruit: This disease appears to be widespread in the North. The bacterium has been isolated and its pathogenicity proved.

(7) *Hop-diseases.*—A survey of the hop-growing areas in Nelson has shown that the only disease of economic importance is "black root-rot." Experiments are under way to determine its cause and control. A chlorotic condition occasionally seen is under test on suspicion of being due to a virus.

(8) *Cucumbers, Melons, &c.*—Cucumber mosaic has been prevalent during the past season on cucumbers, melons, marrows, &c., especially in the Gisborne district. In experiments the virus has been transmitted artificially to all these crops and to tobacco and blue lupin, producing in the latter symptoms closely resembling those of "sore-shin."

(9) *Mould Fungi in Industry.*—The study of mould fungi responsible for deterioration and spoilage of food-stuffs, textiles, &c., has been continued and much information acquired on the conditions which govern their occurrence and on means for checking their appearance. Experiments in conjunction with the Public Works Department have demonstrated a practicable method for the prevention of mould damage to tent-calico, which should result in very substantial savings to this and other tent-using Departments.

Free use of the expert advice available has been made by various industrial concerns faced with troubles due to moulds.

(10) *Miscellaneous.*—The supply of pure cultures of the lucerne nodule organism is an important and profitable branch of the Section's duties. During the present season sufficient cultures have been supplied to the farmers of New Zealand to inoculate 122,000 lb. of lucerne-seed. The use of similar inoculum for other leguminous plants, notably red and white clovers, lupins, soya beans, peas, &c., has been the subject of field trials, in collaboration with the Fields Division, with conflicting results. Further investigations are under way to determine the reason why the favourable results obtained with lucerne, and at times with the other crops mentioned, should in many cases fail to appear.

Preliminary work on the technique of biological analysis of soils is in progress, with a view to evolving a standardized method for use in collaboration with the physical and chemical sides of soil-survey projects.

During the year members of the Section associated themselves with Dr. G. H. Cunningham in the issue of the book "Plant Protection by the Aid of Therapeutants." This work covers in condensed form the whole of the available knowledge on the subject, and represents a fund of accurate information of incalculable value to users, traders, and manufacturers of the therapeutants used in all forms of plant-protection.

Agrostology.

(By E. Bruce Levy, Agrostologist.)

The work of the Section throughout the year has progressed steadily and the staff has been kept exceedingly busy, much good work being accomplished. Strain-testing of ecotypes and for certification purposes has been a major feature, and additional grass and clover species are now being studied. Plant-breeding and other work in connection with strain-building to pedigree standard has been steadily continued, and it is obvious that this work will gradually raise the standard of ordinary certified seed and in addition will afford progressive farmers an opportunity to adopt pedigree seeds for the betterment of their grazing areas. The Section has as its objective in building to pedigree standard the production under certification of such quantities of pedigree seeds at such a price that these seeds ultimately will be within reach of every farmer.

Strain-testing, strain-building, and field trials, thanks to the close and energetic co-operation of the field staff of the Fields Division, have been maintained as a continuous process, and too much emphasis cannot be laid on the value of this close inter-relation between research and field extension.

A pleasing feature of the year's work has been the close co-operation of workers in the matter of the investigation into feed flavours in cream. Farmers, dairy factories, cream-graders of the Dairy Division, the Dairy Research Institute, the Fields Division, and the Plant Research Station have all