

(h) Miscellaneous.

(1) *Sterilization of Meat-wraps*.—An investigation into the most efficient method of eliminating moulds from meat-wraps, carried out in collaboration with the management of the Longburn Freezing-works, has been completed, and is being employed commercially at Longburn Freezing-works.

(2) *Preservation of Tent Fabrics*.—Experimental work on preservation of mould deterioration of tent calico, conducted during the past two years, in collaboration with the Public Works Department, has now been completed. Results will be published shortly.

(3) *Soil Biology*.—Isolation of the chief fungi of the soil have been made from various New Zealand soil types. An apparent negative correlation has been found between one species and fertility as measured by crop vigour. Experiments are in progress to determine the effects of this fungus on plants grown under controlled conditions. This work is being carried out in collaboration with the Soil Survey Division.

II. ENTOMOLOGICAL INVESTIGATIONS.

(1) *White-butterfly Control*.—The third year's work on control of this pest by the aid of various sprays and dusts has been completed. A cheap and practical control has been evolved. Results of the past three seasons' work are being prepared for publication.

(2) *Eelworm in Currant*.—Methods for control of this pest in rooted cuttings are being evolved, materials having been planted at Mount Albert for the purpose.

(3) *Fruit-pest Control*.—Investigations carried out during the year are supplied in the separate report dealing with Fruit Research (see page 42).

(4) *Cocksfoot Midge*.—An investigation was made in Canterbury into the low yield and percentage germination of cocksfoot-seed. At first thought to be of bacterial or fungus origin, the trouble was traced to larvæ of a midge which was found infesting seed heads to the extent of 80 per cent. in Ashburton district and up to 50 per cent. on Banks Peninsula.

III. PLANT PROTECTION.

(1) *Seed Disinfection*.—Work has been completed on the effects of "Agrosan" and "Ceresan" dusts on seed of wheat, oats, barley, and peas treated in advance of sowing. Little or no adverse effects were detected on treated seed when stored for periods up to five months, either in subsequent germination or disease control. Farmers may therefore safely treat their seed with either preparation at any convenient time between harvest and sowing.

Tests made of various new seed dusts showed that none was superior to "Agrosan" or "Ceresan."

Further work has been conducted on the efficacy of several experimental seed dusts for control of damping-off of tomato seedlings. Results have been published.

(2) *Production of Therapeutants*.—Approximately 16,000 cuttings from thirty-six pure clonal lines of pyrethrum were struck. When planted out at Auckland only a small percentage survived, owing to the dry weather experienced.

Selections for high pyrethrum content have been made, and from these—108 in all—flowers have been collected for analysis at the Dominion Laboratory. From a block of plants at Palmerston North, 150 lb. of dried flowers were obtained and will be used in field experiments.

(3) *Improvements in Spray Programmes*.—Particulars are provided in the separate report on "Fruit Research" (see page 42).

(4) *Testing of Therapeutants*.—Details of this work, too, are given in a separate report (page 43).

IV. GENERAL.

(a) Experimental Areas.

Mount Albert Area.—Since this was taken over in January, 1937, it has been cleared of gorse and blackberry, old fences have been razed, and stones carted off. The area has been tile-drained where required, 1,650 ft. of 3 in. tiles being laid and 1,000 ft. of open drains dug. Fourteen springs have been tapped and led off.

During the winter months, blocks of apples and citrus were planted, and about two thousand trees from Palmerston North set out. All have grown well during the year. Areas have also been planted in hops, strawberries, and other small fruits, beans, potatoes, brassicas, and tomatoes. Shelter-hedges have been planted, and roads prepared and metalled.

Two glasshouses have been constructed, of the series required for research work, and the site of the main building excavated to a depth of 3 ft.

The area has recently been reploughed and sown to a winter cover crop, necessary to prevent scour on the volcanic soils of this locality.

The area of 4 acres at Huapai has been renovated; all trees pruned and sprayed; and the land ploughed, manured, and drained. Sixty trees were replaced with stock of the Division's own working. A stationary spray-pump was installed during the winter and has proved most satisfactory.

(b) Taxonomic Studies.

Several officers are engaging in their spare time on systematic studies of New Zealand fungi and insects. Mr. Neill is working on the mould fungi, Mr. Taylor on the mildews, Mr. Reid on classification of bacteria, and Mr. Chamberlain on the terminology of the virus diseases. The last named is preparing a monograph on these diseases, Mr. Cottier one on the Aphides of the Dominion, and the Director one on the Gasteromycetes of Australia and New Zealand. The last should be ready for publication in book form early in 1939. Mr. Brien has prepared a list of plant diseases of the Dominion.