STONE-FRUITS.

Standard Collection.

Work on the collection of standard varieties of stone-fruits is being continued by the Plant Diseases Division.

Plant Protection Experiments.

I. *Entomological Studies.*

Leaf-roller Caterpillar.—In co-operation with the Department of Agriculture a series of experiments on the control of this pest on stone-fruits has been laid down in Central Otago. Materials under test are basic lead arsenate, nicotine-bentonite, and nicotine-tannate. Results have not yet been forwarded.

II. *Mycological Studies.*

Silver-leaf.—Two hundred young peach-trees at Owairaka were inoculated with the fungus *Stereum purpureum*, and 98-per-cent. infection was secured. Infected trees were injected during the spring and summer months with various chemicals with a view to finding some means of combating this disease. Results have been inconclusive.

Brown-rot.—A block of one hundred Paragon peach-trees was used by the Plant Diseases Division for testing various spray programmes in the control of this fungous disease. Best results were secured with the standard lime-sulphur plus colloidal-sulphur spray, but complete control was not given by any spray.

In a further series of dipping tests only partial control was secured. Owing to the cost and difficulty of application it is not proposed to continue with this work.

The Cawthron Institute has maintained its notification service in regard to date of ascospore discharge in the Nelson District.

III. *Physiological Studies.*

Brown-spotting of Apricots.—In co-operation with the Department of Agriculture, the Cawthron Institute has continued investigations into the control of this disease at Alexandra, Central Otago. Definite control of the ailment has been effected by the use of a 0·1-per-cent. borax spray or of ½ lb. borax applied as a top-dressing round the tree in the spring. Control plots (without borax) yielded only 2 per cent. of healthy fruit, while the sprayed or top-dressed trees bore 94 per cent. to 95 per cent. Chemical analyses of the fruit gave confirmatory evidence of boron deficiency as the primary cause of the ailment. In the control fruit the boron content was only 5·7 p.p.m., as against 34·5 p.p.m. and 46·5 p.p.m. in the fruit from the sprayed and top-dressed trees respectively.

Pitting of Cherries.—This project has been carried out in the Alexandra district in parallel with the apricot brown-spotting work. Field experiments during the past season have not shown a clear-cut result, as pitting did not develop on the control trees. Analytical data, however, showed a definite association of low boron content with the incidence of pitting in other orchards.

SMALL FRUITS.

Standard Collection.

The plants introduced from England are now well established in the nursery and will serve as parent plants for material that can be distributed to appropriate districts for further test under field conditions.

Raspberry.

The Entomology Division at the Cawthron Institute has continued its study of the two major insect pests attacking this fruit.

(*a*) *Raspberry-bud Moth (Carposina adreptella).*—This insect must be regarded as one of the major pests of the raspberry. Investigations have shown that the moth lays its eggs between the unopened bud leaves and that the developing larvæ attack the terminal and lateral buds, frequently boring into the terminal shoots. The moth hibernates as a larva, pupation frequently occurring in the soil. The raspberry-bud moth also attacks the native lawyer (Rubus australis) and is commonly found on blackberry. It is attacked by two species of parasites.

(*b*) *Raspberry Saw-fly (Priophorus tener).*—This European insect was found in Canterbury, where some damage was being done to the foliage of raspberries. A study of the life-history of the saw-fly shows that there are two broods during the year and that a partial third brood may develop in late autumn. The adult flies are on the wing in September and December. The eggs are laid in the stems of raspberries and blackberries.

Gooseberry.

Work on this and the following two fruits has been carried out at the Plant Diseases Division. A stem wilt of gooseberry from Greytown has been found to be due to the fungus, *Verticillium dahliae*, hitherto recorded in New Zealand only on the tomato.

Passion-fruit.

A common disease, prevalent throughout the commercial areas, and known as "woodiness," has been shown to be of virus origin. It has been transferred by artificial inoculation from diseased to healthy plants.

Grape.

Mealy-bug has been controlled by live steam treatment, steam being generated by a small boiler under slight pressure. Complete kill of the pest without injury to the vine may be secured.