

In addition, experiments are being conducted with passion-fruit, which, in the previous season gave promise of being capable of withstanding transport to Great Britain. This year's investigations, however, have not shown such promise, as the fruit became much affected with mould growths and of a decidedly bad appearance, though the quality of the juice was not impaired. It has therefore been decided to suspend overseas' investigations, and undertake land-storage trials with this fruit.

A number of cases of lettuces were also forwarded overseas, but it was shown that this vegetable would not remain in good condition for more than four weeks' storage.

Plums.—A commercial trial consignment of Grand Duke and Doris plums grown in the Hawke's Bay District was despatched to Great Britain. It was found that both varieties withstood storage conditions well, and were landed in Great Britain in excellent condition.

Tomatoes.—Two small trials with tomatoes were unsuccessful, as the fruit in both instances landed in bad condition in London.

Peaches.—One experimental shipment of late peaches was despatched to London, but it is yet too soon to receive reports as to their condition.

Dunnage.—The work of the Cambridge Low Temperature Research Station in the model ship's hold at the Ditton Laboratory has indicated that a new system of dunnage, known as the "Tower system," has proved very successful. A modification of this system was installed on certain of the fruit-transporting vessels during the season, and the effect of the new system on fruit quality is being closely watched.

One bulletin has been issued during the year: "Relation of Storage Temperature to the Overseas Carriage of some Further Varieties of New Zealand Export Apples," by L. W. Tiller (Bulletin No. 41).

FRUIT RESEARCH.

Advisory Committee: Messrs. H. Vickerman (Chairman), F. Firth, A. M. Robertson, F. S. Pope, Thos. Waugh, H. E. Napier, Wm. Benzie, T. C. Brash, W. J. Rodger, A. H. Cockayne, J. A. Campbell, T. H. Easterfield, T. Rigg, and G. Shirtcliffe. F. R. Callaghan, Secretary.

The Fruit Research programme is being conducted jointly by the Plant Research Station, Cawthron Institute, Horticulture Division of the Department of Agriculture, and the Department of Scientific and Industrial Research. Periodical meetings of investigators are held, when the details of the various researches receive full consideration. The experimental orchard of 72 acres located at Appleby is devoted to field-research work, and, in addition, spray and fertilizer trials are conducted in a number of orchards located in the different fruitgrowing districts of both Islands.

The nursery-work is at present all carried out at the Plant Research Station, Palmerston North.

RESEARCH ORCHARD.

All the trees in the orchards have been fully utilized for experimental work in connection with manurial, spraying, and disease trials. One hundred and eleven spraying trials were in progress, and the full programme of manurial trials laid down in previous seasons was continued. The orchard has also been drawn upon to supply fruit for cold-storage investigations. Both the Cawthron Institute and the Plant Research Station have made use of specified blocks of trees for the conduct of various investigations. A very complete system of tree recording has been developed, each tree bearing an indelible record of all the investigational treatment to which it has been subjected. Standard methods of pruning have been adopted throughout, and attempts are being made to keep precise records of pruning and blossoming by means of photographs.

The weight of fruit yielded by all trees has been carefully recorded and will be available for use in interpretation of the various manurial and spray researches to which each has been subjected. The varieties of apples represented in the orchard are Cox's, Dunns, Jonathans, Delicious, Sturmer, and Statesman. The yield of fruit in the 1933 season was light, being approximately one-half of that in the previous year. The total cases of fruit available for export amounted to 3,462. The season was not a serious one so far as diseases were concerned, though eye-rot and bitter-pit were prevalent to some extent.

During the year an additional building to provide accommodation for six workers was completed. The orchard is now fully supplied as regards office and staff accommodation, and the most necessary additional building now required is a manager's residence. Improvements have also been effected in connection with the packing-shed and the provision of additional water-supply.

MANURIAL TRIALS.

While very few of these trials have been running for a sufficiently long period to yield conclusive results, it is no doubt of interest to record some of the principal effects that have been noted to date. At the Research Orchard and elsewhere throughout New Zealand applications of nitrogenous manures produced marked results in regard to tree-growth, the most pronounced effects being seen in the case of trees growing on poorer-quality soils. In some instances excessive growth was produced and the colouring of the fruit was reduced. From all the trials it was not possible to decide whether the time of application of the nitrogen caused any variation in the amount of the response. It was shown, however, by trials at the Research Orchard that the best results were secured from a distribution of the nitrogen in a circle of not more than 6 ft. radius from the trunk of the tree. The effect of nitrogen upon tree yield on poor soils was indicated in a trial at Waimea West, where, following the application of 3 lb. of sulphate of ammonia per tree, a yield of 172½ lb. of fruit was secured, in comparison with one of 102 lb. when only 1 lb. was supplied.