COLD STORAGE OF APPLES.

INVESTIGATIONS AT NELSON, SEASONS 1927 AND 1928.

AN account of the main investigations of the Cawthron Institute into some of the difficulties associated with the cold storage of apples in the Nelson district during the 1927 and 1928 storage seasons is given in the recently published Bulletin No. 16 of the Department of Scientific and Industrial Research, by Mr. L. W. Tiller, Orchard Chemist to the Institute. The report is summarized as follows:—

(1) For securing uniformity of temperature at all points in a small experimental chamber cooled by a direct expansion dry battery situated outside the room, an air-circulation system operating from ceiling to floor has given the best results.

(2) Less internal breakdown develops in a store in which the relative humidity of the air is kept low than in a store where the humidity is high, provided the flesh-temperature is the same in both stores.

(3) Internal breakdown is more in evidence at low storage temperatures than at high, although varieties differ considerably in their power of resistance to low temperature.

(4) Internal breakdown as it occurs in the Nelson District is compared with similar physiological diseases occurring in America.

(5) Fruit grown on good soils generally shows superior storage qualities to that grown on naturally poor soils.

(6) Cultivation of the orchard and climatic factors exercise a profound influence on the keeping quality of the fruit.

(7) A well-balanced manurial programme carried out on the orchard has materially improved the storage qualities of the fruit.

(8) The root-stock upon which a variety is worked may influence the condition in which the variety turns out at the end of its storage period.

(9) Jonathan-spot is differentiated from bitter-rot, with which it is frequently confused.

(10) A limited measure of control of Jonathan-spot is afforded by the use of oiled wrapping-paper.

(11) Soil conditions and manurial treatment of the orchard cannot at present be correlated with the incidence of Jonathan-spot.

(12) Except in one instance, temperature has had no consistent effect on Jonathan-spot development. In the exceptional case there was less trouble in evidence at a storage temperature of about 38° F. than there was at 32° F.

(13) Storage humidity has had no effect on the incidence of Jonathan-spot.

(14) Delay between picking and storing usually causes a slight rise in the percentage of Jonathan-spot, but the increase is very small compared with that produced by late picking.

(15) The best control of Jonathan-spot at present available is given by picking the fruit as early as can be done without sacrificing the essentials of colour and flavour.

(16) The use of oiled wrapping-paper gives a very substantial reduction in the amount of shrivel in stored apples without detrimentally affecting them in other ways.

(17) Jonathans picked and packed as for export were put into store for three months and then kept out of store for periods up to three weeks. In no line did severe breakdown exceed 3 per cent., and fungal trouble was almost totally absent. Factors governing this experiment are similar in some respects to those obtaining in the New Zealand export trade.