Contact has still been maintained with the Cambridge Low-temperature Research Station, which has rendered invaluable service in the examination of experimental cargoes of fruit, and by furnishing reports to New Zealand upon the out-turn of the experimental lines, so that there is being accumulated a store of most useful information which will enable improved transport of fruit to be made possible.

The co-operation between the Fruit Cold Storage Committee, the Cambridge authorities, and the consultative group, has demonstrated the value of such an organization, as a means of following through fruit right from the orchard to the English consumer.

During the year the following cold-storage factors were studied in connection with apples of the Cox's, Jonathans, Sturmer, Granny Smith, Delicious, and Dunns varieties :—

(1) The influence of locality and soil type upon keeping-quality.
(2) Maturity at the time of picking in relation to quality and to such diseases as bitter-pit, scald, and breakdown.
(3) Packing, in relation to bruising and fungal rotting.
(4) Handling.
(5) Wraps and pads, in regard to bruising, general keeping-quality, and scald.
(6) Delayed storage, transport, temperature, and irrigation, in their relation to general keeping-quality, and to the occurrence of pear mould.

The pear investigations cover the varieties Winter Nelis, Winter Cole, and Louis Bon de Jersey.

With passion-fruit, the influence of wraps, packing-material, surface treatments, and storage conditions, were under investigation. With peaches, investigations were carried out with Pullar's Cling, Goodman's Cling, Wiggins, Million Dollar, and Akarana varieties, in regard to their respective factors influencing keeping-qualities.

Plums.—Doris and Grand Duke plums were stored at specified temperatures, and subjected to a transport test to ascertain the possibility of the export of these varieties to British markets. Both varieties showed that they were able to maintain condition well throughout the voyage to London.

Lemons.—Lemons were stored under different conditions, with a view to ascertaining the most suitable conditions for this purpose.

The nature of the season was such as to reduce all storage troubles to a minimum, with the exception of those associated with physiological conditions. In consequence of a period of dry weather, during maturation, a fair amount of drought spot, an internal browning of the flesh, was found in those varieties of apples susceptible to these troubles. In addition in the Cox's variety, bitter-pit appeared in some of the early season's pickings.

The raising of the transport temperatures overseas, which was last year recommended to be raised to 36-37° F., in the case of Cox's and Jonathans, again has shown up to advantage, even though this season's fruit was remarkably free from storage troubles.

The fruit cold-storage work is conducted in cold stores at Auckland, Wellington, and Nelson. In the Nelson cool stores the investigations are largely concerned with the influence of manures and storage temperatures upon the keeping-qualities of the main export varieties of New Zealand apples.

Reports have been issued and published in the *Journal of Science and Technology*, *Journal of Agriculture*, and the *Orchardist*, relating to a number of the cold-storage investigations upon which progress reports were desirable.

LEATHER RESEARCH.

Advisory Committee : Messrs. J. E. Astley, A. E. Lawry, J. Garton, W. Donovan, F. Johnson. Director of Research : Mr. P. White. Assistant : Mr. F. G. Caughley.

During the year under review, at the request of the manufacturers, much closer contact has been maintained between the laboratory and the factories. The Director of Research has visited the tanneries much more frequently than in previous years. This has curtailed the amount of research work carried out on specific problems. On the other hand, it has increased the number of actual works problems investigated. From the industrial point of view, this alteration of the programme of work has been immediately beneficial, and may ultimately prove of greater value than if a regular programme of research work had been carried out.

One very gratifying result is the increased interest which is being shown by the workers in the tanneries in the scientific aspect of leather-manufacture.

Chrome Leather.

Continuing investigations of the processes used in the manufacture of chrome leather, this year particular attention was devoted to fat liquoring. In order to set a standard of what good fat liquoring could do, and what defects incorrect methods might produce, a large number of commercial samples were examined. This examination included analyses for penetration of fat, total amount of fat present, and amount of fat fixed in the leather. The results obtained from this work showed quite definitely that some of the qualities associated with good upper leather are directly related to the fat liquoring, thus emphasizing the importance of this process. The conditions necessary to obtain the best results in this process were determined both as regards penetration of fat, and the total amount of fat present in the leather.

A brief survey of the different fat liquors used was carried out in their relation to water-proofing qualities, size of the break of the grain, and the degree of fixation of the fat. A result of this work has been a modification of the fat liquors used by the firms which are associated with the Research Association.