Sturmer: Trees receiving N alone are maintaining their growth and crop superiority over untreated trees, although distinctly inferior to PN trees in both respects. The best growth and yield performance is still that of the PNK trees, although the margin over PN trees as regards yield is very small this season. The mean yield on PNK plots is 132 lb. more fruit per tree than that on U plots.

Cawthron Institute.—The manurial experiments on Jonathan at Upper Moutere and on Sturmer and Dougherty at the Annesbrook Orchard have been continued, and the results in both orchards emphasize the importance of complete manures containing P, N, and K for many Nelson soils. At Upper Moutere spectacular results have followed the manuring of trees that have been untreated for twelve years. Neither PN nor NK gave such good results in growth, foliage-development, and fruit-production as the complete manure.

Rootstock Experiments.

Research Orchard.—The new area noted in last year's annual report is making good growth, but will not reach bearing age for several years. Differences are not very noticeable at present, but it is considered that M.XII and M.XV are perhaps somewhat stronger than M.I and Northern Spy.

Cawthron Institute.—With the Cox's Orange variety, Northern Spy stocks continue to show superiority over seedling stocks. Several trees on the latter type are now badly affected with "sour-sap," while those on Northern Spy show no detrimental effects.

Jonathan and Sturmer varieties, however, have given better results on Double Vigour and Epps' Seedling stocks than on Northern Spy.

Plant Diseases Division.—Tests have been continued with East Malling and Northern Spy stocks in the experiments laid down collaboratively with the Department of Agriculture in 1934. Records of growth to date indicate that performance of trees on Spy stocks compares favourably with that on Malling stocks. Trees are now coming into bearing, enabling a study to be made of stock influence on quantity and quality of fruit.

M.IX (Jaune de Metz) is proving a valuable dwarfing stock for intensive experimental work.

Inarching Experiments.

The inarched material at the Appleby Orchard has been so severely attacked by woolly-aphis as to preclude any possibility of its success. Clonal stocks inarched into stunted Jonathan trees at Huapai in 1937 are well established, but no increase in vigour has yet been noted.

Varietal Investigations.

The Plant Diseases Division has added eleven varieties to the thirty already in the nursery, and forty others are shortly due to arrive from England. The latter include several new varieties recently awarded certificates of merit by the Royal Horticultural Society. The purpose of this work is to form a standard collection of varieties comparable, though on a smaller scale, to that of the Royal Horticultural Society at Wisley in England. The collection should also serve as a standard for comparative trials of new varieties raised in the Dominion or imported from abroad.

The Division is simultaneously carrying out work on the different strains of apple varieties. Fruits of many types of Delicious apple on trees growing at Owairaka have been available for the first time. Fruit colour is at present the most conspicuous point of difference between types, and much variation is shown, ranging from normal through intermediate types to an extreme represented by a deep red. Variation in other external characters, though evident, is much less marked. Some strains appear to be more vigorous than others, but nothing definite can be accepted for some years yet.

Three markedly different types of Northern Spy apple have been produced on trees grown from buds selected in 1933. The strains of the other varieties under test—Jonathan, Cox's Orange, Granny Smith, and Sturmer—have not yet fruited.

At the Appleby Orchard, Bramley's Seedling scion wood imported from England and cool stored locally has been successfully grafted on to headed-back Statesman frames. Scion material provided by the young established cider trees has enabled the varieties Reinette Obry, Sweet Alford, and Knotted Kernel to be likewise grafted on Statesman.

Pruning Experiments.

Research Orchard.—Various departures from standard pruning practices are being tested in an endeavour to reduce the extent of the biennial bearing habit of certain varieties and to improve fruit quality. An attempt is being made to convert Cox's Orange to an almost completely spur-bearing habit; Dunn's Favourite is being heavily spur-reduced prior to both "on" and "off" years; Jonathan is being thinned out and opened up by several methods.

Cawthron Institute.—An opportunity was taken to test what is known as the Hawke's Bay system of pruning, in which main leaders are reduced to three or four in number and nothing further is done beyond the cutting-out of interlocking growth. Both Cox's Orange and Jonathan were tested under this system, but the results showed that it was unsatisfactory under Nelson conditions. With the Jonathan variety growth was outstandingly weak and gave little promise for future fruit-production