Dunn's Favourite: This variety has proved rather less responsive to manurial treatment, but nevertheless treatment has proved advantageous. N trees have averaged 16 lb. and PNK trees 32 lb. more fruit per tree than the controls.

Delicious: N trees have yielded 37 lb. and PNK trees 69 lb. more than the controls. The costs per tree are as for Cox's Orange Pippin.

Sturmer: P by itself has given no significant crop increase, although the trees themselves show no die-back, in contrast to some of the untreated trees and some of the N trees. N has given an average increase of 52 lb. per tree, PN 83 lb. per tree, and PNK 98 lb. per tree, for respective costs of 4·3d., 7·0d., and 10·0d. per tree. Over the past two years the average increases are respectively 53 lb., 116 lb., and 135 lb. per tree per year.

(*b*) *Short-term Manurial Investigations.—Dunn's Favourite:* Treatment with 2 lb. ammonium sulphate, additional to a base dressing of P and K, has given an average increase of 47 lb. per tree per year for an extra cost of 4·4d. The interpretation of the crop records from trees receiving 4 lb. ammonium sulphate is rendered difficult by the absence of pre-treatment data. While they appear to show a further increase of crop, this result is of doubtful significance, even though the response to the extra nitrogen is readily apparent in the foliage colour of these trees. In a heavy-liming experiment, trees receiving ground limestone at the rate of 2½ tons per acre every second year have averaged 32 lb. more fruit per tree than unlimed trees, at a cost of 2·3d. for lime. A base dressing of P, N, and K was used throughout. The response appears to be an indirect nitrogen effect induced by better cover-crops on the limed area.

Jonathan: A comparison of 0 lb., 2 lb., and 4 lb. ammonium sulphate, with a uniform base dressing of P and K, continues to point to 2 lb. as the optimum rate of application. Under this treatment an average of 48 lb. more fruit per tree per year has been obtained for an extra outlay of 4·4d. Two sulphate of potash applications of 12 lb. per tree, followed by 1 lb. in each of the succeeding ten years, have given an average increment of 55 lb. of fruit per tree per year for an expenditure averaging 7·1d. per year. At the same time, the colour and size of the fruit are better than from trees without potash. An experiment to determine whether there is an optimum period of the year for the application of N is still showing no measurable differences. A study of concentrated versus more disperse distributions of N is beginning to suggest that a greater response is secured by concentration within a 3 ft. radius from the trunk. More data will be needed, however, before a recommendation can be made.

(*c*) *Rootstock Trials.*—Although the trees in this trial are now eleven years old from date of planting, it is still evident that the ultimate relative positions of the Northern Spy and various Malling stocks have not yet been reached. The following must therefore still be regarded as progress notes covering the 1945 crop.

Cox's Orange Pippin: The yields on M I, M XII, and Northern Spy did not differ significantly from one another, but that on M XV still lagged behind.

Jonathan: M XII went well into the lead this season. Northern Spy failed to give a significantly higher yield than M I and M XV.

Delicious: Yields from the various plots were rather variable and the only statistically significant difference was that M I gave a higher yield than M XII.

Granny Smith: Northern Spy and M I gave higher crop weights than M XII or M XV. The differences between Spy and M I or between M XII and M XV were not significant.

(*d*) *Varietal Trials.*—Further observations have been maintained on a large number of red strains of Cox's, Jonathan, Delicious, and Dougherty, and a few fruits have been obtained from some of the hybrid varieties now growing on the orchard. Most of the strains have so far been disappointing, in that their colouring is not typical of the parent variety and, as noted under "Fruit Cold Storage," their keeping-quality is generally inferior.

(*e*) *Spraying Trials.*—These are dealt with under the Plant Diseases Division section of this report.