

APPENDIX No. 2

in the ordinary way. The surest way, however, of obtaining hardy stocks is to grow the hardy varieties on their own roots as explained in the paragraph on root-grafting.

SCIONS.

As much of the success in grafting depends on the condition and quality of the scions, too much stress cannot be laid on the importance of having them of the best quality and in the best condition at the time of grafting.

Scions may be cut any time after the wood is well ripened in the autumn and before the buds begin to swell in the spring. The best time, however, is in the autumn, as they may then be kept in the condition desired, although scions which are not kept in good condition all winter are not as good as those cut from the tree early in spring and grafted at once.

If they are cut in cold weather, in winter, there is less sap in the scions at the time, and thus the chance of their drying up is greater than if they were cut in the autumn. One cannot tell very well, either, in winter, whether the young wood has been injured or not. Scions should be cut from healthy, bearing trees. The wood of old trees is liable to be diseased, and if diseased wood is used it is likely to produce a diseased tree when grafted. Scions should also be cut from the most productive trees. Occasionally, one or more trees of a variety will produce more and heavier crops than the others. If scions are taken from these trees, the probability is that a larger proportion of the grafted trees will produce crops like the trees from which the scions were taken than they otherwise would. The scions should be cut from the wood of the current season's growth, as older wood is not satisfactory. The buds should be well developed and the wood thoroughly ripened. It is not wise to use the water sprouts or young shoots which spring from the main branches or trunk for this purpose. They may not be thoroughly ripened, and it is also possible that sprouting propensities may be thus more developed in the grafted trees. The entire season's growth may be cut off and packed away until required for grafting, when it should be cut into pieces from four to six inches in length having three well developed buds.

Scions may be kept in good condition in moss, saw-dust, sand, or forest leaves. The last named are found very satisfactory at Ottawa. These materials should be slightly moist, but not wet; the object being to keep the scions fresh and plump without there being any danger of their rotting. They should be kept in a cool cellar which is not too dry, and should remain dormant until ready for use.

Root-Grafting.—The cheapest and one of the best methods of propagating apples, especially in Canada, is by root-grafting. The strongest of the young stocks which have been grown in the manner already described are heeled in during the autumn in a cool cellar in moist sand. Grafting may be done any time during the winter, but it is usually not started until January or February.

At Ottawa, the best success has been obtained when grafting was done early in February. By grafting early the wound has time to callus well before the grafts are planted out, which is important. Whip or tongue-grafting is the method usually employed. As only the root is required, the trunk and branches are cut off and thrown away. As there is but little advantage in using the whole root, it may be divided into several pieces, much depending on its size. Each piece should be at least four inches long. A smooth, sloping cut upwards, about two inches long, is made across the main part of the root most suited to receive the scion. The scion is prepared by cutting off a piece of the wood procured for the purpose in the autumn from four to six inches long and with about three well developed buds on it; a smooth, sloping cut downwards and across it is now made of about the same length as that already made on the stock. Clefts are now made in the sloping surface of both scion and stock, in the former, upwards; and in the latter, downwards. They are then joined together by forcing the tongue of the scion into the cleft of the stock. The inner bark or cambium, of both scion and stock should be in contact with one another on