

in the cleft of the stub, with the wide side of the wedge on the outside, and thrust down until the lowest bud is almost on a line with the edge of the stub. The inner bark of both scion and stub should meet at some point, so that the union will take place readily, and this is more easily effected if the scion is given a slightly outward slope when inserted. When the wedge has been withdrawn from the cleft the advantage of having the wedge-shaped end of the scion thicker on one side will be apparent, as it will be held much more tightly than if both sides were the same. If the scion is not a tight fit all along there is something wrong in the way it has been cut or the stub has been cleft. The cut parts should now be covered with grafting wax to exclude the air and hold the scion in place. Cotton is also sometimes wrapped around the wax in order to more effectively hold the scion in place. If both of the scions grafted on a stub should grow, the weaker one should be removed after most of the surface of the stub has healed over.

It is often desirable to top-graft young trees, and this may be done very readily. The main branches are cut back to within a short distance of the trunk, and the scions grafted on, either by cleft or whip grafting. The closer the grafted part is to the trunk the better, as the tree will be stronger than if the union occurred further out on the limb, since the growth of graft and scion may not be equal. It is possible to cut off the whole top of the tree and graft successfully on the main trunk, when the tree is young, but unless one is sure that the union will be perfect and the top not outgrow the stock it is better not to run the risk of losing the tree. Furthermore, if the whole top is cut off there will be such a growth the first season that the scions are liable to get broken off. In top-grafting a young tree that has been planted from three to five years, it is better to take two seasons to do the work, as the results will be as a rule more satisfactory. In top-grafting it is usually desirable to begin with the central rather than the side branches.

It is necessary to examine the grafted trees from time to time during the summer and remove any young shoots from the stocks which are interfering with the scions. It is not wise, however, especially when the tree has been cut back severely for grafting, to remove all the shoots until the grafts have grown considerably and furnish a good leaf surface. McMahan, Haas and Hibernial apples make good stocks where the winters are very severe, the last named being most suitable for the prairies unless crab apples are used which are hardier but which do not make as good a union, and Tolman a good one elsewhere.

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. If they are cut in cold weather, in winter, the trees from which they are taken may be injured if large numbers are removed from them, as the bark is liable to split. There is less sap also in the scions at that 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 heavier crops than the others. If scions are taken from these trees, it is possible that a larger proportion of the trees grafted with them will prove more productive than they otherwise would. The scions should be cut from the wood of the current season's growth, as