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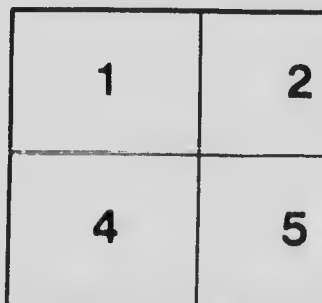
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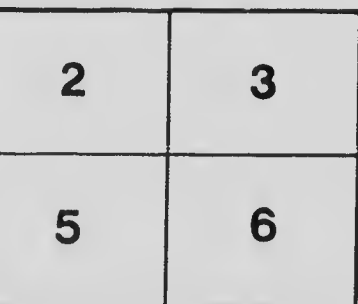
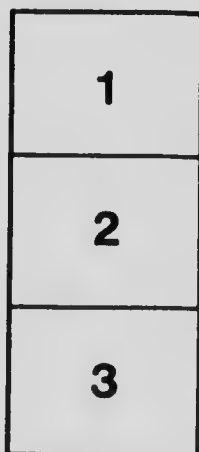
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# TOP-GRAFTING.

BY

W. T. MACOUN.

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Where there are trees which produce poor or unprofitable fruit they may be made to bear good fruit by top-grafting other varieties upon them. If it is desired to grow a good variety which when grown in the ordinary way proves a failure, on account of root-killing or sunscalding, it is possible to grow it successfully by top-grafting. Varieties which ordinarily take a long time to come into bearing will fruit much sooner when top-grafted. These are some of the most important results which may be obtained by this method.

Up to the present time in Canada, top-grafting has usually been done on old or bearing trees which produced poor fruit, and as very satisfactory results have been obtained this practice will continue to be popular.

The work is done in the spring before growth begins, but it is possible to graft successfully even when the trees are coming into leaf, provided the scion is quite dormant, but the chances of success are much lessened if it is done late. As the shock to a large tree would be very great if all or nearly all the branches on which the leaves develop were cut off the first season, from three to four years should be devoted to removing the top of the tree. If, however, a large number of scions are inserted the top may be changed in less time, but as a rule it is not wise to do it in less than three years. Furthermore, a too severe pruning at one time will cause a large number of shoots to grow on the tree, and considerable labour will be involved in removing them if many trees are grafted. Cleft grafting is usually adopted in top-working trees, it being a simple and satisfactory method.

The branches to be grafted should not exceed an inch and a half or two inches in diameter. If they are larger it is so long before the stub heals over that disease may set in. It is possible, however, to graft larger branches by putting in more scions. The top-grafting of a large tree should be done with a view to having the new top as symmetrical as possible, and great care should be taken in selecting the branches to be grafted upon. After the branch is sawn off the stub is cleft by means of a mallet and strong knife to the depth of an inch and a half or two inches. It is held open to receive the scion by driving a wedge in it. Scions for use in top-grafting are cut from dormant wood which has been kept in good condition in the manner hereafter described. They should have about three strong buds and be cut wedge-shape at the base, one side, however, being a little thicker than the other. Two scions are now inserted

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

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 trunks for this purpose. They may not be thoroughly ripened, and it is also possible that sprouting propensities may be thus 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 each having three well developed buds, if growth has not started scions may be cut fresh from the tree and be successfully grafted.

Scions may be kept in good condition in moss, sawdust, sand or forest leaves. 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 rotting. They should be kept in a cool cellar which is not too dry, when they will remain dormant until ready for use.

#### GRAFTING WAX.

There are many kinds of grafting wax recommended, but it is unnecessary to enumerate them all. One of the cheapest and best is that known as 'Reliable Wax,' the receipt for which is as follows:—'Reliable Wax.'—Resin, four parts by weight; beeswax, two parts; tallow, one part. Melt together and pour into a pail of cold water. Then grease the hands and pull the wax until it is nearly white. One of the best waxes for either indoor or outdoor use. This should be heated before using if too hard.

A more pliable wax for outdoor use is made in the following proportions:—Resin, five parts by weight, beeswax, one part; boiled linseed oil, one and a quarter parts.

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