

Top Grafting.

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In estimating the value of a fruit farm, it is a common mistake to leave out of consideration the varieties of which it is composed, simply counting up the number of trees, or the acres in orchard. In the absence of any definite information as to suitable varieties, many have been planted in the past which, for one reason or another, are now found almost unsalable; and many which, though at one time very valuable, are now undesirable in the commercial orchard on account of scab, as, for example, the Early Harvest and the Fall Pippin. The income from such an orchard is far below that from an orchard of Spy and Baldwins. In other cases the income is very much below what it should be, because it contains too many varieties. This also lessens the value of the orchard, by rendering the crop difficult to sell, for buyers do not like to handle mixed lots. In my experimental apple orchard, I have forty or fifty varieties, and every year I find that most of these go to waste, because there are too few of any one kind to find a market. The same rule holds good in pears, plums, cherries and grapes; the key to success in fruit-growing lies in having only those varieties which are best suited for the locality in which the orchard is situated. It was to aid farmers in selecting varieties best adapted to their respective localities that our Ontario Fruit Experiment Stations were established, and now, after ten years of experimental work in the vari-

For preparing the wax, the following is one of several recipes: Resin, 4 parts, by weight; beeswax, 2 parts; tallow, rendered, 1 part. Melt together and pour into a pail of cold water; then grease the hands and pull until it is nearly white.

In renewing an old tree, the grafter should not attempt to complete the work in less than two seasons, a few of the smaller limbs being grafted each year, thus gradually transforming the whole top. As a rule, limbs about two inches in diameter are best for top working, because such wounds are quickly healed.

Grafting the apple or pear may be done by any farmer or fruit-grower who is at all handy in the use of tools. Figure 2 shows a limb sawed and split for

At A the stock is shown cut off and prepared for the insertion of the cions; the wood is not split, the bark only is slit a little way, sufficiently to permit the insertion of the cion under it. At B is shown the cion bevelled on one side, ready to go next the wood. At C the cions are set, and at D is shown the same wound with stiff manilla paper and tied firmly about with a string. The paper is made to project about half an inch above the cut, and the basin thus formed is filled with mud, which will remain to protect the cut surface until the wound has begun to heal over.

CHERRIES AND PLUMS.

In top-grafting cherries and plums, more care must be taken than with apples and pears, for the wood does not unite quite as readily. The work, too, must be done earlier in the season, say in March or April, before there is the least beginning of wood growth or of bud development.

In trees not too old, whip-grafting may be done, instead of the cleft-grafting already described. Fig. 7 will illustrate a method of whip-grafting which may be used for cherries and for plum trees, in branches less than an inch in diameter. At D is shown how a splice is made, the cion having been bevelled on one side only; A shows the splice graft wound with string to keep the parts securely in place; B the same, waxed, and C, wound with muslin or other cloth over the wax to keep off the hot sun.

For larger limbs, cleft-grafting is preferable, and the method is just the same as in the case of apple and pear trees.



Fig. 5.—Top-worked Trees, 20 years old.

grafting, with the cions properly inserted. Skill is required in two things; first, in making the small wedge-shaped cut of the cion. This must be done with a sharp knife, by a single drawing cut for each side, so as to make a perfect wedge, usually leaving the one side a little thicker than the other to insure close contact. Then, while the split wood is held apart with the chisel, the two cions are put in place. In the second place skill is required in so placing the cion in the cut that the inner bark of both stock and cion may be in contact with each other and make a perfect union. The reason of this will be evident to the reader by a study of figure 3, which is self-explanatory. When the cions are in place, cover every portion of the cut surface of cion and limb with grafting wax, so as to thoroughly exclude rain and the drying effects of the atmosphere, as shown in figure 4.

Two cions are not really necessary at each cut, but it is very little more trouble to insert two than one, and thereby two chances of success are afforded; while, if both live, it is a simple matter to cut off one, leaving its stub to help grow over and cover the wound.

A general idea of the best way to cut and graft large trees is shown in figure 5, in which the trees are twenty years old, and the work of top-grafting has extended over a period of about three years.

CROWN GRAFTING.

A very simple method of grafting large branches, six inches or more in diameter, has been practiced by the writer on some old apple and pear trees; a method

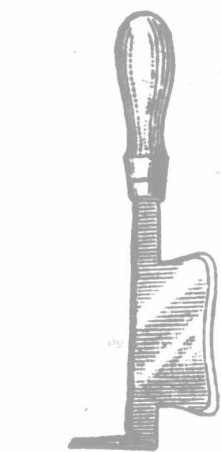


Fig. 1.—Grafting Chisel.



Fig. 2.—Cions inserted in cleft.

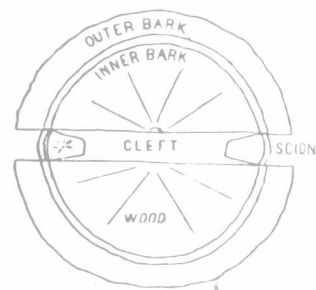


Fig. 3.

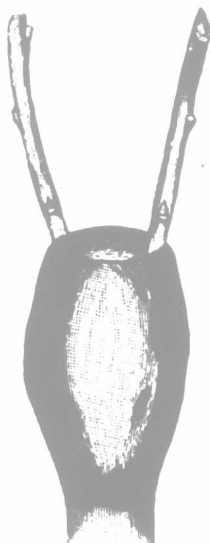


Fig. 4.

ous fruit districts, the Department of Agriculture, Toronto, has been able to publish an official bulletin of varieties recommended for each, which may be had on application. In addition to this, a book has been prepared, giving descriptions and photogravures of all our desirable Ontario fruits, which will soon be published by the Department for the benefit of Ontario farmers.

Knowing the varieties most desirable for his district, the fruit-grower should mark those trees bearing undesirable kinds and estimate the number of cions he needs of each. These should be cut from trees of which there is no doubt about the identity; bearing trees are best on this account, and, by selecting the cions from those trees which have been the most productive, or which have given the finest fruit, these special characteristics may be propagated. By cions we mean cuttings from the wood of last season's growth. These should be made while the wood is still dormant, long in advance of the time for grafting, tied in small bundles, labelled, and packed away either in earth or fresh sawdust until needed.

THE APPLE AND PEAR.

The top-grafting of an apple or of a pear tree may be done much later in the spring than stone-fruit trees, for while the latter should be done very early in spring, the former may be deferred until the last of May or the beginning of June.

The necessities for the work are: (1) A sharp, fine-toothed pruning saw, with which to make a clean cut of the limbs to be grafted; (2) a grafting chisel (such as is shown in figure 1), or if these cannot be had, a common chisel, or even a large pruning knife, with which to split and hold open the limb for the insertion of the cion; (3) a small mallet; (4) a ball of grafting wax, and (5) a small bundle of cions.

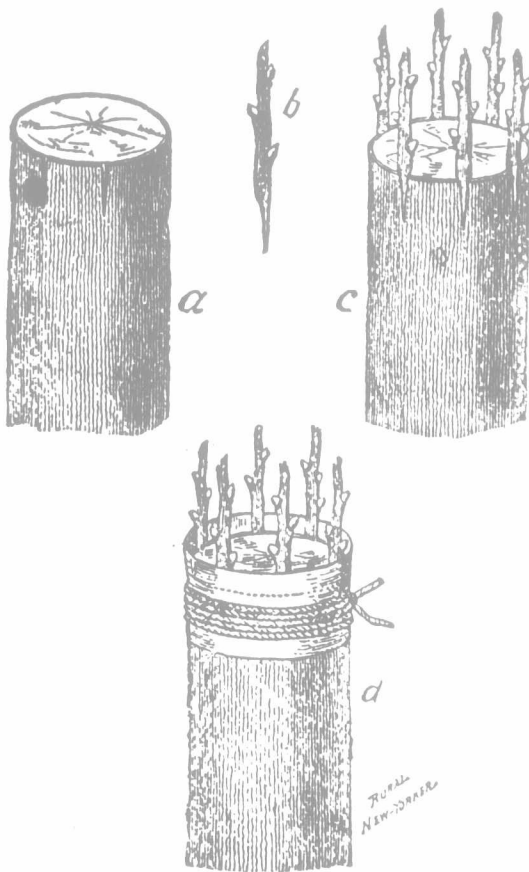


Fig. 6.—Crown Grafting.

which requires very little skill, few tools and no wax. Our illustration (figure 6), after the Rural New Yorker, illustrates the method so perfectly that very little need be said in explanation.

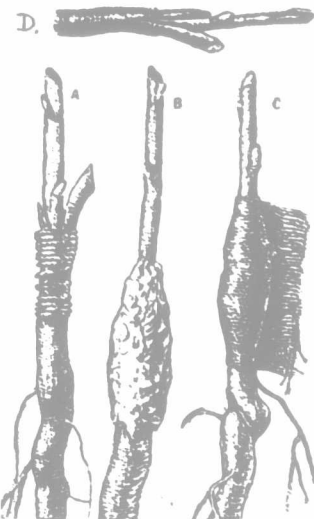


Fig. 7.—Grafting the Plum and the Cherry.



Fig. 8.—Cleft Grafting the Grapevine.

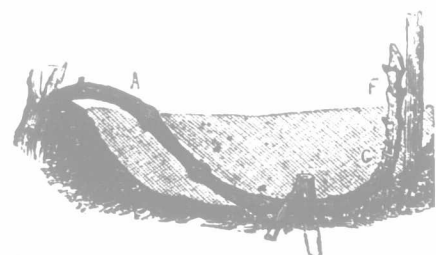


Fig. 9.—Splice-grafting the Grapevine.

THE GRAPE.

Sometimes a vineyard is unprofitable because of the varieties. Either they are not very productive, or they are badly subject to mildew, or they are not profitable in the market. In such a case, providing the old vines are still healthy and vigorous, they may all be grafted over to better kinds. To do this, cut off the old vine five or six inches below the surface of the ground, leaving an inch or two of straight wood above the roots. Into this stub insert two cions of grape-wood just as is done in cleft-grafting the apple, using cions of young wood about six inches long, having each two or three buds, so that when the work is completed one of the buds will be above the surface of the ground (see figure number 8). Use no grafting wax, but, if necessary, tie about the cleft with a string to hold it well together, and then fill in the soil about the stump, firming it well, so as to exclude the air from the cut surfaces sufficiently to prevent their drying out.

The grape may be grafted at any time between the fall of the leaf in autumn until the time in spring when the sap becomes active; but if done at the latter time the profuse bleeding is apt to drown the cion and cause failure; or the work may be done late in spring, when the strong flow of sap has ceased. One very important point is to cut the young wood for cions before very cold weather and while growth is dormant, or failure will result. They should be stored in sawdust or buried in the ground until needed.

In case an old vine is too knotty for cleft-grafting, the work may be accomplished by splice-grafting a smaller branch, as shown at A in figure 9. This is done at a distance of two or three feet from the stump, at G, and the grafted branch is then laid down and fastened in place with a peg. The earth is pressed about the cion, leaving a bud above the surface at F, which is the only one that should be allowed to grow.

In Europe grafting of the grapevine is done on a large scale, using native American kinds as root stocks, because these are resistant to the phylloxera, a root louse, most destructive to European varieties.