

fruited in 1897. The grafts on Duchess produced fruit in 1897 and 1899, and those on Wealthy in 1897 and 1898. The wood of the Northern Spy appeared quite hardy until the winter of 1903-4, when this variety was killed, while the stocks on which it was grafted remained alive.

*Budding.*—Although grafting is a much more common method of propagating apples than budding, the latter has some advantages over the former and can also be done at a time when grafting could not be performed successfully.

The best season for budding the apple is in late summer, some time during August being the best time for Ontario and Quebec. Young stocks of the first or second season's growth from seed are generally used. The process of budding adopted for apples consists of inserting a bud with very little or no wood, under the bark of the stock and on the surface of its wood. It is called shield-budding.

Budding is best performed when there is still sufficient sap beneath the bark to permit of the latter being easily raised with a knife. On the other hand, if the work is done when the tree is still growing vigorously the bud is liable to be 'drowned out,' or, in other words, forced out by reason of too much sap and growth of the stock.

The stock which is to receive the bud should be at least three-eighths of an inch in diameter near the ground. The lower leaves are rubbed off to a height of five or six inches to enable the bud to work more freely. A perpendicular cut is now made in the stock as near the ground as possible from an inch to an inch and a half long and preferably on the north side of the tree, as the bud will not be so readily dried out by the sun on that side. The cut should only extend through the bark. Another cut should now be made across the top of the perpendicular one. The two cuts when made will appear thus:— T

The buds are cut from well developed or nearly mature shoots of the current season's growth of the variety it is desired to propagate. Before the buds are removed the leaves should be cut off the shoots; a piece of the petiole or leaf stem is left, however, by which the bud may be handled after it has been removed. A very sharp, thin-bladed knife is necessary in removing the bud. Knives are specially made for this purpose. The bud is cut off the shoot downwards or upwards, whichever is most convenient, the general practice, however, is to cut upwards. The length of the piece removed with the bud should be about one inch long, and the cut surface smooth. It should be quite thin, as but little of the wood is taken with the bud. The buds or twigs should be kept where they will not dry out while the work of budding is going on. The bud is inserted under the bark by raising the latter with the blade of the knife or the part of the budding knife made for that purpose. The bud is then pushed down and under the bark with the fingers, and finally the piece of leaf stalk which was left when it was removed from the twig is pressed with the blade of the knife to bring the bud into the proper position. The bark on each side of the bud, which should now be under the bark of the stock will hold it in position. In order to bring the bud and stock into close contact and prevent the former from drying up before the union takes place, they should be tied together with raffia or some soft string, taking care not to cover the bud with it. The bud should unite with the stock in two or three weeks, and after that time the string should be cut, as otherwise the bud may be injured. If the proper season has been chosen for the work the bud should remain dormant until spring. If it starts in the autumn it may be killed during the winter. In the following spring the stock should be cut off just above the bud, which will cause all the strength of the stock to be directed into the bud and produce rapid growth, four feet and more not being an exceptional growth for the first season.

Budding is now a very popular method of propagating apples. The first season's growth is greater than from the root-grafted trees and there is a large proportion of straight-trunked trees by this method. If it is desired also to prevent trees from becoming on their own roots, budding is preferable, as trees propagated in this way