

It is usual to insert two scions, fig. 3. On withdrawing the chisel, the cleft closes firmly on the scions, when the graft is tied and clayed in the usual manner.

The great number of modes described in books, says Mr. Thomas in his "fruit culturist," have tended rather to bewilder than enlighten beginners; the following remarks, therefore, are more for the purpose of laying down *reasons* on which success depends, than for pointing out the peculiar modes of operation, which may be varied according to convenience, provided attention is given to the essential particulars.

Propagation by grafting differs mainly and essentially from increasing by cuttings, by inserting the cutting into the growing stock of another tree, instead of directly into the soil. The stock thus supplies the sap, as the soil does in the case of a cutting; and the graft, instead of making roots of its own, extends its forming wood downwards, through the inner bark, into the stock itself. Hence there are two chief requisites for success: the first, that the graft be so set in the stock, that the sap may flow upward without interruption; and the second, that the forming wood may flow downward uninterruptedly through the inner bark.

To effect these two requisites, it is needful, *first*, that the operation be performed with a sharp knife, that the vessels and pores may be cut smoothly and evenly, and the two parts be brought into immediate and even contact. *Secondly*, that the operation be so contrived that a permanent and considerable pressure be applied to keep all parts of these cut faces closely together. *Thirdly*, that the line of division between the inner bark and the wood, should coincide or exactly correspond in each; for if the inner bark of the one sets wholly on the wood of the other, the upward current through the wood and back through the bark, is broken, and the graft cannot flourish nor grow.—And, *fourthly*, that the wounded parts made by the operation, be effectually excluded from the external air, chiefly to retain a due quantity of moisture in the graft, but also to exclude the wet, until, by the growth of the graft, the union is effected.

1. The first requisite is best attained by keeping a keen, flat-bladed knife to cut the faces, and another knife for other purposes.

2. The second requires that the jaws of the stock in cleft-grafting, press with some force, but not too much against the wedged-shaped sides of the graft. A stock one-third of an inch in diameter will sometimes do this sufficiently; but three-quarters of an inch is a more convenient size. In whip-grafting, the tongue and slit should be firmly crowded or bound together.

3. The third requisite is attained by close examination.

4. The fourth is accomplished by plasters of grafting-wax, and by the application of grafting-clay.—*Grafting-wax* may be made by melting together one pound of beeswax, two of tallow, and four of rosin. More wax and less rosin is less adhesive to the hands, but more expensive. This spread, when melted or softened, on muslin or thin unsized paper, with a brush or spatula. It is sometimes applied without plasters, in which case it should be worked with wet hands, until it may be drawn out into ribbons of wax, which are wrapped round the part. In all cases it should be applied closely, so as to allow if possible no interstices, and cover every cut or split surface otherwise exposed to the air. In cool weather, a lantern, chafing-dish, or hot brick, is necessary to soften the plasters before applying them.

Grafting-clay is prepared by mixing one-third horse-dung, free from straw, and two-thirds clay, or clayey loam, with a little hair, like that used in plaster, to pre-

vent its cracking. Beat and temper it for two or three days, until it is thoroughly incorporated. When used, it should be of such a consistency as to be easily put on and shaped with the hands.

It is hardly necessary here to mention that propagation by grafting and by cuttings is to be performed early in spring before the buds swell; and that the grafts or cuttings may be cut late in autumn or at any time during winter, provided the natural moisture is preserved until they are used. A convenient mode of thus preserving them, is to wrap or imbed them in damp, not wet, moss; or bury them in a box, beneath the surface of a dry spot of earth, the box to be open downwards, and the grafts to be kept from contact with the earth by sticks across the inside of the box.

HINTS ON HORTICULTURAL SUBJECTS.

BY GEORGE LESLIE.

A few remarks on the *peculiarities* of such Trees and Shrubs as are hardy, and easily procured from a Nursery, might be servicable in assisting to make a selection. All trees are *useful* by affording shelter, producing shade and seclusion, concealing disagreeable objects, and enhancing future value. They are also *ornamental*, never failing to create or add beauty to a residence or landscape.

The Horse Chesnut and Silver Maple may be ranked *first* in stateliness and general elegance. For *rapid growing* trees of a large size, we may take the English Elm, Chinese Abele, European Larch, the Locust, European Ash, Weeping Willow and Poplar. To these may be added, as eminent for the beauty of their flowers and foliage, but attaining less size, the Double Flowering and Hard Shell Almond, and Double Flowering Cherry.

The most *rapid growing* Shrubs are Lilacs of different sorts, Fringe Tree, Upright Honeysuckle, Privet, Syringa, and Guelder Rose.—Such Shrubs as are adapted to grow under the shade of Trees are Privet, Buckthorn, and Missouri Currant. The most remarkable for the beauty of their flowers are Deutchia Scabra, Mezereon, Double Hawthorns, and Tree Pæonias. The best climbing plants are the Queen of the Prairie Rose, Scarlet Trumpet, and Striped Monthly Honeysuckle, the latter rare, and of exquisite fragrance.

Some trees and shrubs retain their fruit and berries till very late in the fall, after having dropped their leaves, of these among trees are the Mountain Ash and Siberian Crabs. Shrubs of this description are Strawberry Tree, red and white, Barberry, and different descriptions of Snowberries.

THE FLOWER GARDEN.

The *Rose* has been a favorite flower from time immemorial among all nations. The at-