

THE
NURSERY-BOOK

A COMPLETE GUIDE
TO THE
Multiplication and Pollination of Plants

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berry is shown in Fig. 46. (See Blackberry, in Chapter VI.) A growing *dracæna* cutting is exhibited in Fig. 47.⁶ The cuttings of this plant are handled in a propagating frame or on a cutting bench in a warm greenhouse. The bouvardias and many other plants can be grown in the same manner. Many of the fruit trees, as peach, cherry, apple and pear, can be grown readily from these short root cuttings in a frame. Variegation cannot always be transmitted by root-cutting, *e. g.*, *Symphytum asperrimum*, *variegatum*. Among kitchen garden plants, the horse-radish is the most familiar example of propagation by root-cuttings. The small side roots, a fourth inch or so in diameter, are removed when the horse-radish is dug in fall or spring, and are cut into four to six inch lengths, as seen in Fig. 48. These cuttings are known as "sets" among gardeners. (See Horse-radish, Chap.

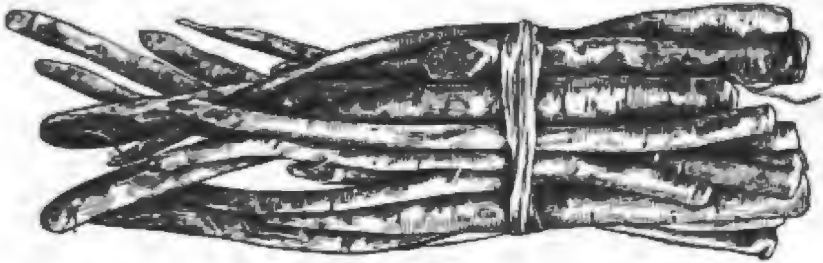


Fig. 48. Horse-radish root cuttings.

ter VI.) When the crowns of horse-radish are cut and used for propagation, the operation falls strictly under division, from the fact that buds or eyes are present ; and the same remark applies to rhubarb, which, however, is not propagated by true root-cuttings.

3. **Stem Cuttings.**—Cuttings of the stem divide themselves into two general classes: those known as cutting of the ripe, mature or hard wood, and cuttings of the green, immature or soft wood. The two classes run into each other ; no hard and fast lines can be drawn.

Hard-wood cuttings are made at any time from late summer to spring. It is advisable to make them in the fall in order to allow them to callus before the planting season, and to forestall

injury which might result to the parent plant from a severe winter. They may be taken as early as August, or as soon as the wood is mature, and be stripped of leaves. Callusing can then take place in time to allow of fall planting. Or the cuttings taken in early fall may be planted immediately and be allowed to callus where they stand. All fall cutting beds should be mulched to prevent the heaving of the cuttings. As a rule, however, hard-wood cuttings are buried on a sandy knoll or are stored in moss, sand or sawdust in a cellar until spring. (See page 50.)

There is no general rule to govern the length of hard-wood cuttings. Most propagators prefer to make them six to ten inches long, as this is a convenient length to handle. Two buds are always to be taken, one bud or one pair at the top and also at the bottom, but in "short-jointed" plants more are obtained. Sometimes all but the top buds are removed to prevent the appearance of too many shoots. Grape cuttings are now commonly cut to two or three buds (Fig. 43), two being the favorite number for most varieties. (See Grape, Chapter VI.) Currant and gooseberry cuttings (Fig. 49) usually bear from six to ten buds. All long hard-wood cuttings are set perpendicularly, or nearly so, and only one or two buds are allowed to stand above the surface.

When the stock is rare, cuttings are made of single eyes or buds. This is particularly the case with the grape (see Chapter VI), and currants and many other plants are occasionally grown in the same manner. Fig. 50 shows a single eye grape cutting. These cuttings, whatever the species, are commonly started under glass with bottom heat, either upon a cutting bench or in a hot-bed. The soil should be kept uniformly moist, and when the leaves appear the plants should be frequently sprinkled. In from thirty to



Fig. 49.
Currant
cutting.

forty days the plants are ready to pot off. Single eye cuttings

are usually started about three or four months before the season is fit for out-door planting, or about February in the northern



Fig. 50. Single-eye Grape cutting.

states. The most advisable method of treatment varies with the season and locality as well as with the

species or variety. It is well known, for instance, that the Delaware grape can be propagated more easily in some regions than in others. A common style of single-eye cutting is made with the eye close to the top end, and a naked base of an inch or two. This is inserted into the soil perpendicularly, with the eye just above the surface. It is much used for a variety of plants.

Many coniferous plants are increased by cuttings on a large scale, especially retinosporas, arbor-vitæ, and the like. Cuttings are made of the mature wood, which is planted at once (in autumn) in sand under cover, usually in a cool greenhouse. Most of the species root slowly and they often remain in the original flats or benches a year, but their treatment is usually simple. In some cases junipers, yews and *Cryptomeria Japonica* will not make roots for nearly twelve months, keeping in good foliage however, and ultimately giving good plants. (For more explicit directions, see *Thuja* and *Retinospora* in Chapter VI.)

Most remarkable instances of propagation by means of portions of stems are on record. Chips from a tree trunk have been known to produce plants, and the olive is readily increased by knots or excrescences formed upon the trunks of old trees. These excrescences occur in many plants and are known as *knours*. They are often abundant about the base of large plane-trees. But they are not often used for purposes of propagation. Whole trunks will sometimes grow after having been cut for many months, especially of such plants as cactuses, many euphorbias and yuccas. And sections of these spongy trunks will grow, also. Even saw-logs of our common trees, as elm and ash, will sprout while in the "boom," or water.

Green-wood cuttings are more commonly employed than those

from the mature wood, as they "strike" more quickly, they can be handled under glass in the winter, and more species can be propagated by them than by hard-wood cuttings. "Slips" are green-wooded cuttings, but the term is often restricted to designate those which are made by pulling or "slipping" off a small side-shoot. All soft-wooded plants and many ornamental shrubs are increased by green cuttings. There are two general classes of green-wood cuttings : those made from the soft and still growing wood, and those made from the nearly ripened green-wood, as in *Azalea Indica*, oleander, ficus, etc. House plants, as geraniums, coleuses, carnations, fuchsias, and the like, are grown from the soft young wood, and many harder-wooded plants are grown in the same way. Sometimes truly hard wood is used, as in camellia.

In making cuttings from soft and growing shoots, the first thing to learn is the proper texture or age of shoot. A very soft and flabby cutting does not grow readily, or if it does it is particularly liable to damp off, and it usually makes a weak plant.



Fig. 51. Tough and brittle wood.

Too old wood is slow to root, makes a poor plant and is handled with difficulty in many species. The ordinary test for beginners is the manner in which the shoot breaks. If, upon being bent, the shoot snaps off squarely so as to hang together with only a bit of bark, as in the upper break in Fig. 51, it is in the proper condition for cuttings ; but if it bends or simply crushes, as in the lower portion of the figure, it is either too old or too young for good results.

The tips of the shoots of soft-wooded plants are usually employed, and all or a portion of the leaves are allowed to remain.

They are inserted in sharp sand to a sufficient depth to hold them in place, and the atmosphere and soil must be kept moist

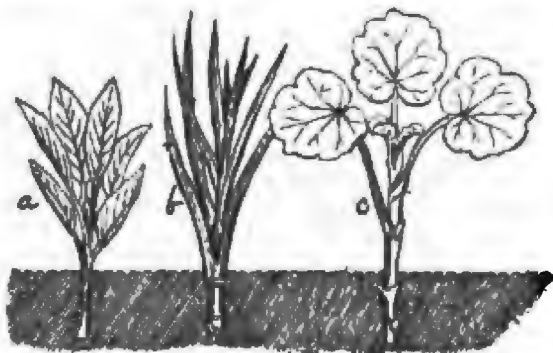


Fig. 52. Soft cuttings.

to prevent wilting or "flagging." The cuttings should also be shaded for the first week or two. A propagating-frame is often employed. Soft cuttings are commonly cut below a bud or cut to a heel, but this is unnecessary in easily

rooted plants like geranium, coleus, heliotrope, etc. Fig. 52 shows an oleander cutting at *a*, a carnation at *b*, and a geranium at *c*. A coleus cutting is illustrated in Fig. 53. Sometimes the growth is so short or the stock so scarce that the cutting cannot be made long enough to hold itself in the soil. In such case a toothpick or splinter is tied to the cutting to hold it erect, as in the cactus cutting, Fig. 54, or the geranium cutting, Fig. 55. In the window garden, soft cuttings may be started in a deep plate which is filled half or two-thirds full of sand and is then filled to the brim with water, and not shaded; this method, practiced on a larger scale, is sometimes useful during the hot summer months. If bottom heat is desired, the plate may be set upon



Fig. 53. Coleus cutting.

the back part of the kitchen stove. Oleanders usually root best when mature shoots are placed in bottles of water.

Cuttings from the nearly mature green wood are employed for hard-wooded trees and shrubs, as diervillas (weigela), roses, hydrangeas, lilacs, etc.

They are cut in essentially the same manner as the hard-wood cuttings described on page 55. They are often taken in summer when the buds have developed

and the wood has about attained its growth. They are cut to two to four or five buds and are planted an inch or two deep in shaded frames. They are kept close for some days after setting, and the tops are sprinkled frequently. Care must be taken not to set them too deep; they are rarely put in over an inch, if the cutting is six or seven inches long. "June stock cuttings" are sometimes advantageously made; here the young shoots of hardy shrubs are taken, when about two to three inches long, the leaves partly removed, and they are planted under glass, precisely as the geranium is treated in the autumn. Several weeks are required for rooting, but good plants are obtained which, when wintered in a cold frame, can be planted out in beds the next spring. Great care must be given to shading and watering.

Hydrangea paniculata var. *grandiflora*, and *Akebia quinata* are examples; or any deutzia or more easily handled plant of which stock is scarce may be cited.

Fig. 54.
Cactus
cutting
held by
splinter.

Part of the leaves are removed, as a rule, before the cuttings are set, as shown in the rose cutting, Fig. 56, and the hydrangea cutting, Fig. 57. This is not essential, however, but it lessens evaporation and the tendency to "flag" or wilt. In most species the top can be cut off the cutting, as seen in Figs. 44 and 57, but in other cases it seriously injures the cutting. Fig. 58 shows a weigela cutting from which the top was clipped. An unusually large callus formed at the bottom, but the leaves shrivelled and the cutting is dead. This frequently occurs in what some nurserymen call "end growers," among which may be mentioned weigelas (properly diervillas), the shrubby altheas, *Cercis Japonica*, and

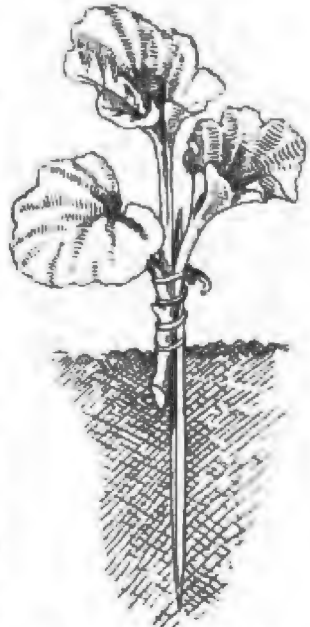


Fig. 55. Cutting held by toothpick.

such spireas as *S. crataegifolia*, *S. rotundifolia* var. *alba* and *S. Cantonensis* (*S. Reevesii* of the trade) var. *robusta*.



Fig. 56. Rose cutting.

These hardened cuttings, about two inches long, are often made in the winter from forced plants. This is particularly the case with roses (which see in Chapter VI). Cuttings taken in February, in the north, will be ready to transfer to borders or nursery beds when spring opens. Stout, well-rooted stock-plants are used from which to obtain these cuttings, and they are cut back when taken to the house in the fall in order to induce a good growth. Many hardy shrubs can be easily propagated in this way when the work is difficult in the

open air, *e. g.*, *Spiræa Cantonensis* (*S. Reevesii* of the catalogues) and *S. Van Houttii*. Stock plants of the soft species, like coleus, lantanas and geraniums, are obtained in like manner.

4. Leaf Cuttings.—Many thick and heavy leaves may be used as cuttings. Leaf cuttings are most commonly employed in the showy-leaved begonias, in succulents, and in gloxinias, but many plants can be propagated by them. Even the cabbage can be made to grow from leaf cuttings. The whole leaf may be used, as shown in Fig. 59. It is simply laid upon moist sand in a frame and held down by

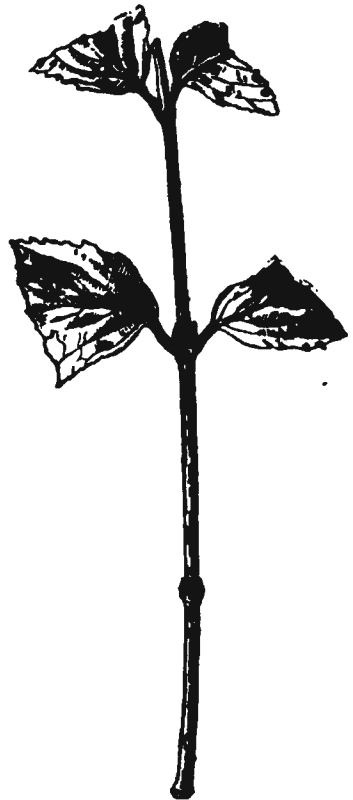


Fig. 57. Hydrangea cutting.