Home propagation.

J. L. Budd
Iowa State College

Follow this and additional works at: http://lib.dr.iastate.edu/bulletin
Part of the Agriculture Commons, and the Agronomy and Crop Sciences Commons

Recommended Citation
Available at: http://lib.dr.iastate.edu/bulletin/vol3/iss34/5

This Article is brought to you for free and open access by the Extension and Experiment Station Publications at Iowa State University Digital Repository. It has been accepted for inclusion in Bulletin by an authorized editor of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
Home Propogation.

By J. L. Budd.

The belief in the prairie states has been too common that only the professional nurseryman can successfully propagate the fruit trees, ornamental trees, shrubs, bulbs, perennial plants, etc., needed for the fitting up of the true home.

But a change of belief is now indicated by the reception of many queries as to the best way of propagating a favorite tree, shrub, or flower. As a rule the querists do not ask how to bud, graft, or set a cutting but the way to save and plant certain seeds, the best way to increase the number of a favorite bulb or perennial, or the best way of propagating a variety of fruit tree, ornamental tree, or shrub.

Hence at this time no attempt will be made to describe the methods of budding, grafting, etc. Usually in every neighborhood some one can be found who can give object lessons in such work of more value than printed instructions. The present purpose is to give some of the general principles of propagation as adapted to the home life, and in some cases the modes and methods that will give the best results in our soil and climate.

STRATIFIED SEEDS.

What is known as "stratification" of seeds is simply mixing them with sand in the fall in pots or boxes before they are much dried. In most cases the pots or boxes are buried in dry ground just below the surface of the earth where they will freeze solid in winter. In other cases the stratified seeds are kept in the cellar. As a guide in home propagation the following lists are given which are, by no means, exhausted: We bury outside for freezing stratified seeds of apple, pear, cherry, plum, peach, grape, strawberry, raspberry, blackberry, Black haw, tree cranberry, black wild cherry, red wild cherry, sand cherry, buffalo berry, wild olive, honey locust, black locust. Siberian almond, dwarf Juneberry, asparagus, barberry, bearberry,
Rosa rugosa, buckthorn, caragana, hackberry, gas plant, hazel nut, bush honey suckle, mountain ash, Russian privet, mock orange, mulberry, hop tree, snowberry, bladder nut, lilac, and basswood.

Some of the stratified seeds kept in the cellar are green and white ash, box elder, hard maple, acorns, chestnuts, buckeye, coffeetree, and the shellbark hickory.

In planting the stratified seeds we plant seed and sand together with the exception of such nuts as hickory, chestnuts, buckeye, and coffeenuit, which are separated to facilitate proper planting. As with nuts it is best to drop on mellow ground merely crowding them down with the heel. If pressed down firmly they will start the tap root naturally, but if buried as deep as corn they will often rot.

The black walnut and butternut do not succeed well when stratified. It is best to place them in thin layers on a smooth spot under trees, with their outer shucks on, and cover with three inches of leaves. In planting them merely crowd them down with the heel. All stratified seeds should be planted early or they will sprout in the pots or boxes.

ANNUAL FLOWER SEEDS.

The finest modern varieties of such old favorites as the verbena, China aster, cockscomb, Nierembergia, Drummond phlox, vinca rosea, pansy, and balsam, have seeds too delicate and small for outdoor planting. If properly planted in hot beds, or shallow boxes kept in the house, and properly transplanted when small, into thumb pots, about every seed at planting time makes a fine plant to take its proper position in the beds or borders. With this plan we can afford to buy the select named varieties which are always finer than mixed seeds.

In our day we can buy glazed cypress hot bed sashes for one dollar and fifty cents each. Two of these sashes will cover a bed six feet square and by storing them when not in use they will last many years. The thumb pots for transplanting are also very cheap and with care will last a life time. If the hot bed is not available we can use flat boxes, properly drained, filled with rich earth. Press the small seeds down firmly with a short piece of board, as dropped on the surface, and cover at once with thick paper. Untarred porous carpet or building paper cut in proper shape makes a good covering to lessen evaporation and give the requisite darkness. In watering take
off the paper and sprinkle with a fine spray watering pot, replacing the paper at once. When the seeds throw down roots the paper can be taken off. When grown in boxes, if the thumb pots are not available, the plants can be transplanted into larger boxes far enough apart to take up with a ball of earth in final transplanting after thorough wetting of the soil in the box. The use of paper to secure darkness for slightly covered seeds and to lessen evaporation, permits us to grow in the living room, even such delicate seeds as the verbena.

PROPAGATION BULBS, CORMS AND TUBERS.

Many of our modern developments of these can be propagated at home quite as well as in Holland. Indeed some of them do better in our soil and air than in Holland or Bermuda.

BULBS.

These are scaly as in the tulip and lily, or composed of concentric coats or layers as in an onion, and hyacinth. Of the beautiful modern lilies of the Japan and Asiatic types we do not as yet know how many are hardy in open air with only a slight protection of leaves in winter. As an instance it has been discovered that Lilium speciosum punctatum is as hardy as our native lilies. Yet it is not excelled in its gorgeous beauty.

From a single bulb any home owner can soon supply the neighborhood. The old bulbs soon divide into sections of four or five scales, each of which will make a large flowering bulb in one season. Also Lilium speciosum and auratum develop numerous offsets called bulbels, on the lower part of the flower stalk. The larger ones of these will make good bulbs in a rich well prepared bed in one season, and the smaller ones, covered in winter, will fully develop in two seasons. With propagating frames the single scales of these hardy lilies will root and develop into good bulbs in two years. In other groups of lilies the bulbels form on the crown of the mother bulb with a circle of roots between them and the old one, and in some species bulbels of quite large size form above the old one as in the gladiolus. In the hyacinth they form at the base of the bulb. The close observer will soon learn to locate the embryonic bulbs, and profitably utilize them in propagating. In the beautiful modern tiger lilies the embryo bulbs form in the axis of the leaves. In this case
they are called bulblets. These planted like seeds develop into good bulbs in two years.

The tulip also can be propagated rapidly in our soil and air. Its bulb is an interesting study. When we plant in October, a bed of the choicest modern tulips each bulb seems solid as an onion. But in the spring the bulb throws up leaves and a flower stem while from its scales one or more secondary bulbs emerge for next year's growth and flowering. Again, from the side of these secondary bulbs spring numerous tertiary bulbs which flower the third year after their formation. From a bed taken up in July, after flowering, we can pick off hundreds of these little bulbels that will develop in well prepared garden beds into strong bulbs in two years. These together with the small secondary bulbs, which develop in one year in the garden, enables us to propagate the finest tulips very rapidly.

CORMS.

This class differs from the bulbs in their solid formation as in the gladiolus and crocus. In this class a new corm forms above the old one which, as the season advances, dries up as in the gladiolus. But, as in the bulbs, a large number of little cormels are found about the under part of the new corm. The largest one of these in good rich beds will form full sized corms for flowering in one season and the smaller ones will develop in two years. But as most of these corms are tender they cannot remain in the garden over winter as with the lilies and tulips.

TUBERS.

The tuber forms below the earth as in the potato and dahlia. These are propagated from sections of the tuber with an eye attached. But in the dahlia the buds are all at the upper end of the tubers. It is difficult to divide them as taken up in the fall so as to be certain that a bud is present in each section. If the tubers are kept in a dry warm place the buds will start early in the spring when the division can be made. The smallest tuber, with a bud, will make a strong flowering plant the same season. But the professional propagators plant the whole cluster of tubers in a hot-bed in the spring. They throw up numerous roots which are taken off with a small heel of the tuber attached and root quickly with a genial but mild bottom heat.
The magnificent herbaceous varieties of the paeony of our day have tuberous roots which divide at the crown like the dahlia. In the early spring after the buds have started a large hill can be taken up and divided into as many sections as we find buds. As all the best modern types are derived from east European and north Asiatic species they are hardy in the north with slight winter covering of leaves or coarse manure. They should be common in every neighborhood in the northwest.

ROOTSTALKS.

Botanically this class is called rhizome. The rhubarb, lily of the valley, and canna, are familiar examples. Literally in this class there is an extension of the crown with a large bud at each joint. In the beautiful modern cannas the rootstalk extends and from the one bud, with section of rhizome, planted in the spring we have in the fall perhaps a dozen buds with an attached section of the rhizome. In the lily of the valley the root stalk is divided so as to form what florists call “pips,” which are handled like bulbs in the sale room of florists and seedsmen.

FLESHY ROOTED PLANTS.

These are variable in propagation. In some cases biennials may be made perennial by division. As an example the modern double hollyhock flowers the second season, and often the third, and perishes. But if the second fall, and annually thereafter, the roots are taken up and divided with a sharp knife, they may be increased rapidly and be perpetuated like a true perennial.

The dicentra, hemerocallis, yellow day lily, and most all fleshy rooted perennials, can be rapidly propagated by crown division. In most cases it is best to divide in the fall and pack away the divisions in a box with sand, for spring planting.

PERENNIALS.

All the best hardy perennials such as fraxinella, perennial phlox, perennial poppy, aquilegia, clematis, iris, pyrethrum, sedum, and herbaceous spiraea, can be rapidly propagated by crown division and winter treatment as recommended for the fleshy rooted perennials.

SMALL FRUITS.

The propagation of our small fruits, as well as their varieties and management are better understood by our people than any other section of horticulture. It is also
true that our societies, institutes, horticultural reports, and papers, give much attention to the small fruits. Hence at this time I will only say of the strawberry that in our climate the home supply will be more regular and of better quality if the matted rows are formed by mingling the staminate and pistillate varieties. This is done by planting the two rows only eighteen inches apart and alternating the varieties in the two rows so as to intermingle the plants as they take root. This perfect mingling of the perfect and imperfect plants gives good crops and perfect berries during seasons when the common systems give a small yield and knobby fruit. With this system some one in the neighborhood should grow the best varieties separated on rich ground and not permitted to fruit. The young plants propagate in this way and taken up with long roots are vastly better for new plantations than plants from bearing rows and they are free from seedlings which soon mix our best varieties.

THE ORCHARD FRUITS.

The most enduring and perfect tree or bush in any climate is the one grown from seed and standing where its tap root first went down. This is not disputed in Europe or America. But the growing of our long cultivated, and more or less mongrel orchard varieties, from seed is evidently not possible. The next best, that is very near to nature, is the tree or shrub grown from sprouts, root cuttings, or cuttings of the young wood.

Commercial propagators in Europe and America have denied this proposition, but it is supported by disinterested experts and horticultural schools over the old world so far as known to the writer. The careful observer in Europe will find that the roadside fruit trees that are thrifty, long lived, and fruitful, are always on their own roots, and the most profitable centers of commercial fruit growing are hostile to all trees that are budded or grafted. This state of things has given rise to the extreme statements quoted in the "nursery book" by Prof. Bailey, of New York, like the following by Burbridge: "We doubt if there is a greater nuisance in the whole practice of gardening than the art of grafting. It is very clever, it is very interesting, but it would be no great loss if it is abolished altogether. It is for the convenience of the nurseryman that it is done in nine cases out of ten, and in nearly all instances it is not only needless but harmful. If we
made the nurseryman give us things on their own roots they would find some quick means of doing so. We want no coddled or grafted stuff when own rooted things are in all ways infinitely better, healthier, and longer lived. Any plant once grafted becomes exceedingly difficult of increase except by grafting.”

In the horticultural schools these extreme views are modified. They teach that budding and grafting are useful arts and that the war on such propagation comes from the too general use of uncongenial or devitaetized stocks. Prof. Bailey defends the almost universal systems of budding and grafting of our country. Yet he says: “If there are plants upon which grafting is entirely successful then all must agree that the operation itself-per se is not wrong, however many cases there may be to which it is not adapted. Grafting has been indiscriminately employed, and it is apparent to every one that there have been many failures.”

FROM SPROUTS AND ROOT CUTTINGS.

With us, where grafting and budding are so universal, the usual query is: “How shall we get trees on their own roots?” As a rule all our root grafted trees of plum, cherry, apple, and pear, are on their own roots when two years old. That is the most of them will throw out roots from the scion. This is specially true of the very hardy apples, pears and cherries, grown in northern Iowa which often root from the scion the first year. To get trees that will certainly be reproduced from root cuttings or sprouts all that is necessary is to cut off the seedling root when planting in orchard. If the seedling root is not cut off, where the trees are set in the orchard from four to six inches deeper than they stood in the nursery, they will soon be on their own roots. In hundred of instances we have found people digging up sprouts in garden and orchard for burning that were true to the variety planted. This is specially true of the cherry and plum which, with us, sprout more freely from the root than the apple, pear, and peach. But as Burbridge says, in Europe and Asia where grafting has not been practised, the latter sprouts as freely as the cherry and plum. With a little cultivation of the observative faculties the novice can distinguish the leaf and bud of the cultivated cherries from the sprouts of the mazzard, and it should not be forgotten that the mahaleb root never sprouts. So it is easy to determine
whether the cherries are on own roots. With our native plums on native plum roots it is not so easy. But with foreign plums on native roots we can make no mistakes. With some practice no mistakes will be made with sprouts of any of our orchard fruits as the leaves and buds of our best cultivated varieties do not much resemble those of seedling stocks, yet the absolutely certain way to propagate for home use or sale from sprouts or root cuttings is to start with root-grafted trees, sorted at the nursery so as to only include those that have rooted from the scion, and clipping off the seedling root.

In growing trees from root cuttings of apple, pear, cherry, plum, and peach, as well as all other trees and shrubs that show a tendency to sprout from the crown or surface roots, or can be made to sprout by wounding the root by plow or spade, it is best to use young excitable surface roots less than half an inch in diameter. These are cut into sections about three inches long in the fall and packed away with sand in a box kept in the cellar over winter for callusing and bud development. In the early spring they are stuck in the mellow soil obliquely so that the top is about half an inch under the surface of the earth. Such cuttings start a tap root and side root very much after the plan of roots from the seed.

FROM CUTTINGS OF THE YOUNG WOOD.

In climates with a moister summer air, fruit trees can be grown readily from cuttings of the young wood as we propagate the currant, gooseberry, mock orange, honey suckle, poplars, willows, etc. In Chiloe, in South America, for instance, in starting an apple orchard a branch is stuck into the earth which soon roots and in two years is in full bearing. In the moist air in France, and other parts of west Europe, apples and pears are often grown from cuttings of the new wood in the open air, and the same is true in the Southern States in growing some kinds of apples, pear, and plum.

With us our air is too dry to give profitable results from such attempts, but we can and do start fruit tree cuttings by grafting them on short pieces of roots. With the apple this is now the approved method in nearly all parts of the prairie states, and with the cherry on mazzard root and the pear on French stocks the same use of long scion and short root is now practised by deep setting in nursery to develop roots from the scion. In all such
cases the root is a mere aid to the growth of a cutting and the process is very near to nature and nature's methods.

STOCKS FOR BUDDING.

The European war on budding and grafting has mainly come from the too extended use of stocks not wholly congenial to the varieties worked upon them, the use of stocks not suited to special soils or climates, or using stocks grown from seeds of the cultivated fruits devitalized by over development of pulp. The real truth is that budding given varieties on congenial hardy stocks wholly adapted to given soils and climates is a process near to nature and not to be condemned. As an instance, growing our native and hardy foreign plums and prunes on thrifty native plum stocks makes a long lived and profitable tree nearly or quite equal to one on its own roots. Again, our hardy cherries properly budded on stocks of the wild red cherry (Prunus Pennsylvanica) will probably give a tree nearly equal in value to one grown from cutting of top or root. The same would be true of budding apple and pear if we were able to secure stocks as hardy as seedlings of the Anis or Recumbent apple, or the wild pear of Russia. In home propagation by budding, the most useful present line of work will be with the plum and cherry. Put away pits of the best native plums and the wild red cherry in sand for winter freezing by burying outside. In the spring plant rather thinly on rich, well prepared soil and when up give first class culture. By the middle of August the stocks will be large enough for budding. Such stocks are young and excitable and the buds inserted by a novice rarely fail. As to methods of budding and tying, and after care, every neighborhood has at least one person who can give the needed instruction better than can be done on the printed page, and the same is true of outdoor and indoor grafting.

BY LAYERING.

This is one of nature's methods of home propagation with a wide range of application. Some species are slow in starting roots from the buried shoots, but all varieties and species we have tried root within two years, and very many where we bury young and excitable shoots in August root in sixty days. In Germany even the school children are taught to lay down shoots of the fruit trees, roses and other shrubs and trees, and report on the varied time required for rooting. In spring layering of fruit trees,
grapes, and shrubs, it is best to lay the shoot flat in a trench four inches deep, and peg it down tightly on the bottom. It lies exposed to the sun until shoots start upright from each bud and reach a height of three inches, when the trench is gradually filled as growth progresses, until the trench is filled. The first roots do not come from the old shoots but from the base of the new and excit­able shoots that spring from the buds. It is really root­ ing a green wood cutting while yet attached to the shoot. In the fall when cut apart we often have, on the same shoot, fifteen or more plants which are wintered by pack­ ing away in boxes in the cellar as we pack root grafts. We have rooted in this way all the orchard fruits, grapes, roses, and about all the shrubs we have tried.

Summer layering consists in laying down the young shoots usually of the same season’s growth. At the point where the shoot is buried for rooting the shoot is twisted until the sap starts. This injury starts the callus which usually precedes rooting. Plants that root easily, such as grape, spiraea Van Houttii, climbing honey suckles, and Virginia creeper, develop in this way strong roots before severe frosts occur.

INARCHING.

This is often useful on the home grounds. To illus­trate: In the German schools the young students plant in the spring cherry seedlings around a low topped cherry tree near the ends of branches. In June when growth is about complete the boys are taught to slice the bark, with a bit of wood attached, from the side near the top, of a seedling. A shoot of the tree, sliced in the same way, is bent down and the two cut surfaces are brought together, tied, and covered with wax or clay. If with clay a rag is wound around to hold it in place after drying. In this way at every home the children should be taught to in­arch the roses, grapes, shrubs, fruits, etc., joined with the lesson that the cherry must be on cherry, the plum on plum, the rose on rose, etc.

TOP-WORKING.

This should also be practiced by the home occupants. At this time only some of the essentials to success will be noted. As to season the plum and cherry should be grafted on pleasant days in March, or at least in north Iowa before there is a show of sap starting. The scions of hardy varieties can be cut as wanted for use. As a
rule this is the best. If cut in the fall they are quite cer-
tain to be too dry or too moist. In top-worked native
plum stocks, while the new top is extending growth the
outer layer of bark often gets so hard that it cannot ex-
pand when the new deposit of wood forms in June. In
such cases the stem is hide-bound, soon resulting in over
growth of the top and the death of the tree. The remedy
is to slit, in three or four places, the outer bark from the
limbs to the ground. In some cases we have peeled off
the whole outer bark after the slitting, especially after
we had grafted cherry on plum. By peeling off the rings
of outer bark the first year the cherry bears well for a
number of years on plum stocks. In top-working the
apple the best time is when the buds begin to start and
with hardy sorts it is quite as well to cut scions as used.
The remaining maine essential is: not to take off all the
growing wood from the stock the first season. In top-
working the plum and cherry we leave fully half the
growing wood of the stock. If the growth interferes
with that of the grafts we clip it back during the sum-
mer, but it is not removed wholly until early the next
spring and if the growth of grafts is not strong the extra
wood is left on two years. The same is true of top-work-
ing the apple and even the willow and other trees and
shrubs in our climate.

These notes are only original so far as long experience
enables the writer to adopt them to our soil and climate.