

THE NURSERY

— AND —

THE ORCHARD.



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THE NURSERY

AND

THE ORCHARD.

A PRACTICAL TREATISE ON FRUIT CULTURE.

ILLUSTRATED.

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PREFACE.

This little Book, BRIEF AND PLAIN, was not written for experienced Pomologists.

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CHAPTER I.

THE PARTS OF TREES AND THEIR FUNCTIONS.

A tree is a living body, composed of various parts, which have certain functions to perform; and in order that it may be managed intelligently and successfully,

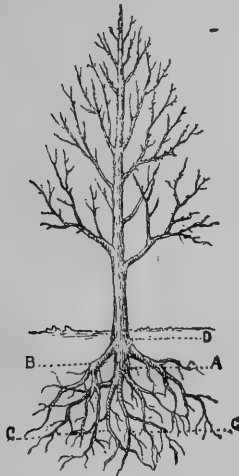


Fig. 1.

it is necessary that the manner in which these offices are performed, and their effects upon the tree, be thoroughly understood.

The organs of vegetation of a plant are *root*, *stem* and *leaves*, the first two of which are shown in figure 1. The

root is the portion which takes nourishment from the soil and gives it to the plant. It is composed of the *main* or *tap* root, A, its laterals, B, and the rootlets or fibres, C, C. It also has a large number of exceedingly minute root hairs, not visible to the unaided eye, which absorb moisture very rapidly. The old portions of roots that are covered with hard bark imbibe very little. Trees that naturally have very long tap roots are made to throw out laterals, thus inducing more rapid growth and greater fruitfulness, by shortening the tap root, which checks the growth at its extremity.

In taking up trees, as it is usually done, the most of the smaller roots are destroyed, and unless circumstances are favorable and the tree has sufficient vitality to re-produce them, growth cannot follow, and the tree dies. Hence, it is necessary to successful transplanting that the roots be injured as little as possible.

The collar is the point of union between root and stem, just beneath the surface (*D*, *fig. 1*.) The stem is the part above the collar that sustains the branches. Both stem and branches are composed of an outer and inner layer of bark, sap wood, perfect wood and pith. Buds are formed on the tree, some of which develop into leaves and aid in its growth.

THE PROCESS OF GROWING.

The cells of the roots charge themselves with moisture from the soil, which is carried up through the sap wood until it reaches the leaves. Here, under the influence of the sun, it passes through important modifications and descends through the inner bark, depositing a layer of

cambium, the most of which, when hardened, forms a layer of new wood, a small portion being converted into bark. This process is kept up during the season, and in many instances during the successive years of a long period, depositing more or less wood each year, according to the species and condition of the tree.

It is an easy matter to determine the age of a tree by counting the layers or rings in a cross-section of the stem, each of which represents a year's growth. (See *fig. 2.*)

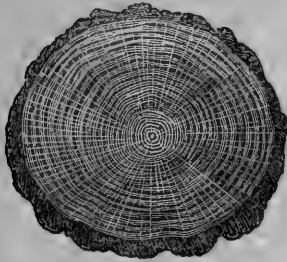


Fig. 2.

It will be seen from the process of growth that the roots and stem are mutually dependent upon each other, and that the success of the tree depends upon their being vigorous and properly proportioned. The outer bark when young performs an office similar to that of the leaves, but in some trees it gradually becomes a hard substance, which only affords protection to the more delicate, underlying parts. The heart or perfect wood adds stability to the tree, and the pith while young promotes growth by retaining moisture. In old trees the pith becomes dry, often disappearing entirely, without any apparent dam-

age. Thus we see that all parts of the organs of vegetation perform important offices in the growth of trees.

The *leaf*, which is so essential to the process of vegetation, is represented in figure 3. It is composed of the

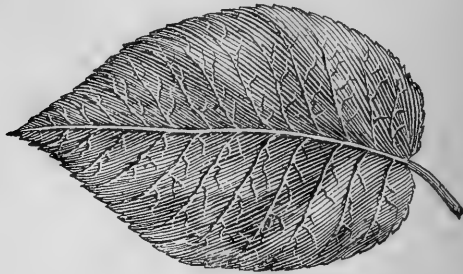


Fig. 3.

frame-work to support the leaf and supply it with sap, and the pulpy portion, which is composed of numerous cells. By the aid of powerful microscopes, an almost incredible number of breathing pores are discovered on the leaf, through which air and moisture pass during vegetation. In addition to the buds, which develop into leaves, in bearing trees, are found other buds, the object of which is not the growth of the tree, but the

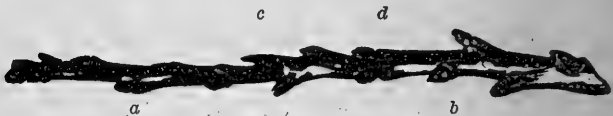


Fig. 4.—Stick of buds, showing the leaf and fruit buds, single, double and triple.

continuation of the kind. These buds (*a and b, fig. 4*) expand into flowers, and, after passing through various

stages, develop into the ripened fruit, containing seeds, which, under the proper conditions, will produce trees similar to the one from which the bud was taken, but not necessarily producing fruit similar in all respects.

CHAPTER II.

SEEDS AND SEEDLINGS.

Seeds are ripened ovules, which, under the proper conditions, develop into plants. They should be taken from plants that are healthy and vigorous, and to insure germination require heat, air and moisture, but not light. The seeds of fruit trees are usually planted in nurseries for the purpose of raising stocks to be budded or grafted.

Apple seeds are obtained by washing them from pomace taken from cider mills. They are then mixed with three or four times their bulk of sand, and kept in a cool, shady place till early spring. Freezing and thawing will not injure them. They are then planted in nursery rows, three and one-half feet apart, in good soil, at about the rate of one bushel per acre. For raising only a small number of seedlings, well ripened apples may be broken up and planted at once. Some of the seeds will come up the following spring. Excellent apple seeds are obtained from France and sold by dealers in a dry condition. They are prepared for planting in the spring by mixing them with sand and burying them in a hole one or two feet deep in the open ground in a layer a few inches in depth. If not received before February the seeds should be soaked in water a day or two before being buried. The hole is then covered securely with boards, and dirt placed on them a little higher than the surrounding surface. This is one of the numerous meth-

ods of managing dry apple seeds. Success with fruit tree seeds of any kind is more certain if they are not allowed to become dry. As soon as the buried seeds show signs of sprouting (*fig. 5*) they are taken up and planted.



Fig. 5.—Apple Seed and Young Plantlet.

Handle them carefully and cover lightly. If to be grafted where they grow, leave the young seedlings about six inches apart; if to be taken up and grafted in the hand, or transplanted to obtain another year's growth before being grafted, they can be left closer together and the rows need not be so far apart.

If well cultivated, the young seedlings can be budded the ensuing summer, or grafted the following winter or spring. Any one desiring to propagate some valuable apples at once, and not having the stocks, can obtain them at very low prices from most nurserymen. The seeds from our native crabs make hardy stocks. A few

ounces of seed obtained from a reliable seedman and treated as directed in this chapter will produce enough seedlings for an experiment which will usually result in the production of a number of first-class trees. Seedlings of all kinds require careful cultivation to insure a vigorous growth the first year. Healthy trees cannot be obtained from diseased seedlings.

It is claimed that the Best Peach Seeds are obtained from the sound, ripe fruit of seedling trees, called natural, as distinguished from the seeds of budded and grafted trees. It is true, however, that the perfect seeds of strong, healthy budded or grafted trees produce seedlings on which excellent trees are grown.

The seeds of the very early varieties are imperfect and will not germinate when planted. Do not allow peach seeds to become dry; but as soon as gathered place them in a box or barrel mixed with dirt and leave exposed to the weather. Plant early in the fall, in moderately rich soil. Land that will produce one-half a bale of cotton per acre without manure is rich enough. It is a good plan to sow peas on the ground intended for peach seeds and turn under in the fall. Prepare the land the same as for cotton, and plant the seeds two or three inches apart in rows three and one-half feet distant. Cover two or three inches deep.

If too thick when they come up in the spring, thin out the young seedlings to five or six inches apart.

If seeds become dry and are not planted till spring, they should be cracked before planting. When scarce, it is a good plan to spread the seeds out on a smooth piece of ground in a layer a few inches deep, with a covering of three or four inches of sand. When exposed in this

manner to the freezes of winter they begin to sprout early in the spring. They are then taken up and sifted to separate them from the sand.

All that are sprouted are planted at the distance the seedlings are desired to stand—from five to twelve inches, according to soil. The seeds that show no signs of sprouting are put back into the bed to remain a few days. By repeating this process several times the most of the seeds that would come up the first year can be separated from the others and planted. In this way a regular stand will be obtained. If planted in the fall there will be some irregularity. Seeds can be kept in good condition from summer till fall in a dry cellar mixed with dirt. If from any cause the seeds cannot be planted early in the spring, sprouting may be retarded by burying them deep in the ground. Peach seeds from the North should be avoided, as the yellows, a fatal disease, prevails in some sections of the Northern States. Small quantities of peach seedlings may be obtained in spring by transplanting to nursery rows, the volunteers found under bearing trees, when one or two inches high.

If the ground is moderately fertile and the seedlings are well cultivated they will be large enough to bud the summer after planting; if to be grafted, it is done the following spring. Small peach seedlings can be taken up and grafted in the hand the same as apples, but they do not succeed so well. (See chapter on Whip Grafting.) Peaches are usually budded at the North.

Plum and almond seedlings are used to some extent as stocks for peaches; but on most soils the peach succeeds best in the United States, when budded or grafted on its own roots. The best soil for the peach is a good sandy

loam—the worst a stiff clay. The trees are usually planted in the orchard when one year old from the bud or graft. They are sometimes budded very early in the summer and transplanted when only one year from the seed. These are known as June buds.

Pear Seeds are obtained and planted in the same manner as apple seeds, but owing to the difficulty of managing them successfully in this country, large quantities of both seeds and seedlings are brought from France. Persons desiring to raise a few pears for their own planting can obtain French seedlings from nurserymen in this country, which can be budded or grafted after receiving one or two years' careful cultivation in deep, rich soil.

Plum and cherry seeds are treated in the same way as the seeds of the peach.

CHAPTER III.

PROPAGATION OF VARIETIES.

Living at an age when thousands of choice varieties of fruits are in cultivation, we perhaps do not properly appreciate the labors of the pomologists, who, by making it a life work, have transformed the insipid peach, the sour crab and the wild and worthless pear into the luscious fruits that we now have in our orchards and fruit gardens. A great deal of pleasure can be derived from the attention and constant watch-care which it is necessary to bestow upon plants in order to produce valuable new varieties; but what most interests the ordinary farmer and fruit grower is to know what varieties of fruit, already in existence, are best adapted to his climate and his soil, and to understand the methods by which they are propagated. After a new and choice variety has been obtained, though at first but a single tree or plant, it may, in a short time, be greatly multiplied by budding, grafting, layers, suckers or cuttings. Of these methods, budding and grafting are used principally for the propagation of fruit trees. They involve the same principles, produce like results and consist simply in the insertion of a bud, or stick of buds, of one tree into another in such a manner as to cause a union between the two, the consequent growth resulting in a new compound.

BUDDING.

Budding is the process of producing a tree from a single bud which will bear fruit like that of the tree from which the bud is taken. It is performed during the season of growth—from June till October, according to the climate and the habits of the tree. Young stocks are usually budded during the summer after planting, at any time when the bark of the stock can be raised easily, and the buds of the variety it is desired to propagate are sufficiently matured, which is usually determined by the perfect formation of the bud on the end of the shoot. An excellent time for budding is soon after a rain when the trees are growing vigorously. The only implements necessary are a knife for trimming up the stocks, and a budding knife with a thin sharp blade (*fig. 6*), for mak-



Fig. 6.

ing the incision in the bark and cutting off the bud. Some budding knives have an ivory handle, very thin at the end, which is used to raise the bark of the stock for



Fig. 7.

the insertion of the bud. To obtain buds, shoots of the present year's growth are taken from trees of the variety it is desired to propagate, and the leaves all cut away.

Half an inch of the leaf stalk is left for convenience in handling. The undeveloped buds on both ends of the shoots are cut off, and we then have a stick from the middle of the shoots (*fig. 7*), which can be used at once, or packed away in damp cloth or moss to remain a few days.

Success is more certain when they are used soon after they are cut from the tree. If the stock has limbs near the ground they are cut away and a smooth portion of bark selected where the bud is to be inserted, usually on



Fig. 8.—A row of buds as they appear after the trees have been cut off—budding carelessly done.

the north side, from two to four inches from the ground. With the budding knife, make an upright incision in the



Fig. 9.—A row of trees budded by a careful hand.

bark an inch and a half long, and a cut at right angles across the top, the whole resembling the letter T (*fig. 10*). The bark is then slightly raised (*fig. 11*.)

Take the stick of buds in the left hand, and with the budding knife cut off a thin slice of bark, about an inch and a half long, having a bud and a small portion of wood attached (*figs. 12 to 14*). It is then pushed carefully

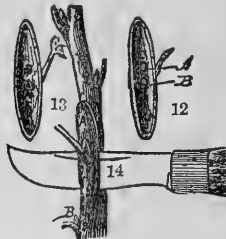


Fig. 10.—T-shaped incision made in bark.



Fig. 11.—Bark slightly raised for insertion of buds.

under the bark of the stock (*fig. 15*), and if the top reaches above the incision it is cut off so as to make a



Figs. 12 to 14.—Manner of cutting off buds (14), a perfect bud after being taken off the limb (12), and one destroyed (13.)

complete fit. Strips of bass bark, which can be obtained from dealers in nurserymen's supplies, are used for tying, so applied as to cover the entire wound, leaving only the bud exposed (*fig. 16*). Good bandages are obtained from the bark of the poplar tree by soaking it in water until the fibrous inner bark can be separated from the outer. It

is then torn into thin narrow strips to be used as needed. The bandages are softened before use by thorough wetting. They must be tied sufficiently tight to exert a moderate pressure without injuring the bark. If the operation is successful, the leaf stalk will drop off in a few days, the bud presenting a fresh, plump appearance. If the stocks are growing freely, it will be necessary to loosen the bandages in ten to fifteen days. In a month's time they may be removed entirely.

Buds usually remain dormant till the following



Fig. 15.—Bud inserted.



Fig. 16.—Tying.

spring, but if the stock is cut off several inches above the bud, soon after it has taken, and all other buds and shoots are kept rubbed off, it will make a very good growth during the first season. If well grown stocks are budded early in June, and cut off as suggested above, they will make perfect little trees by fall, and can be taken up with the roots almost entire, and when planted in the orchard often bear as early as much older trees set out at the same time. When buds are desired very early their maturity can be hastened by pinching off the ends of the

shoots. It is the general practice, however, not to cut off the stocks till the spring after budding, just as the buds begin to swell. They are then cut two or three inches above the bud, which is at once pushed into vigorous growth, and when a few inches high should be tied to the stump to prevent its being broken by the wind, and to induce an upright growth (*fig. 17*). About a



Fig 17.—The young shoot tied.

month later the stump of the stock is cut down close to the bud, as represented by the small line (*fig 17*). Some nurserymen do not practice tying up the young shoot. All sprouts that appear above or below the bud must be kept rubbed off.

In the first or second fall after budding, the tree will be large enough to plant in the orchard, and will bear fruit

like that of the tree from which the bud was taken. That the operation may be successful, wood buds must always be selected. If fruit buds are used, they will bloom, but will not make any growth. There are three classes of buds: single, double and triple, but the single are used chiefly. The wood buds are easily distinguished by their being rather slender and pointed (*c*, *fig. 4*), while the fruit buds are of a fuller and more rounded form (*a* and *b* *fig. 4*). Double and triple buds are found principally in the stone fruits. The latter are numerous in the peach, the middle one always being a wood bud (*d*, *fig. 4*).

The fruit buds of the peach are formed one year and bloom the next; hence, both wood and fruit buds are found on the same shoot of the current year's growth; but on the new wood of the apple and the pear are usually found wood buds only. *Fig. 18* represents another



Fig. 18.

method called annular budding, sometimes applied to trees with very thick bark. The figure is sufficient explanation of the process. Girdled trees are sometimes restored in this way. Budding and grafting both have their special advantages. The former is done at a more convenient season, and can be repeated on stocks that have not taken from the first operation; the latter may be applied to trees on which budding has failed, and grafted trees require less attention after the operation is performed than those that are budded.

GRAFTING.

The propagation of fruit trees by grafting has been practiced for a long period, and various methods have been employed; but as a few of the most useful and practical, with slight variations, will be found sufficient for most purposes, such methods only will be described in this work. The process of grafting is so simple, and the various results obtained from its application so satisfactory, that every owner of fruit trees should understand it perfectly. There is very little mystery connected with the operation, and almost any person can, in a short time, learn to graft successfully.

The principal object of budding and grafting is to propagate certain varieties which do not reproduce themselves from seed; but they are also used for the following other purposes:

Dwarf Trees.—By grafting a scion from one tree into another of less vigorous growth, the size is reduced, and bearing hastened, as in the case of the pear on the quince, making dwarf pear trees.

Testing New Varieties.—A new variety grafted on the limb of a bearing tree will often produce fruit the second year, while, if a young seedling is used as a stock, it may not bear in ten years.

Several Kinds on the Same Tree.—Fine specimens of fruit may be obtained from one tree during several months of the year by grafting different kinds on the branches, or a worthless kind may be changed to one of fine quality by grafting a new head.

Supplying Branches.—By grafting, trees with long barren limbs may be supplied with branches in all their parts.

Rendering Delicate Kinds Hardier.—Certain kinds of fruit may be rendered hardier, or protected against disease by grafting on other stocks, as in the case of the European grapes on American stocks to protect them against the Phylloxera.

In order that grafting may be successful, several requisites must be carefully observed: The stock and scion must be related, as the pear on its own roots, or the roots of the quince, both of which are seed fruits; or the plum on its own or the roots of the peach, both of which are stone fruits. But such a union as that of the apple and the peach cannot be effected.

The operation must be performed with sharp instruments to avoid making rough wounds which will not heal readily; and if above ground the wound must be protected by applications of grafting wax or clay. The scion must be so placed in the stock that the inner bark of the two will coincide at least in one point, thus affording a channel for the passage of the sap in its upward and downward flow, by means of which life is retained and growth effected.

The usual time for grafting fruit trees is from February till April, or just before the buds begin to swell, the cherry, plum and peach coming into the proper condition first, followed later by the pear and the apple.

The scions for grafting are sometimes taken from the trees as wanted for use, but as it is better for the stocks to be a little in advance of the scions, the latter are usually cut in the fall or winter and kept till needed in the manner recommended in the chapter on Preserving Cuttings.

Stocks for grafting are either the root or stem of

plants one or more years old, into which the scion is inserted, and from which it derives its nourishment. The scion is simply planted in the stock instead of the soil, and it determines the nature of the grafted tree. It matters not from what kind of a seed an apple seedling may have sprung, if a scion from an "Early Harvest" apple is grafted into it, the fruit from the grafted tree will be "Early Harvest" also.

It is indispensable to the vigor of the future tree that both stock and scion possess this quality in a high degree.

CLEFT GRAFTING.

Cleft Grafting is one of the most useful methods, practiced largely at the South, where it succeeds even on the peach, which is usually budded at the North. It can be applied to stocks of almost any size, and is so simple and easy that a ten-year-old boy can readily per-

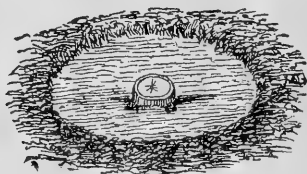


Fig. 19.

form it. *Fig. 19* represents the young seedling tree which is to be grafted, with the dirt raked away, and the top cut off at the collar of the root, ready to be split for the reception of the scion, which is taken from a tree of the variety it is desired to propagate. Small

stocks can be cut off with a strong, sharp knife, but if too large to be cut in this manner, a fine sharp saw is used, and the top of the stock smoothed over with a knife. A split is then made in the stock an inch or an inch and a half deep by driving in a knife, cutting rather than splitting, the bark.

A number of different implements have been invented, but for grafting on a small scale a thin-bladed knife of good temper for preparing the scions, and a larger one for cutting the stocks will be found sufficient.

The scion, which should be well ripened wood of last years growth, containing two or three buds, is cut into

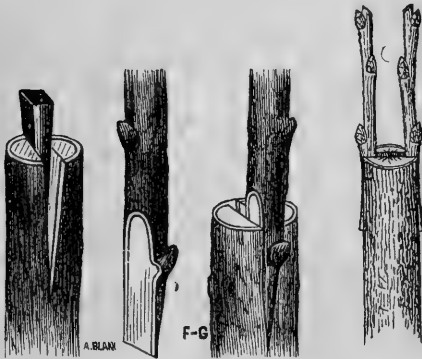


Fig. 21. Fig. 20. Fig. 22. Fig. 23.

the wedge-shape represented in *fig. 20*, with the outer edge a little thicker, in order to secure a close fit at this point. The stock is then opened with some kind of a wedge (*fig. 21*)—a small screwdriver does very well—and the scion inserted as represented in *fig. 22*, so that the inner

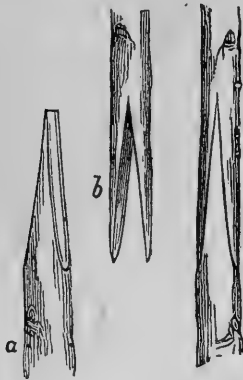
bark of the two will be together. The scions are sometimes set at a slight angle (*fig. 23*) so that the edges will be certain to meet at least in one point. Two scions may be put in large stocks. If both grow, one is cut away when a few inches high. It is a good plan to cut the scions so as to leave a bud on the wedge part, (*fig. 20*) as a point of union between the inner bark of the two parts is almost certain to be found in the peculiar curve at the bud. The dirt is then raked back carefully up to the top bud of the scion. This covering must not be so narrow and pointed that the dirt in settling will leave the stock exposed. If the stocks are split in the direction that the rows run, there will not be so much danger of the scions getting dislocated by clods of dirt in cultivating. The work is now completed, and if successful, leaves will soon appear on the scion. All shoots except the one which is to be trained up for the future tree, must be kept rubbed off from both stock and scion, being careful not to move the scion from its position. If well cultivated, the trees will usually be large enough to plant in the orchard at the end of the first or second year after grafting.

For cleft grafting above ground, see *Grafting New Heads on Old Trees*.

Very small scions are generally whip-grafted. Pieces of roots are often used as stocks, but they are not so good as whole roots.

SADDLE GRAFTING,

Which is illustrated in *figs.* 24 to 26, is sometimes useful.



Figs. 24 to 26.

SIDE CLEFT GRAFTING.

A modification of cleft grafting, which will often be found useful, is illustrated in *fig.* 27. It can be applied to seedling stocks which are standing, to whole or pieces of roots taken up and grafted in the hand, and to stems or branches aboveground. It will, perhaps, be found most useful in grafting above ground, for the purpose of supplying limbs where they are wanting on trees. When the stock to be operated upon is sufficiently large and firm, a sharp chisel about a quarter of an inch wide is used for making the cut. Set the chisel with the straight side next the stock and drive it in with a mallet about three-quarters of an inch deep in the direction the limbs take

from the tree. Prepare the scion, which should contain two or three buds, the same as for ordinary cleft grafting, except that the edges are to be cut the same thickness and one of the wedge-shaped sides left a little shorter than the other. (See *fig. 28.*)



Fig. 27.



Fig. 28.

The scion is then placed firmly in the cut, with the shorter beveled side down, leaving a small portion of the wedge part above the cut. In large stocks, if the operation is carefully performed, the scion will be held firmly in place and will not require tying. When small stocks are grafted, the cuts should be made with a sharp knife, and it will be necessary to tie after the scion is inserted. When performed above ground the wounds are protected by a coating of grafting wax.

This method will be found useful in

GRAFTING NEW HEADS ON OLD TREES.

There is scarcely an object in nature more pleasing to the sight than a well developed, symmetrical tree, laden with its yearly tribute of bright and luscious fruit.

But quite different is the effect produced by the tree that is unproductive, fails to ripen its fruit in season, or yields fruit so inferior in quality as to be utterly worthless. Still, the owner of such trees should not apply the axe to them at once, if they are well grown and in a thrifty condition, as there is within easy reach means of utilizing the well developed bodies and wide-spreading roots, and of converting the worthless fruit into a choice variety; but large trees, which bear fruit of fair quality, should not be subjected to the process, as it is sometimes the case that they die from the effects of having so much of the top pruned off. Death, however, will rarely occur if the tree is in a thrifty condition and the operation is skillfully performed.

A tree which is enfeebled from any cause should first be invigorated by moderate pruning and good cultivation and manuring.

Trees which are vigorous and well supplied with small branches should have only a portion of their tops grafted the first year.

The remaining portion will make a vigorous growth and will be in good condition for grafting the next year. It is sometimes best to leave a portion to be grafted the third year.

GRAFTING NEW TOPS ON OLD TREES.

No limb as large as two inches in diameter should be cut if it can be avoided. Let the scions be inserted in

the smaller limbs, making an effort to leave the tree in a symmetrical shape.

If the trees are well grown, and have tops made up principally of a few large branches, they should first have a portion of their tops cut away, which will induce a vigorous growth of young shoots, as in *fig. 29*. These

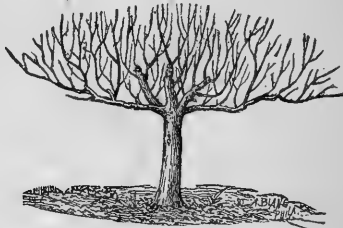


Fig. 29.—A new head grafted.

will be in excellent condition for grafting when one or two years old. The scions are inserted in the ends of the limbs in the same manner as in cleft grafting underground. They are then wrapped and waxed, and in a short time begin to make a vigorous growth. Two scions should be put in limbs three-fourths of an inch in diameter, and if both grow, one should be cut away smoothly when a few inches long. All sprouts that appear near the growing scion should be kept rubbed off. Long barren branches can be supplied with limbs wherever desired by the foregoing method of side cleft grafting. The proper time for grafting above ground is when the buds begin to swell.

The scions may be cut from the trees at the time of grafting, but success is more certain if they are retarded in the manner described in the chapter on preserving

cuttings. As the grafts gradually enlarge, the wood of the old tree can be cut away, until within a few years the entire head will be of the new and better variety.

GRAFTING WAX.

Grafting wax, to be used for protecting wounds caused by grafting above ground, may be made by the following formula :

- 3 parts beeswax.
- 2 parts rosin.
- 2 parts tallow.

Melt and work like candy.

It is applied to the wounded surface, so as to thoroughly exclude air and moisture.

GRAFTING CLAY,

which is composed of equal parts of clay and horse manure, or cow dung, is sometimes applied to the grape in preference to grafting wax.

WHIP GRAFTING.

This method is much practiced, and is particularly useful in grafting small stocks, which are usually young seedlings taken up in the winter or early spring.

After they are cleanly washed and their tap roots shortened, they are cut off at the collar of the root with a slope, and split or tongued, as shown in *fig. 30*. The scion is then cut in the same manner (*fig. 31*) and they are fitted together as in *fig. 32*, so as to insure a union of the inner bark of the two parts.

They are then wrapped firmly when they are ready to be packed away in the cellar, if in winter, or planted at once, if in early spring.



Fig. 30, Fig. 31, Fig. 32.

A number of methods of wrapping are employed—some using paper or thin cotton cloth, waxed and cut into narrow strips, while others prefer cotton warp drawn through melted grafting wax. When waxed material is used it is unnecessary to tie. The operation may be successfully performed without tying or using wax, by wrapping firmly with soft cotton strings so as to fasten one end of the string as the wrapping proceeds, the other end being looped when it is finished.

Grafting in this way may be done all through the winter, the grafts being packed away in damp soil, moss or sawdust and kept till spring, but as it requires some care to maintain the proper degree of moisture, it is better,

when only a few are to be grafted, to wait until they can be planted in the nursery rows at once. In planting, the grafts must be handled very carefully to prevent dislocating the scions. The ground should be rich and deeply plowed. Plant the grafts about one foot apart in the row, leaving the top bud of the scion even with the surface of the ground. Press the dirt firmly about them. When the stocks have long lateral roots it is better to open furrows with a spade and pack the dirt around the roots with the hand. But when large numbers of small grafts are to be planted, it can be done much more rapidly by using a dibble, which is made of a piece of wood about one foot long, pointed with iron (*fig. 33.*) With this



Fig. 33.

a hole of sufficient depth is made and the dirt pressed firmly around the graft with the dibble by thrusting it into the ground near the graft, and pressing the dirt so as to thoroughly close the opening from bottom to top. A good implement for this purpose is a trowel made of a piece of steel three or four inches wide and eight or ten inches in length. Planted in this manner, if the soil is good, the grafts, with proper attention, will often be of sufficient size for transplanting at the end of the

first year. In raising a few trees for his own planting, the fruit grower will usually obtain better results from cleft grafting stocks as they stand—without taking them up; but as much time is saved by grafting large numbers of trees during the winter months, whip grafting in the hand is a very useful method of propagation, and is much practiced. When the stock is much larger than the scion, the top and one side are cut away, as shown in *figs.* 34 to 36. As in cleft grafting, all

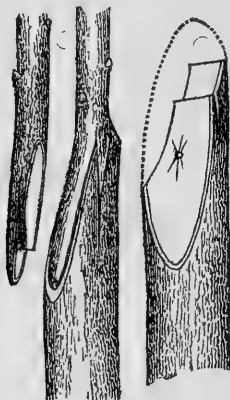


Fig. 34, Fig. 36, Fig. 35.

sprouts from the roots must be kept rubbed off, and a single bud trained up from the scion. Unless great care is taken a sprout from the root may be left for the future tree, as sometimes happens in nurseries, in this way producing a seedling tree, generally of no value. This method of grafting may be applied to standing stocks.

Some Southern Nurserymen obtain most of their apple stocks from localities farther north, and whip graft them

at once, or set them in nursery rows to be cleft grafted after getting one year's growth. In buying stocks for fruit trees, always get the best. Cheap, low grade stocks are often worthless.

GRAFTING BY APPROACH.

Examples of this mode of grafting may be seen in our forests where we find limbs of trees firmly united by continued contact. The French, who are the most skillful of all horticulturists, and describe in their works more than



Fig. 37.—The grape grafted by approach.

one hundred modes of grafting practiced at different ages, thoroughly understand this method, and practice it extensively in their systems of training. The season for

this method of grafting is during the flow of the sap, and it may be performed on either ripe or green wood. Though but little used in this country, there are instances in which it may be applied with very happy results. It is divided into two classes. The first is illustrated in *fig. 37*, in which the upper part of the scion is retained.

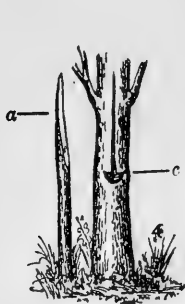


Fig. 38.



Fig. 39.

for the future plant; the second, in *figs. 38 and 39*, where the top of the scion is inserted under the bark of the stock, called inarching.

Preventing Splitting.—It is sometimes the case that the splitting of forks in trees may be prevented by this operation. The two prongs of the fork are held together by attaching to one prong a limb that grows from the other, or by uniting an independent limb to both prongs.

Similar portions of bark are removed from the parts to be united, and they are fitted together and securely bound. The bandage may require loosening, but should not be removed until a perfect union has taken place.

Supplying New Roots.—A useful application of this

method of grafting is made for the purpose of supplying new roots for dwarf trees when they begin to decline. *Fig. 39* represents the old stem and the young standard trees, growing near, with their tops cut off and inserted under the bark. An inverted **L**-shaped incision (*c, fig. 37, 38*) is made in the bark of the stock, after which the scion is cut with a slope two or three inches long (*a*) and placed under.

The whole is then carefully bandaged and waxed. One or more scions may be inserted. The vigorous young stems impart new life to the old tree, and often prolong its period of bearing many years. Trees with injured stems may be operated upon in the same manner; and after the grafts have become thoroughly established, the old stems may be removed.

Grafting the Vine.—Owing to the difficulty attending ordinary grafting of the vine, this method is sometimes resorted to as a more certain means of converting a grape of poor quality into a choice variety. (See chapter on grafting the grape). In this way the old vine is not destroyed, and if the first operation is not successful it may be repeated. *Fig. 37* represents the old vine, or stock, and the new variety, or scion, with a slice of bark two or three inches long removed from each, and fitted together ready for the bandage and the application of grafting clay. The bandage should be loosened during the summer, but not removed, and the top of the stock pinched back to throw a more vigorous growth into the scion.

In joining the stock and scion they may be tongued as in ordinary whip grafting. The dotted lines in the figure represent the points at which the vines are severed in the fall, after a thorough union has taken place. *Figs.*

40a, 40b and 40c represent self-supporting espalier and mode of forming letters by approach grafting. It requires

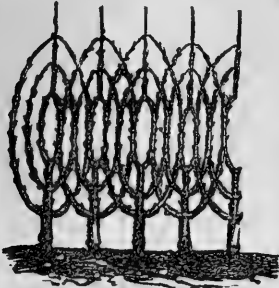


Fig. 40a.

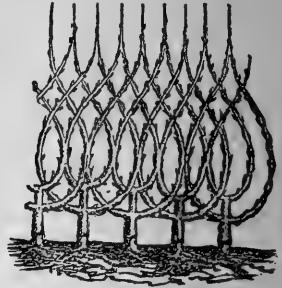


Fig. 40b.

considerable time, patience and skill on the part of the operator in order to obtain such happy results ; but they are

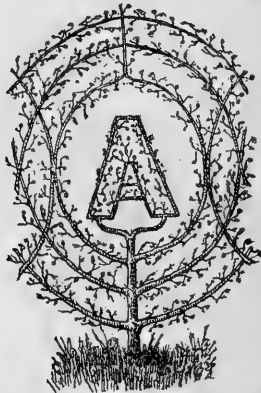


Fig. 40c.

often accomplished and show to what extent the art of grafting may be carried. From the foregoing explana-

tions, it will be understood how the operations are performed. These complicated designs are produced more readily by training the tree to a trellis which has the outline marked upon it. In *figs. 40a* and *40b* the branches are united where they touch back to back, not where they cross. In this mode of training it will sometimes be necessary to supply branches where they are wanting, which can be done by methods already described. While of little practical value, such experiments will be peculiarly interesting to the enthusiastic pomologist.

PROPAGATION BY CUTTINGS.

Cuttings are portions of plants, which, under favorable circumstances, produce other plants similar to those from which they are taken.

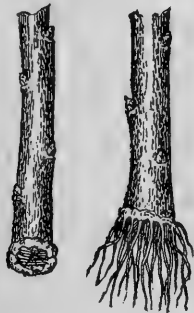


Fig. 41. Fig. 42.

This method of propagation is applied to the grape, mulberry, quince, raspberry, blackberry, fig, gooseberry, currant and some kinds of pears.

Cuttings are usually portions of wood of the last year's growth, from six inches to a foot in length, cut close to a bud at each end. They are planted in the fall in deeply-spaded ground, well enriched, especially at the bottom, leaving one or two inches above the surface. Only one bud of grape cuttings should be left above the ground. Press the dirt firmly around them.

The descending sap that exudes from the lower end of a cutting forms a callus (*fig. 41*), from which roots are emitted (*fig. 42*). The buds at the top develop into shoots, and in one season the simple stick of buds becomes a well-rooted plant, in many instances several feet high.



Figs. 43, 44.

Success with cuttings is more certain if a portion of the old wood is attached, as in *fig. 43*. Cuttings of this kind are termed *mallet cuttings*. If side shoots are used, cut them so as to contain the enlarged portion of wood near the main stem (*fig. 44*).

Cuttings require careful cultivation, and during dry seasons watering will prove very beneficial. They are sometimes placed in a hole in the open ground, with their butt-ends up, tied evenly together and covered with a few inches of dirt to remain till callus is formed in spring on the ends turned up to the sun.

They are then taken up and planted a few inches apart in nursery rows. They must be handled carefully and not exposed to the sun. Such plants as the blackberry, that throw up suckers readily, can be propagated from root cuttings, which are small pieces of roots two or three inches long, planted in good soil, at an angle of about forty-five degrees, and covered lightly.

PROPAGATION BY LAYERS.

Layers differ from cuttings in being left attached to the parent from which they receive nourishment; and while not a very rapid method of propagation, they produce excellent plants. Layers are made from ripe or green wood, and some plants that do not root readily from cuttings are propagated without difficulty by layering.



Fig. 45.



Fig. 46.

Fig. 45 represents a cane of the vine laid down about mid-summer, buried in the ground five or six inches

deep, with the extremity, which is sometimes tied to a stake, left uncovered. A flat stone placed over the buried portion will aid in retaining moisture and in keeping the vine to its place. By fall the layers will be well rooted, when the entire cane is cut from the parent and the rooted parts separated (*fig. 46*). They are then ready for setting out. Plants are sometimes hooked down, and those having hard wood have incisions made



Fig. 47.

near the buds, as represented in *fig. 47*, to facilitate rooting.

A cane is sometimes placed in the ground in several places at intervals of a few inches (*fig. 47*). This is



Fig. 48.

called serpentine layering. For spring layering, wood of last year's growth is used.

A strong cane growing as near the ground as possible,

after having about one-third of its length cut away, is laid down level in a trench five or six inches deep, and secured with stones or pegs. As soon as the buds on the cane make a growth of several inches, cover the layered cane with an inch or two of soil. Continue covering, as the young canes increase in length, until the trench is filled. Leave the young shoots about a foot apart (*fig.* 48). With good attention they will be well rooted by fall, when the old cane is separated from the parent and taken up entire. The rooted plants can now be cut apart and planted in nursery rows or where they are to

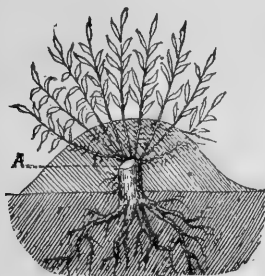


Fig. 48

remain. *Fig.* 49 represents stool layering, which is applied to the quince and the Paradise and Doucain apples for raising stocks.

The plant is cut down to a few buds before growth commences in spring, and during the following season a number of vigorous shoots spring up from the stump. The next fall or spring the dirt is drawn up so as to cover the old stump. One or two years after hilling up, the young shoots become well rooted, and are taken from

the stool to be used as stocks for budding or grafting. The stools are enlarged until one will furnish a great many plants. *Suckers* are shoots from buds on the roots—spontaneous layers.

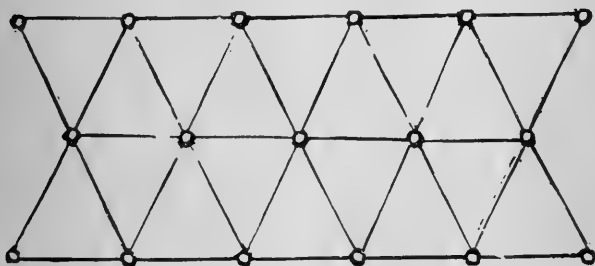
They sometimes appear in large numbers around trees that have had their roots broken by a plow. They are much employed for multiplying the raspberry. Suckers are sometimes used for stocks, but seedlings are much better.

CHAPTER IV.

PLANS FOR ORCHARDS.

Besides being much more pleasing in appearance, the trees of a carefully laid out orchard can be properly cultivated with far less difficulty than those that are out of line in the rows and at irregular distances apart. The following plans, which can be varied in many ways, will be found very convenient:

QUINCUNX PLANTING.



By this method the trees are in rows in various ways, and may be plowed in three directions.

The following plan is given by Mr. Randolph Peters, of Delaware. An acre planted in this manner contains 165 trees.

48 standard apples, 30 feet apart, marked O.

35 standard pears or cherries, marked S.

82 dwarf pears, dwarf apples, dwarf cherries, plums, quinces or peaches, marked X.

O	x	O	x	O	x	O	x
x	s	x	s	x	s	x	s
O	x	O	x	O	x	O	x
x	s	x	s	x	s	x	s
O	x	O	x	O	x	O	x
x	s	x	s	x	s	x	s

LAYING OUT ORCHARDS.

It requires considerable time for one person to plant an orchard of a hundred trees when the rows have to be straightened by the usual method of sighting backward and forward; but by means of a simple device, which is described in *The American Fruit Culturist*, the labor is greatly lessened. A strong cord is procured, as long as one side of the orchard, if possible. This is stretched tightly along the line intended for the first row of trees. Then with a measure lay off along the cord the proper distances apart for the trees, marking each place by sticking up a small peg. These pegs indicate where the trees should stand; but when the holes are dug and the pegs removed, the proper places for the trees cannot be ascer-

tained. It is at this juncture that the board, represented in *fig. 50*, is so useful. It should be four or five inches

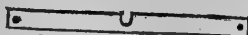


Fig. 50.

wide, with an opening in the middle and a hole in each end, as shown in the figure. Lay the board down in any direction, so that the opening in the middle is around one of the pegs along the cord, and drive pins into the ground through the end holes. Remove the board and dig the hole. Replace the board as it was, with the holes in the ends over the pins, which were driven through them, and set the tree with its stem in the opening in the middle of the board. It is evident that the tree will stand exactly in the position of the peg which was removed, and will be in a line with the other pegs. By repeating this process, the entire orchard can be planted in a short time, and the rows will be perfectly straight.

CHAPTER V.

DISTANCES FOR PLANTING.

Apples—standard.....	20 feet each way.
Apples—dwarf.....	6 to 8 feet each way.
Pears—standard.....	16 feet each way.
Pears—dwarf....	8 to 12 feet each way.
Peaches, Plums, Cherries, etc....	16 to 20 feet each way.
Grapes.....	8 to 10 feet each way.

Scuppernong 20 to 30 feet in the row, and rows 10 to 20 feet apart, according to soil.

NUMBER OF TREES ON AN ACRE AT GIVEN DISTANCES.

<i>Distances Apart Each Way.</i>	No. of Trees	<i>Distances Apart.</i>	No. of Trees.
4 feet.....	2,722	4x6.....	1,815
6 feet.....	1,210	6x8.....	907
8 feet.....	680	8x10.....	544
10 feet.....	435	10x12.....	363
12 feet.....	302	10x20.....	217
14 feet.....	222	15x30.....	97
16 feet.....	170	20x30.....	75
18 feet.....	134	20x40.....	24
20 feet.....	108		
25 feet.....	69		
30 feet.....	48		
40 feet.....	27		

CHAPTER VI.

TRANSPLANTING.

Perhaps no operation connected with fruit culture is so often improperly done as transplanting or taking up and setting out trees. It may seem strange to the man who succeeds so well in raising farm products that he



Tree showing length of roots.

should need any instructions on so simple as subject a transplanting trees. Yes, but the very man who takes the utmost care to have his ground in a perfect condition for the reception of corn or cotton seed very often crams his fruit trees into the hard soil, post-like, and then expects them to thrive and produce large crops of fruit. If

a fruit tree will do well when its roots are placed in a hole in the unbroken ground hardly large enough to receive them, then why will not a grain of corn produce a fine stalk and well developed ears when planted in the hard ground, with scarcely enough dirt to cover it? This process of removing a tree from one position to another is applied to seedlings which are usually taken from the seed beds to nursery rows when one year old, and to nursery trees which are removed to the orchard when from one to three years old from the bud or graft.

The proper time for transplanting at the South is soon after the first killing frost, thus giving the trees time to become established in their new position before growth begins in spring. It is one of the requisites to successful transplanting to make a thorough preparation of the soil.

It is an excellent plan to sow peas on the ground intended for an orchard, and turn them under in early fall with a two-horse plow followed by a subsoil. Holes are dug three feet wide and two feet deep, to be filled with surface soil, thoroughly mixed with about a peck of good cotton seed and stable manure compost to each hole. Do not let any strong manure come in contact with the roots.

Many failures in transplanting result from careless digging. It is an easy matter to take up small seedlings with their roots almost entire, but as the roots of a tree extend on each side to a distance about equal to the height, it is impossible, in digging trees five or six feet high from nursery rows, to avoid leaving a large portion of the roots in the ground.

In nurseries, trees are dug very rapidly by thrusting a

spade into the ground on each side of the tree, a foot or two from it, and raising it from its position. It requires two hands to do the work. When only a few trees are to be taken up, it is better to dig large circles around them and get as much root as possible. Make it a rule

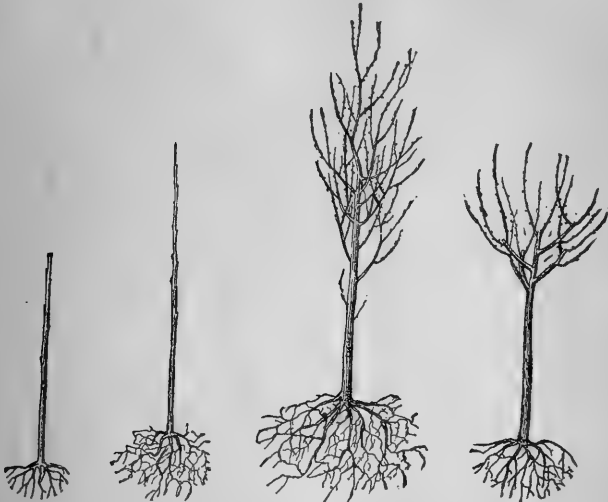


Fig. 51.—A one year tree, with all in-out branches, injured roots and branches from the nursery and the top shortened.

Fig. 52.—A one year tree with injured roots as received from the nursery.

Fig. 53.—A 2 or 3 year tree as received from the nursery.

Fig. 54.—A tree 2 or 3 years old prepared for planting.

to avoid all unnecessary mutilation of the roots. After seedlings are dug, their tap roots are shortened and they are planted in the same manner as whip grafts.

When nursery trees are dug they are prepared for planting in the orchard by cutting smooth all injured

roots, and shortening-in the head to restore the balance between root and top. As a part of the roots are necessarily left in the ground when a tree is dug, the top must be lessened in proportion. A one-year tree is usually cut back to a naked stem from two to three feet high (*figs. 51 and 52*). Older trees have about one-half the length of their limbs pruned off, leaving them longest at the bottom, and tapering up to the leader. This is not very well represented in *fig. 54*.

The tree is then placed in the hole a little deeper than it stood in the nursery, with all its roots spread out to their full extent, and the soil well worked among them with the hand. The dirt must be pressed down around the tree firmly, so that it will be held in its position, and no roots left in an open space to die from want of moisture. Bank the dirt up around the tree a little higher than the surrounding surface. It will sink down to a level. In transplanting, it is well to immerse the roots in soft mud, and they must not be exposed to the sun very long. When trees are shipped long distances, they are sometimes injured by freezing or drying. Frozen trees are not much injured if buried in the ground till they thaw; if shriveled from want of moisture, they are usually restored by keeping them buried in the ground several days, top and all.

Always select young, well rooted trees. One year from the bud or graft is usually the best age. When large trees are taken up, they receive a severe check from which they sometimes fail to recover.

CHAPTER VII.

REGISTERING AND LABELING.

When a lot of trees from a nursery are to be planted, the wire labels showing the different kinds should be removed, but some plan must be adopted by which the variety of each tree will be known in after years. Maps of orchards are often made and answer a very good purpose, but labeling each tree is far more convenient.



Fig. 55.

Thin strips of soft wood, written on when wet with an ordinary lead pencil, and fastened to the tree with a twine string, will last a while, but they require constant renewing and are not to be recommended.

The best labels are made from strips of sheet zinc, about an inch wide and three or four inches long, soaked a day or two in water and exposed to the air till a slight corrosion takes place. The names are written on them with a lead pencil. In a short time they show plainly, and will be legible for several years. They are attached

to the limbs with copper wire (*fig. 55*), and examined often to see that the wires do not become imbedded in the growing wood. They are sometimes cut with a narrow end, which is bent around the limb in a single coil, it expands as the limb grows, and does not cut into the bark.

CHAPTER VIII.

MULCHING AND WATERING.

Mulching consists in placing around the tree to the distance of three or four feet a coating a few inches deep of rotten leaves, straw, half decomposed manure, or other such substance that will retain moisture. It is an excellent protection against summer drought, and should be a universal practice in our hot, dry climate. Many trees that die during summer could be saved by mulching. A good time to apply it is in spring, when growth has started, soon after a rain.



¶ If trees are well mulched, they will not need much watering, but in very dry seasons newly set trees should have occasional copious waterings in addition to the mulch. Do not let a valuable young tree die from want of a little attention in this way.

CHAPTER IX.

PLANT A SUCCESSION OF FRUITS AT ONCE.

The man who settles on a new place, waits a few years to get ready to set out an orchard, and finally plants



Fig. 56.

nothing but a few peach and apple trees, with the intention of waiting a few years to see how these do before planting more, will not eat much fruit from his own orchard in a long time. Do not wait till next year, nor the year after, to begin; go to work at once and set out trees and plants of every kind of fruit that succeeds in your climate. A few apple and peach trees are not sufficient. Plant the small fruits, strawberries, raspberries and grapes, also currants and gooseberries wherever they

succeed. They will begin to bear at once, and will supply you with fruit every year during the period that you are waiting on your apples, pears, etc. No matter if your ground is fresh and full of roots; dig big holes, fill them with surface soil, and all will flourish. From the earliest strawberry to the best-keeping apple, we have a succession of fruits that spans the year; and every person who has a few rods of ground can raise them on his own premises.

CHAPTER X.

CULTIVATION.

It very often happens that the owner of a fruit tree is disappointed because his fruit is not so large and excellent as specimens of the same variety that he has seen elsewhere. He is then ready to pronounce the variety a failure, or the nurseryman a fraud, when the fault is really his own, and the lack of proper cultivation the principal cause of his disappointment. If a tree is de-



Fig. 57.—The orchard that is neglected and the one that is well cultivated.

prived of cultivation, the same results may be expected, that every farmer knows will follow, if his corn is allowed to stand in soil that is baked and grown up with weeds.

From the planting of the seed, through all the stages of the trees' growth, clean cultivation is necessary. After orchards come into bearing, it is better to give up the land entirely to the trees, giving them repeated plowings and a top dressing of manure each year. A compost containing lime and ashes is excellent. Do not injure the roots by plowing too deeply, and carefully avoid mutilating the trees with the plow.

Low growing, hoed crops may be cultivated in orchards without injury, but never corn or sown crops.

CHAPTER XI.

PRUNING.

This subject has been discussed for many years; much has been said and written upon it, but even now it is very imperfectly understood by the masses of people, and often wholly disregarded. Our climate, it is true, is very favorable to the growth and perfect development of fruit trees, and renders unnecessary much of the labor and expense attached to fruit raising in some other countries, but to obtain the best results, even in this genial climate, pruning for some purpose will be necessary through all the successive stages. While intelligent pruning is ever productive of the most satisfactory results, an entirely different effect is produced when it is performed in a bungling manner without any regard to the object to be accomplished. The time and manner of pruning will be determined by the purpose in view and the nature and condition of the tree.

We prune all parts of a tree, at various seasons of the year, to accomplish very different purposes. In this country it is practiced principally to regulate the shape, to produce a vigorous growth, or to induce greater fruitfulness. When the first of these is the object in view, it will be necessary to do some pruning at almost every season of the year. While at the South all large limbs, which through neglect have been left to grow in an unfavorable position, should be removed in the fall, it will

THE NURSERY AND THE ORCHARD.

often be necessary in the growing season to cut away or shorten in certain shoots which have been overlooked, or, are making a very vigorous growth at the expense of other portions of the tree. If properly pruned at transplanting and during the first few years of growth, it will rarely be necessary to remove large limbs, as all useless shoots will be kept cut away while small. No sucker from the root or limb that will have to be removed should be left to obtain a year's growth, as they can be easily rubbed off while young without the slightest injury; but it is often the case that trees are neglected until their heads are composed of numerous useless branches, whose removal the future welfare of the tree demands.

In pruning, all cuts must be made with sharp instru-



Fig. 58.

ments. For small limbs a knife is sufficient, but when too large to be cut in this manner, a pruning saw



Fig. 59.

must be used. When very large limbs are to be sawed off, it is well to first saw about half through from the bottom, finishing from the top, in order to prevent splitting. The rough surface is then smoothed over with a sharp knife and an application made of paint, grafting wax or gum shellac, mixed with alcohol, to the consistency

of paint, to exclude moisture. The small line in *fig. 60* shows the point at which the limb should be cut, just at the beginning of the enlargement at its base.



Fig. 60.

Some orchardists prefer to leave the stump of the limb which is pruned off about one foot long, to be cut again at the base the first of June. Wounds made at this time heal very rapidly, leaving the wounded surface exposed a shorter time. While for the accomplishment of certain purposes, and for different trees, in which the growth is very unlike, various methods of pruning will be adopted, it will be necessary in all cases to remove dead wood, or crossing branches, which often produce harbors for insects; to avoid crotches or equal forks, and to obtain a well balanced head sufficiently open to admit air and sunlight, without which neither the highest coloring nor the best quality of fruit can be obtained. *Figs. 61, 62 and 63* show the directions taken by limbs from buds in different positions. By giving some attention to these results, the shape of trees may be materially altered by pruning, rendering very open heads more compact, and *vice versa*. Vacant places can often be supplied by cutting a limb to a bud which points in the desired

direction. The adjacent figures represent the correct and the incorrect methods of cutting off a branch at a

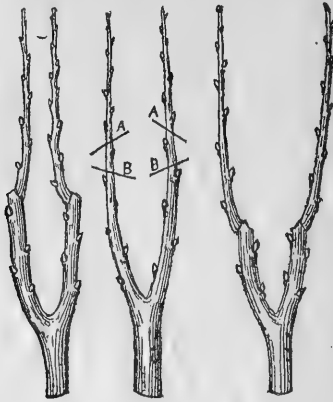
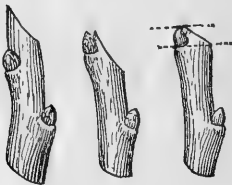


Fig. 61. Fig. 62. Fig. 63.

bud. If too far from the bud, as in *fig. 64*, the stump above the bud will die, making another cut necessary. In *fig. 65* the bud is enfeebled by having a portion of wood to



Figs. 64, 65, 66.

which it is attached removed. The perfect cut is seen in *fig. 66*. When done in this manner, the healing of the wound will be rapid and complete, while the bud will be left in a thrifty condition.

After orchards have borne full crops, there are many broken limbs to be removed, which should be done as soon as the fruit is gathered, and the brush taken away. Trees which appear to be ruined by breaking down, caused by overbearing, are often entirely restored by judicious pruning.

If the object of the pruning be a more vigorous wood growth, it is done soon after the fall of the leaves in autumn, as at this time, in mild climates, there sets in a vigorous storing up of nutriment in the cells of the tree to be expended on the next year's growth. The process is kept up during the winter, and this plant food is distributed among all the branches. It is evident that the fewer the limbs among which this material is to be divided, the larger will be the portion which each is to receive, and the greater the consequent growth during the ensuing year. Hence, if a portion of the branches are removed early in the fall, a larger quantity of this life-giving substance will accumulate in those that remain than would be the case if all were left till spring. Much can be done toward obtaining a vigorous growth of fruit trees by proper pruning. When all useless branches, such as are not necessary to the form or equality of the head, are removed, and all branches are cut back which are growing so rapidly as to destroy the form or detract from the growth of the other parts of the tree, a proper balance is maintained, the sap is evenly distributed to every portion, and a strong, healthy growth is the result. In most instances it is desired that fruit trees maintain a vigorous growing condition, but it sometimes occurs that after trees have become of sufficient age and size to yield abundant crops, they are still unfruitful on account

of too vigorous wood growth. If immediate bearing is desired, some method of reducing vitality must be resorted to, as whatever retards the formation of wood is favorable to the production of fruit. This can be done by pruning in summer. At this time the plant food which was stored up in winter is largely expended, and when a portion of the tree is removed the flow of the sap is retarded, the growth is checked, and the result is the formation of numerous fruit buds, which otherwise would have developed into wood buds. This is done very successfully by pinching off the ends of the shoots, as the bruising wounds of the finger retard the growth more effectually than the smooth cuts of a knife. But summer pruning is a severe process, and should be practiced only to a moderate extent. Root pruning is also resorted to for the purpose of retarding growth, or, which is the same, inducing fruitfulness. It consists in severing the roots at a greater or less distance from the trunk, according to the size and vigor of the tree and the purpose to be accomplished. In our climate it should be practiced with great caution, and only in cases of very luxuriant growth and obstinate unfruitfulness.

An unproductive limb may be made to bear by bending it down below a horizontal line, and retaining it in this unnatural position, which is unfavorable to a free circulation, until it becomes permanent. Portions of bark are sometimes removed from trees to render them more fruitful, but the practice is not to be commended.

Some specific directions will be given for pruning the different fruit trees treated of in this work, which, together with the instructions in this chapter, will be found sufficient for ordinary purposes.

In our favorable climate the intricate systems of training of other countries are wholly unnecessary, except in the extreme north and Canada, where they are practiced



Fig. 67.

to some extent. *Fig. 67* represents a tree pruner, which is very useful in reaching the extremities of long branches. The length of the pole can be regulated according to the height of the trees.

CHAPTER XII.

CROSSING AND HYBRIDIZING.

The production of new varieties will certainly engage a portion of the attention of every person who is interested in the subject of fruit culture. He will not be satisfied simply to propagate the varieties produced by accident, or through the labors of other men, but will feel a desire himself to become instrumental in the production of something new. It is sometimes the case that we find two varieties of fruit, each of which possesses, in a marked degree, the qualities that are wanting in the other. For instance, one may be large, but poorly flavored, while the other is finely flavored, but inferior in size. By crossing these two we may obtain a new variety, partaking of the qualities of both, but superior to either. Crossing or hybridizing has not been practiced largely a great many years, but some of our finest varieties of fruit are known to owe their origin to this process. It is now well understood by experienced horticulturists, and through its agency we expect many valuable new varieties to be obtained. The process of crossing is very readily performed, and consists in fertilizing the pistil of one variety with the pollen from another.

Fig. 68 represents a flower of the pear; *a*, style of pistil; *b*, stigma; *c*, ovary or seed vessel; *d*, anther, and *e*, filament of stamen. The anthers, when matured, dis-

charge a powdery substance called pollen, which, coming in contact with the stigma, fertilizes the young fruit at its base.

When it is desired to make a cross between two varieties, select blossoms not fully open on the tree intended



Fig. 68.



Fig. 69.

for the female parent, and cut off all the anthers, as represented in *fig. 69*. This must be done before the flower is fully expanded, otherwise the process of crossing may be performed by other agencies—insects or the wind. Bees, no doubt, carry the pollen from one flower to another and effect crosses regardless of consequences. In order to get ahead of these busy little meddlers, and avoid the natural fertilization which will result if the flowers are left to themselves, with sharp scissors carefully cut the anthers from the flower intended for the female parent before it is entirely open, and protect it by a covering of thin gauze until the pollen of the male parent is well matured. Then collect the ripened dry powder with a soft brush and apply it to the moist stigma of the covered flower. It is sometimes applied with the finger, or by touching the stigma with the anthers containing the dry pollen. After this process is complete, keep the flower covered until all danger of accidental fertilization has passed. It is well to repeat the operation several

times on the same flower to be certain of success. In the case of flowers that do not open at exactly the same time, it may be necessary to preserve the pollen till the pistil is in a proper condition for its reception. This can be done by carefully bottling the ripened anthers. The fertilized flower must be watched and protected until the fruit is fully ripe. When planted, the seed of this specimen is supposed to produce fruit partaking of the na-



Fig. 70.

ture of both parents. *Fig. 70* represents the flower of the cherry, the letters indicating the same parts, as in *fig. 68*. In *figs. 71* and *72* are seen the flowers of the grape, the



Fig. 71.



Fig. 72.

first of which represents the stamens covered by the petals, which, in the case of the grape, drop off instead of expanding, as in most other flowers; the latter shows the same flower after the petals have disappeared. The process of crossing is interesting, and to be performed successfully requires considerable care and some skill on the part of the operator; and, while it is readily per-

formed under the proper conditions, there are limits beyond which it cannot be carried. It is very common between two varieties of the same species, as two kinds of apples, and it is sometimes successful between closely allied species of the same genera, as the different species of the gourd and melon families, but not between the apple and the pear. When two varieties of the same species are united the result is called a cross, but when different species are crossed the result is known as a hybrid.

The organs concerned in the production of seeds and fruit are the stamens and the pistils, the former representing the male and the latter the female organs. They are sometimes found in the same flower, as in the blooms of the pear or cherry; but in Indian corn the tassel represents the male portion, while the female is represented by the silk and ear. Again, the pistils are in one plant while the stamens are in another, as in the strawberry some plants of which contain only male organs, and are known as staminate, while others contain only the female organs, and are called pistillate. The seeds of hybrids are usually imperfect. Crosses have perfect seeds, but when planted do not produce precisely the same kinds of fruit. Some may be superior, while others are inferior to the fruit of the parent trees. In order to have a better chance of producing a superior kind by crossing, a number of flowers should be operated upon at the same time. The first fruit of a tree, raised from a seed obtained by crossing, may not be a fair specimen of what it will produce when a few years older.

CHAPTER XIII.

SAVING GIRDLED TREES.

It very often happens that neglected trees are girdled by mice or rabbits and die in consequence, unless connection is restored between the two portions of bark. All such intruders are readily kept off by making a few applications of the coal tar fruit tree wash described on page 76 during the fall and winter. Thick paper with



Fig. 73.—Girdled tree.

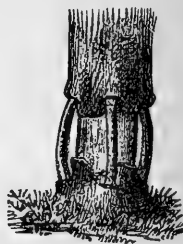


Fig. 74.—Damage repaired.

tar on the outside is often tied around the bodies of trees to prevent girdling, with good effect. In using tarred paper it is necessary to guard against getting much of the tar on the bark of the tree.

When only partially girdled, trees may often be saved by banking up the dirt so as to cover the wound, or by surrounding the trunk with a plaster of clay and cow dung mixed with water to the consistency of mortar,

letting it extend above and below the wound. It is then wrapped with some coarse fabric and kept moist during dry weather. But when the girdling is complete—nothing left to connect the two portions of bark—it will be necessary to resort to another remedy. *Figs. 73 and 74* represent the girdling, and the repairing of the damage by inserting scions of the same kind of wood above and below the wound. Cuts are made in the tree with a knife or small chisel, and the limbs, with their ends cut sloping, inserted, as shown in the figure. The scions are bent outward in the middle and the ends pushed firmly into the cuts so that the edges of the two portions of cut bark will be in contact. If too high to be covered with a mound of earth, the whole should be protected by an application of grafting wax. In cases of girdling, the tops of the trees should be pruned more or less severely according to the extent of the injury. By this process valuable trees may often be saved that otherwise would be lost.

CHAPTER XIV.

COAL TAR WASH.

The following wash is now used by some of our largest and most successful nurserymen and fruit raisers, both North and South.

Wherever tried it is invariably pronounced the best preparation of the kind ever used. In addition to the advantages of extreme cheapness, it has the merits of effectually keeping off rabbits, preventing the attacks of borers and of cleansing the bark and giving the tree a bright healthy appearance. Old peach orchards, almost entirely destroyed by borers, have been reclaimed by its use. It can be prepared at nominal cost; its application is very easy and rapid, and the results of its use are very beneficial. It is prepared in the following manner: To two gallons of ordinary lime whitewash, add one pint of coal tar (not pine tar) and one pound of potash; then mix thoroughly and keep constantly stirred while in use. Apply to the tree with a common white-wash brush at least twice a year—early in spring and fall. Let the wash reach from the limbs to the roots; coal tar is very cheap; one gallon can be obtained for 25 cents or less, and will be worth many dollars to the fruit grower.

CHAPTER XV.

THINNING AND GATHERING FRUIT.

The theory of thinning fruit has been reduced to practice by some of our most successful cultivators with very happy effects. Besides injuring the trees, overbearing always tends to produce inferior and often worthless fruit. If the largest size and best quality of fruit are desired, it is as necessary to reduce the quantity on an overburdened tree as it is to thin out cotton or corn to the proper stand. A good time for thinning is when the fruit is about half grown, as much that is defective can then be detected and removed. By giving every sound specimen of fruit plenty of room to develop, and allowing no limb to be burdened beyond its capacity, at gathering time the quantity of fruit will not be materially reduced, the quality will be greatly improved, and the trees will be left in a much better condition. After a good crop of fruit has grown, it is often seriously damaged by careless gathering. There are numerous fruit pickers which are often useful, but with good ladders of convenient lengths, gathering can be done well and rapidly by hand. Shaking to the ground or threshing off with polls must be avoided and the fruit carefully handled, not poured from one vessel to another like so much dry grain. When properly handled and assorted according to grade, fruit will keep much longer and bring far better prices in market.

CHAPTER XVI.

CANNING FRUIT.

Canning or preserving fruit in its natural state in air-tight jars is an excellent method of supplying the table with fruit the year round almost as good as when first pulled from the tree. It is absolutely necessary to success in canning to use good sound fruit and jars that can be closed perfectly air-tight. The fruit is prepared the same as for cooking, sugar added if desired, and heated more or less according to kind. Strawberries require very little cooking, but peaches must be cooked a much longer time. The jars are heated and filled to the top with the hot fruit and sealed at once. All air must be excluded. Jars are sometimes thought to be air-tight, when, if the tops are turned down, the water will escape. When properly canned and kept in a cool, dry place, exposed to light as little as possible, fruit will remain in a good condition several years. It will mould in a damp cellar.

As large quantities of peaches are preserved in this manner, every orchard should be supplied with trees of the best late varieties. When canned in the fall the fruit escapes the trying heat of summer, which often induces decay.

CHAPTER XVII.

EVAPORATING FRUIT.

It often happens that large quantities of fruit are allowed to rot in the orchard for want of a convenient way to dispose of it. When shipping facilities are inadequate, and there is not sufficient demand in the home markets, drying in the sun is often the only method of utilizing a valuable crop of fruit. But since the introduction of patent evaporators, of various capacities and prices, there is no excuse for the farmer who lets a crop of fruit waste on his hands. The evaporator can be worked in all kinds of weather, and the product is vastly superior to the wormy, dark-colored fruit that is dried in the sun.

Retaining almost perfectly the natural flavor, a good article of evaporated fruit can hardly be distinguished from fruit in a fresh state when placed on the table. Fancy grades sometimes sell as high as forty cents per pound.

Patent evaporators of various kinds are now on the market, all claiming special merits. By investigation the purchaser can determine the kind and the size best adapted to his purpose.

CHAPTER XVIII.

RENOVATING OLD ORCHARDS.

It is no uncommon thing to see old neglected trees standing in uncultivated fields, or, it may be, outside of any enclosure, that could be renovated by proper treatment, and made to bear abundant crops for many seasons.



Fig. 75.—Old neglected tree.



Fig. 76 — Old tree renovated.

As it is the work of years to plant an orchard and bring it up to profitable bearing, the time and attention are well spent that restore fresh vigor to the enfeebled trees and impart to them a new lease of life. The principal cause of the going down in most of our orchards is the want of cultivation and manuring. Begin with the pruning saw and remove all dead, crowded or crossing branches. Relieve the "hide-bound" trees by scraping

off the old dead bark, break up the lodges of insects in the root, body or limbs, and make a thorough application of the coal tar wash. Examine the trees often during the season, destroying borers or other insects, and wash the body and forks occasionally. The root will need attention also. Root-pruning and manuring are usually combined in one process by digging a trench a foot or more wide and a foot in depth around the tree, at a distance from the stem of three-fourths the length of the limbs, and filling it with good compost. One of our most intelligent horticulturists recommends digging trenches around the tree the width of a spade, from two to four feet apart, radiating from the tree as repre

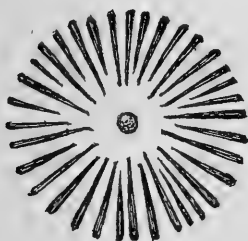


Fig. 77.

sented in *fig. 77*, and filling them with compost. After a thorough overhauling in this way, the old tree, if not too much exhausted, will soon show signs of new life. And, if manuring, the necessary pruning and good cultivation, are given in after years, full crops of fruit will be the reward.

CHAPTER XIX.

PRESERVING CUTTINGS.

It is often necessary to prune trees in the fall from which cuttings will be wanted in the spring. These can be kept in good condition by burying about two-thirds of their butt ends in the ground. If the cuttings are placed in the ground, under the tree from which they are taken, there will not be any danger of mistaking varieties. Grape cuttings are often kept during winter to be planted in early spring by burying them entirely in a hole in the open ground, and covering them with several inches of dirt, and placing a mound of earth over the hole to throw off the water. Root grafts and cuttings are often kept in a perfect condition during winter by packing them away in a cool place in damp moss or sawdust. A mixture of sawdust and sand is sometimes used. Care must be taken to retain only a moderate degree of moisture.

CHAPTER XX.

DWARF TREES.

While dwarfs do not deserve the rich encomiums bestowed upon them by some writers, and can never become so popular or profitable as standard trees, they are nevertheless deserving of cultivation, and if properly managed will give satisfactory results.



Fig. 78.

Pears are more extensively grown as dwarfs than the other fruits which are mentioned in this chapter. The stock usually employed is the Angers quince, obtained from France. When budded or grafted on this stock, the yearling tree should be cut back within a foot of the ground, and left to obtain another year's growth before being transplanted to the orchard. A portion of the

shoots, which spring from the buds that are left when the top is pruned off, are so managed as to obtain the pyramid shape illustrated in figure 78, the lines showing where the limbs should be cut. A vigorous branch is left to form a leader, and the remaining branches are



Fig. 79.

so pruned as to be longest at the base and gradually becoming shorter towards the top. After this system of pruning is kept up a few years, and all useless shoots are kept cut away, being careful not to let the head become so thick as to exclude air and light, the tree will assume the appearance of figure 79, and will be ornamental as well as useful. Rich soil, careful cultivation and constant and systematic pruning are necessary to succeed

with dwarf pears. The trees are not so long-lived as the standard, but they bear very young and can be planted much closer together, the spaces between standard trees sometimes being used for them, as they can be removed when the standards become of sufficient size to require the space. Dwarf pears are usually planted deep enough to cover the quince roots two or three inches, and they very often take root above the graft and become standard or half standard. In this way the advantages of early bearing are combined with larger size and longer life. Some kinds of pears do not succeed well on the quince. The Duchesse d'Angouleme is excellent as a dwarf. Kinds which do not take readily on the quince are sometimes grafted on a pear which was previously grafted on the quince. This is called double working. Ordinary quince roots are used as stocks for dwarfing the pear, but the French is better, well rooted stocks of which can be obtained from nurserymen in this country or in France. The fruit of dwarfs is usually larger than the same variety grown on standards.

THE APPLE

Is dwarfed by grafting on a wild species growing in France, known as the Paradise apple. Another species, the Doucain, is used when dwarf standards are desired. Stocks for dwarfing the apple and the pear are raised from layers. Dwarf apples should be planted so as to leave the point of union between stock and scion even with the surface of the ground. To maintain their dwarf nature, they must be carefully watched to prevent rooting above the graft, which renders them standard. They

do not require so much pruning as dwarf pears, and usually grow only eight or ten feet high.



Fig. 80.

Summer and fall varieties as dwarfs are preferred to later kinds, as the dwarf stock ceases vegetation earlier than the standard, and renders the fruit of the winter varieties unfit for keeping. This class of trees requires rich soil and such cultivation as is necessary for garden crops.

THE CHERRY

Is dwarfed by grafting on a species known as the Mahaleb, which adapts them much better to our Southern climate. The Mirabelle plum is sometimes used as a dwarf stock for peaches and plums. Any of the foregoing stocks may be obtained from nurserymen.

CHAPTER XXI.

THE CURCULIO.

The curculio or plum weevil attacks the apricot, nectarine, apple, cherry, peach and quince, but to the plum it is truly a relentless foe. Figure 81 represents the



Fig. 81.—Curculio.



Fig. 82.—Incision of curculio on plum magnified.

weevil, which is a dark colored insect, about one-fourth of an inch long, with varied spots, easily distinguished by its peculiar beak or snout, which is bent between the fore legs when the insect is at rest. Early in the Spring it begins its depredations on the young fruit by flying from tree to tree and depositing eggs as shown in figure 82. After the incision is made, the insect lays its egg and carefully conceals it in the cut, where it remains a short time and develops into a white grub in which state it preys upon the fruit until it drops to the ground. It then works its way into the soil to come forth in the future a winged weevil to repeat the same process. One of the little pests will lay a large number of eggs during the season, and so numerous do they become if unmolested, that entire plum crops are often destroyed by them. The young crop may be very promising in the Spring, but it often happens that not a single specimen of fruit

is left to mature on a well grown tree. Many methods of protection against the enemy have been tried with partial success, among them, smoking with the fumes of coal tar, syringing with Paris green or other poisons, dusting with sulphur and lime and various ways of entrapping, but perhaps the best results are obtained by jarring the trees and destroying the insects and stung fruit that fall. By giving a sharp, quick blow with a mallet on the stub of a limb sawed off, or a peg inserted in the tree to prevent bruising, many of the insects will fall, and can be caught on a sheet spread under the tree for the purpose. The jarring is commonly done early in the morning or just before night. When hogs are turned under the trees while the fruit is dropping, they consume large quantities of the grubs, and thus prevent so rapid multiplication, but they afford no immediate protection. Trees planted near the house, where they will be constantly tramped around, are comparatively free from attacks of this troublesome insect. To succeed in raising large crops of fine plums, war must be declared very early against the curculio, and waged unremittingly until the fruit is gathered.

If you have never seen this insect, quietly approach one of your plum or nectarine trees early some morning in May, give the tree a quick rap, and you will be likely to enjoy the pleasure.

THE PEACH TREE BORER.

This troublesome insect attacks the peach, nectarine and apricot, and if left unmolested will in a few years become very destructive. Large orchards fall a prey to

its ravages, and even nursery trees do not always escape its attacks. Its presence is indicated by a trashy looking gum that exudes from the tree about the surface of the ground. Figures 83 and 84 represent the insect of the



Fig. 83—Male insect of peach tree borer.



Fig. 84.—Female insect of peach tree borer.

peachtree borer. In summer these insects deposit eggs in the bark of the tree near the top of the ground. The eggs are hatched in a short time, and in the form of a white grub bore their way under the bark, often girdling and entirely destroying the tree. The destruction of the borers is not very difficult, as they confine themselves to the bark. All trees must be carefully examined before they are set out, as borers often get into them before they are taken from the nursery. In early spring apply the coal tar wash, and rake up a small mound of earth around the tree. As the eggs are always deposited near the surface of the ground, in trees that are hilled up they will be a considerable distance from the root, where they can be easily found and destroyed. Besides, the bark several inches above the ground is harder than that near the surface, and resists their attacks more effectively.

Let the mound of earth remain till winter, then rake it away down to the roots, examine the tree for borers and make another application of the wash. Do not replace

the dirt till early the next spring, when the process is repeated. In this manner the tree can be kept clear of borers.

APPLE TREE BORERS.

These borers are entirely distinct from the one just described, and as they do not confine their attacks to the bark, but perforate the wood in all directions, are more injurious, and not so easily destroyed. Several of them will soon kill a thrifty tree. In summer the eggs are laid by beetles on the bark near the ground or in the forks or wounded places, and they soon hatch and begin their circuit through the tree. Examine the trees often and kill the borers by thrusting a flexible wire into the holes made by them, or hunt them out with a knife, injuring the tree as little as possible.

Their attacks are prevented to some extent by applications of the coal tar wash to the bodies and forks of the trees.

THE APPLE WORM OR CODLING MOTH.

This insect is most injurious to the apple, but also attacks the pear.

The eggs are deposited in the blossom end of the young fruit in spring. They soon hatch and burrow into the core of the fruit, which ripens prematurely and drops to the ground. In about three weeks the worm attains its full size, and emerges from the fruit through a hole which it makes in the side. It conceals itself under scales of bark or in other such place, and in a few weeks is transformed into a winged insect, which repeats the process of

laying eggs in the young fruit. The fall brood does not appear as moths until spring, remaining in the cocoons during winter. As a means of preventing the multiplication of these insects, Mr. Downing recommends the building of bonfires in the orchard at night during spring and summer. Many of the moths and other insects are destroyed in the flames.

It is very important to wash and clean the bark of the trees in early spring, and see that no cocoons are left in the crevices or under the scales of bark.

All immature fruit that falls to the ground should be picked up at once. If hogs are kept in the orchard, they destroy many of the worms by eating the fallen fruit.

THE TENT CATERPILLAR.

This troublesome insect often proves very injurious to apple orchards. In summer a reddish brown moth lays eggs in rings, on the branches of the trees, usually in the forks or near the ends of the limbs. A single ring often contains several hundred eggs. These eggs remain till the following spring, when they hatch and begin their ravages upon the foliage. For several weeks they feed voraciously, and often leave the trees almost bare of leaves. They then spin their cocoons, pass into the pupa state, and in a few weeks come forth winged insects to lay eggs for the next spring's hatching. They can be destroyed by cutting off and burning the ends of the limbs containing the rings of eggs, and by raking off and killing all that have hatched and spun their webs.

They will be found in their tents early in the morning.

FRUIT TREES ADAPTED TO PARTICULAR LOCALITIES.

In all sections of the United States there are large nurseries conducted by men of intelligence and experience, who prepare annual catalogues of much value to fruit-raisers. By reading these a great deal will be learned concerning the fruits adapted to particular localities. Every person will learn something on this subject by observing the orchards in his own vicinity. There are so many varieties of fruit in cultivation, that in a book of this size only a small portion of them can be even briefly described; but while many good varieties are omitted in the lists which are given in this work, they are composed principally of well known varieties which cover the entire season, and will be found sufficient for most purposes.

CHAPTER XXII.

THE APPLE.

This king of fruits, whose range is almost unlimited has been cultivated and highly esteemed, from the most remote period. It is grown in nearly all parts of the United States, and in some sections attains to the highest degree of excellence. The apple is propagated by budding and grafting on its own seedlings. Pieces of roots are sometimes used as stocks, but this practice is condemned by some of our most intelligent pomologists, as having a tendency to produce feeble and short-lived trees. Originating from a wild and worthless species, the apple has, by a long period of amelioration through cultivation and reproduction from seed, reached its present degree of perfection. By planting a succession of varieties and using some care to preserve them, we may have this fruit fresh during the entire year. The trees are rather slow growing, hardy and long-lived, sometimes reaching the age of one hundred or more years. The apple will succeed in almost any kind of soil, unless it is very wet or very dry and sandy, if well cultivated and manured. In portions of the South, the trees are often injured, in many instances totally destroyed, by too much exposure of the bodies to the hot afternoon sun. This can to some extent be avoided by planting orchards in northern or northeastern exposures, and training the trees with low heads, or by setting up boards on the southwest side.

Two boards nailed together by their edges at right angles and placed securely near the tree protect it very effectively. While the apple is a world-renown fruit, many of its varieties are exceedingly local in their habits. At

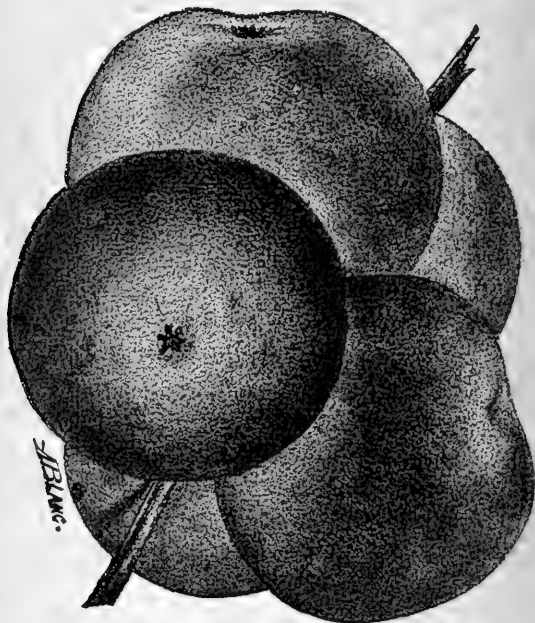


Fig. 85.—Siberian Crabs.

the South we must rely upon our native seedlings for late fall and winter varieties. The finest Northern apples of this class when brought to the South fail to mature their fruit, which often drops off in August. Earlier fall and summer varieties of Northern origin succeed at the

South, but they ripen much sooner. Even in the State of Georgia, some varieties that succeed well in the mountainous regions are worthless lower down in the State.

Observation and the experience of intelligent fruit raisers will often be necessary to make a good selection of apple trees. For orchards, vigorous young trees one or two years old from the graft should be selected. They are planted at distances varying from twenty to thirty feet. When the greater distance is adopted, the spaces between the trees are usually filled with other shorter-lived trees, which will be out of the way by the time the apples require the ground. When planted at this distance, other crops are cultivated in the orchard very conveniently, but if the entire space is to be given up to the trees, twenty feet apart each way is a very suitable distance. Unless the young fruit is killed by frosts, apple trees usually bear full crops in alternate years. By thinning the young fruit in the bearing year and giving the trees liberal supplies of manure, crops may be had annually. The soil of many apple orchards is so impoverished that they cannot produce respectable crops even in the alternate years. In most soils lime and ashes are needed in abundance, but almost any kind of manure will be found beneficial, the more the better. Of course, no sensible person would heap up a whole barrel of lime around the trunk of a single tree; but there is far more danger that the orchard will suffer from want of manure than from too large a quantity. The kind of manure used and the condition of trees and soil will determine how much is necessary. It is better to give up the ground to the trees, manuring annually and keeping the soil clean and mellow by cultivation, but if crops are to be gather-

ed from the orchard, a sufficient quantity of manure must be used to supply all demands of both crop and trees. After a well-shaped, evenly-balanced head has been obtained in the apple tree, little pruning will be required, other than cutting out dead wood and crossing branches, or such as interfere with each other's growth, and removing suckers from the roots.

DESCRIPTIVE LIST OF APPLES.

SUMMER VARIETIES.

In this list of apples, the names of the kinds most popular in Georgia are in bold-faced type. The names in italics are synonyms.

Astrachan Red.

Large, yellow, roundish conical, covered with crimson; flesh juicy, crisp and tender; calyx prominent; tree vigorous and prolific, bears young; ripens in May and June; an excellent early apple.

Carolina Red June.

(*Red June.*) Medium, conical, deep red; flesh white, juicy, subacid; variable stalk, in narrow cavity; basin narrow, with closed calyx; tree vigorous, upright; bears early and abundantly. June.

Carolina Watson.

Large, oblate conical; greenish, striped with red, and dull red cheek; flesh white, subacid, of good quality; tree very prolific; ripens in July.

Early Harvest.

Medium to large, straw color, with white dots, roundish, or roundish oblate; flesh tender, juicy and finely fla-

vored; stalk about an inch long; cavity medium; basin shallow; ripens in June; tree moderately vigorous, spreading; a very popular and profitable apple.

Early Red Margaret.

(*Striped June.*) Below medium, rather flat; skin greenish yellow, with dark red stripes; flesh white, subacid, of agreeable flavor; tree a moderate bearer; June to July.

EARLY RIPE.

Similar to Early Harvest, larger and later.

Family.

Medium, oblate conical; yellowish, striped with dull red; flesh white, tender, juicy, subacid; stalk short; cavity large; calyx closed, in basin of medium depth; tree a regular grower and prolific. July to August.

FANNY.

Large, roundish, deep red, with light dots; flesh white, stained next the skin, tender, subacid, pleasant flavor; small short stalk, in deep cavity; closed calyx; tree vigorous and productive. July.

FOURTH OF JULY.

Medium, roundish, yellow, striped with red; flesh white, subacid; tree a strong upright grower; short stalk in medium cavity; calyx closed. June.

GOLDEN SWEET.

Large, roundish, straw color; flesh tender, excellent quality; tree spreading, vigorous and prolific. June.

Hames.

Very large, roundish oblate; yellow with crimson cheek and dark carmine stripes; flesh white, coarse, acid; short stalk in large cavity; calyx closed, in medium basin; ripens in June. Origin, Troup county, Ga.

Hightop Sweet.

Medium, roundish, yellow, with green dots; flesh yellow, sweet and of pleasant flavor; stalk inserted in a deep cavity; shallow basin, with closed calyx; vigorous, productive. June.

Horse.

A popular, well known summer fruit.

Jewette's Best.

Large, oblate, yellowish green, with red cheek; flesh yellowish, subacid, pleasant flavor; small basin, with closed calyx; stalk short, in large cavity; tree vigorous. August.

Julian.

Medium, conical, yellow, with crimson stripes; flesh yellowish white, tender, subacid, highly flavored; small stalk, in deep basin; tree vigorous, prolific. July.

Kansas Queen.

Medium, yellow, nearly covered with crimson; flesh white, subacid, firm and of good quality; stalk short, in deep cavity; almost or entirely closed calyx in basin of medium depth; tree vigorous and productive.

KNOWLES' EARLY.

Small, roundish oblate, greenish-yellow, with crimson stripes; flesh white, tender, subacid, of good quality; long stalk; closed calyx; tree moderately vigorous, prolific. Ripens with Astrachan Red.

LADY.

Small, regular, flat, yellow with red cheek; flesh white, tender, juicy, and with a pleasant flavor; tree very prolific. August.

MAIDEN'S BLUSH.

Medium, yellow, with crimson cheek; flesh white, subacid, sprightly; tree a rapid grower and fine bearer. August.

MOTHER.

Medium, roundish, yellow ground, nearly covered with red; flesh rich, subacid, of good quality; short stalk; closed calyx; tree moderately vigorous, upright, prolific. Last of August.

Nantahalee.

Medium, oblate conic, yellowish green; flesh white, tender, acid and of good quality; medium stalk in large cavity; small basin with closed calyx; tree a rapid, straggling grower. July.

Rhodes' Orange.

Medium, conical, red on yellowish ground; flesh white, subacid and of pleasant flavor; tree a slow grower. July.

Sweet Bough.

(*Large Yellow Bough.*) Above medium, yellow, oblong, ovate; flesh white, tender, sweet; tree moderately vigorous and prolific. July.

Sops of Wine.

(*Hominy.*) Medium, roundish; yellow, shaded with deep red; flesh white, tender, very good; small stalk, in a narrow cavity; calyx closed, in shallow basin; tree moderately vigorous and a good bearer. June to July.

SUMMER ROSE.

Below medium, yellow, striped with red; flesh tender, juicy, excellent; often in clusters; short stalk; closed calyx, in deep basin; tree vigorous, bears early. July.

TET OF SKY.

Medium, nearly round, yellow, striped with red; flesh white, juicy, acid; tree a regular and early bearer. A Russian apple. June.

WASHINGTON STRAWBERRY.

Large, yellow, roundish, conical; flesh yellow, coarse, juicy, subacid; tree a regular and early bearer. June.

Yellow May.

(*May Pippin, Early May, White Juneating.*) Small, round, yellow; flesh crisp, and of pleasant flavor; tree moderately vigorous and productive; the first of the season.

Yellow June.

Medium, roundish oblate, yellow, with brown dots; flesh white, sprightly, subacid, and of good quality. Ripens with Red June.

AUTUMN VARIETIES.

BONUM.

Medium, oblate, yellow, shaded with crimson, and sprinkled with light dots; flesh white, rich and of fine quality; tree upright spreading a strong grower, and early and abundant bearer. Origin, North Carolina.

Buckingham.

(*Equinately*). Large, oblate, yellow, with red cheek, and light brown dots; flesh yellow, coarse, juicy, subacid; closed calyx, in deep basin; tree vigorous and bears young. Last September.

Carter's Blue.

Very large, roundish oblate greenish, washed with dull red, covered with a blue bloom; flesh yellow, sugary, aromatic; tree an upright grower and early bearer. September.

COLVERT.

Large, roundish, greenish yellow, shaded with dull red; flesh whitish, juicy, subacid and of fair quality; tree vigorous and very productive. September.

Disharoon.

Medium to large, conical, greenish, with gray dots; flesh yellow, tender, juicy, subacid and of pleasant flavor; origin, Habersham county, Georgia; tree a strong, upright grower, productive. October.

Elgin Pippin.

Very large, oblate, orange, with gray dots; flesh yellow, crisp, subacid, of good quality; open calyx, in deep basin; tree a strong grower. August and September.

GOLDEN RUSSET.

Medium, yellowish, nearly covered with russet, with a bronzed cheek; flesh whitish, compact, subacid; stalk short, in cavity of medium depth; closed calyx, in broad basin; tree a thrifty, irregular grower, and early bearer. October.

Gravenstein.

Large, flattened, yellow, marbled with red and orange; flesh tender, aromatic, of fine flavor; short stalk; deep basin, with closed calyx; tree a strong grower, spreading, bears young. September.

Green Cheese.

Medium, oblate, greenish yellow, with brown dots; flesh yellow, tender, subacid; cavity deep, calyx closed; tree moderately vigorous, prolific. A good keeper. Last of September.

Grimes' Golden Pippin.

Medium, roundish oblate, yellow, with light dots; flesh yellow, juicy, crisp, aromatic; tree vigorous, prolific, upright spreading. September and October.

HOOVER.

Medium, roundish oblate, dark red; flesh yellow, firm, juicy, subacid and of good flavor; tree upright spreading, with large foliage; origin South Carolina. September and October.

HUNGE.

Large, roundish, pale green, with a brown blush; flesh tender and juicy; good for drying and cooking; tree rapid grower and prolific. Early autumn.

Laurens Greening.

Large, oblate, greenish; flesh white, acid and of pleasant flavor; tree a strong grower; origin Laurens county, Georgia. September

Mamma.

Large, oblate, red; flesh yellow, subacid, of fine flavor; tree a strong, compact grower. October.

Oconee Greening.

Large, roundish, yellow, with scattering russet dots; flesh yellow, crisp, aromatic, subacid; basin shallow, with

open calyx; stalk short, in a deep cavity; tree a strong grower, prolific; origin Georgia. September and October.

Red Winter Pearmain.

(*Buncombe.*) Large, oblong, yellowish white, nearly covered with carmine; flesh yellow, nearly sweet, and of excellent quality; very short stalk, in deep cavity; calyx closed; tree an upright grower and regular bearer. Last of September.

ROXBURY RUSSET.

Large, roundish, brownish yellow; flesh greenish, moderately juicy, subacid, and of good quality; tree spreading, very prolific. October.

Simmons' Red.

Large, oblate, red, on yellow ground; flesh yellow, sugary, aromatic; tree vigorous and upright grower and early bearer. June to September.

Taunton.

Rather large, conical, greenish yellow, with red cheek; flesh yellow, tender, acid, fine flavor; deep cavity; closed calyx; tree vigorous and prolific, but a straggling grower. First of September.

WINE.

Medium to large, roundish oblate, red, on a yellow ground; flesh crisp, juicy, vinous and of pleasant flavor; tree thrifty, prolific, has small leaves and a spreading head. September.

Yopp's Favorite.

Large, roundish, greenish yellow, with a few russet

dots; flesh white, juicy, subacid; stalk short, in deep cavity; open calyx in deep basin; tree moderately vigorous, upright spreading, prolific. September and October.

WINTER VARIETIES.

Ben Davis.

Medium to large, roundish, greenish yellow, with crimson cheek; flesh white, tender, subacid, of pleasant flavor; calyx partially open, in broad basin; deep cavity, with slender stalk; tree strong grower, prolific, early bearing; excellent keeper.

Black Twig.

Medium, oblate, yellow, shaded with red, and sprinkled with brown dots; flesh yellow, tender, juicy, subacid, of good quality; tree vigorous, with an open spreading head, and a regular bearer. Supposed to have originated in Tennessee. November.

Black Warrior.

Medium, roundish, green with scattering brown dots; flesh white, firm, subacid, and of good quality. A good keeper; tree prolific. October.

Cannon Pearmain.

Medium, conical, yellow, shaded red, with grayish dots; flesh firm, yellow, subacid, of very good quality; open calyx, in deep basin; small cavity with short stalk; keeps well; tree a strong grower, spreading, prolific.

Clarke Pearmain.

Medium, oblate, greenish yellow, nearly covered with

red, and russet dots; flesh yellow, crisp, subacid, good quality; closed calyx, in small basin; tree a slow grower, prolific. November.

Chattahoochee.

Medium, greenish, with a red cheek; flesh yellowish, tender, of pleasant flavor; calyx partially open, in a large, deep basin; tree upright grower, vigorous and prolific. November.

Cullasaga.

Medium to large, roundish, yellow, nearly covered with dark crimson, and whitish dots; flesh yellow, subacid, of good quality; open calyx, in shallow basin; tree a good grower and prolific. November.

Edwards.

Below medium, oblate, yellow, striped with red; flesh firm, juicy, and of fair quality; tree moderately vigorous and productive. Origin, North Carolina.

Etowah.

Medium, conical, yellow, nearly covered with bright red; flesh whitish, crisp, sweet, of pleasant flavor and good quality; half open calyx in very deep basin; short stalk, in deep cavity; tree moderately vigorous, upright grower, a regular and abundant bearer.

Hockett's Sweet.

Medium to large, roundish oblate, deep red on yellow ground; flesh yellowish white, crisp, sweet; of good quality; tree prolific. Origin, North Carolina. October.

Hewes' Virginia Crab.

Very small, roundish, dull red with white specks;

flesh fibrous, acid, astringent; tree small, healthy, and remarkably prolific; one of the best cider apples.

Kittageskee.

Medium, oblate, yellow with dark colored dots; flesh yellow, tender, subacid, of good quality; partially closed calyx, in shallow basin; short stalk, in broad cavity; tree of strong, spreading growth. November.

LIMBER TWIG.

Medium, oblate, shaded and striped with crimson, sprinkled with light dots; flesh white, rather firm, juicy, subacid, of fair quality; cavity deep; basin small, with closed calyx; tree moderately vigorous, prolific. November.

Mangum.

Medium, oblate, yellow, with red shade and bronze dots; flesh yellow, very tender and juicy; tree moderately vigorous and productive. October.

MASON'S STRANGER.

Medium, oblate, yellow, with a light red cheek and brown dots; flesh white, compact, crisp, nearly sweet, of good quality; tree a strong grower, a regular and abundant bearer; open calyx, in deep basin; origin, Virginia.

Maverick's Sweet.

Large, oblate, greenish yellow, with dark red cheek and gray dots; flesh yellow, rather coarse, sweet; calyx open, in deep basin; tree a good grower and early bearer; originated in Pendleton, South Carolina. October.

Mountain Sweet.

Large, roundish oblate, yellow ground, small dots;

flesh white, tender, sweet, of good quality; origin, Pennsylvania.

Nickajack.

Large, roundish, shaded with red and having a grayish appearance; flesh yellow, rather firm, of only fair quality; large cavity; partially open calyx, in medium basin; tree upright spreading, vigorous and prolific; best for mountain region; origin, North Carolina. November.

PRYOR'S RED.

Medium to large, red, with light colored dots and russet; flesh yellow, juicy, subacid, of pleasant flavor; closed calyx, in a small basin; tree moderately vigorous and productive. November.

RAWLE'S JANET.

Large, conical, yellowish, shaded with red, striped with crimson; flesh yellow, juicy, subacid, of pleasant flavor; partially open calyx, in a shallow basin; tree a strong, spreading grower and good bearer; origin, Virginia.

Romanite.

Small to medium, conical, red, with light dots on yellow ground; flesh yellow, juicy, subacid, of good quality; tree of vigorous, spreading growth, prolific; by some, considered identical with Shockley. October.

Rome Beauty.

Large, roundish, yellow, shaded and striped with bright red; flesh yellow, tender, subacid, of good quality; cavity deep; partially open calyx, in deep basin; tree moderately vigorous and productive; origin, Ohio. October and November.

Sauta.

Medium to large, oblate, light yellow and russet; flesh yellowish, tender, subacid, of fair quality; popular in some localities; supposed to have originated in White county, Georgia; tree a spreading and moderately vigorous grower. October.

Shockley.

Small to medium, conical, yellow, with a bright, red cheek; flesh crisp, juicy, of fair quality; shallow basin, with partially closed calyx; long stalk in a deep cavity; tree a vigorous, upright grower, very prolific, bears young; a good keeper and very popular in some sections; origin, Georgia. October.

Stephenson's Winter.

Medium to large, oblate, greenish yellow, covered with brown; flesh whitish, firm, juicy, subacid, of good quality; calyx open; stalk long; tree a moderate grower and regular bearer; a good keeper; origin, Mississippi.

Striped Winter Pearmain.

Large, yellow, nearly covered with a shade of red, sprinkled with gray dots; flesh yellow, crisp, tender, subacid, of good quality; small calyx in broad basin; short stalk, in large cavity; tree vigorous, spreading, prolific. November.

STUMP.

Medium, yellow, nearly covered with red; flesh white, crisp, tender, subacid; calyx partially open; tree a moderate grower, spreading, prolific. October.

Waugh's Crab.

Small, conical, red; flesh whitish, firm, subacid, of

good quality ; tree a strong grower, prolific ; a good cider apple.

Wine Sap.

Medium, oblong, dark red ; flesh yellow, firm, of fine flavor ; tree an irregular grower, bears early ; a good keeper, and excellent for cider ; should be in every orchard.

Yates.

Small, oblate, dark red, with small white dots ; flesh white, firm, juicy, and of pleasant aroma ; tree an upright grower and very prolific ; an excellent keeper and one of the best cider apples ; origin, Georgia.

YELLOW NEWTON PIPPIN.

(*Albemarle Pippin.*) Large, roundish, yellow, sometimes with red cheek ; flesh firm, yellow, acid, of pleasant flavor ; tree a slow grower ; good bearer.

YORK IMPERIAL.

Medium, roundish, whitish, shaded with crimson, a few gray dots ; flesh yellow, juicy, subacid, very good ; tree a fair grower and bearer ; closed, or partially open calyx, in deep basin.

CRAB APPLES.

The crabs in the following list are both ornamental and useful :

- Red Siberian.
- Yellow Siberian.
- Transcendent.
- Golden.

CHAPTER XXIII.

THE APRICOT.

This excellent fruit, partaking of the nature both of the peach and the plum, is hardy south of the 43d degree of latitude in this country, and should find a place

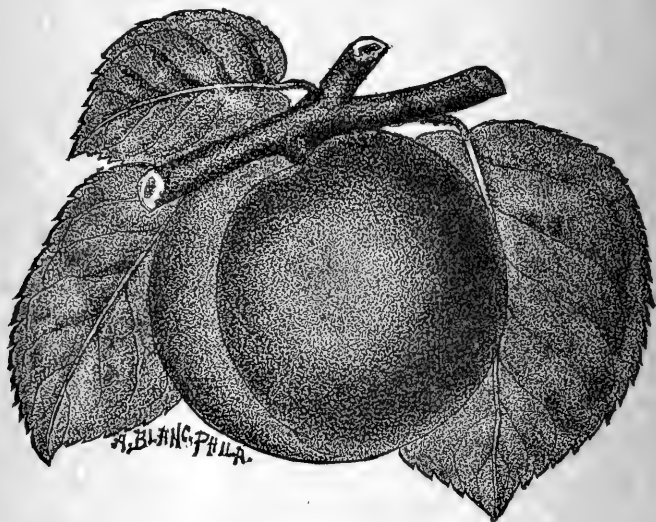


Fig. 86.—Moorpark Apricot.

in every collection of fruit trees. The native country of the apricot is uncertain, but it is cultivated largely in both Europe and Asia. The stone is smooth like that of

the plum, but the flavor is more like that of the peach. Its large white blossoms appear early in spring, and render the tree very attractive, but the young fruit is often killed by frost. The apricot should be planted near the house with a northern exposure, as a protection against the frosts of early spring. It is propagated by budding or grafting on the peach, almond, plum, or its own roots. The plum is by some considered the best stock, especially so when the trees are to be planted on heavy soil, but peach stocks are generally preferred. Hardy and productive trees are sometimes raised from the seed. The directions given for cultivating, manuring, pruning and training the peach apply as well to the apricot.

DESCRIPTIVE LIST OF VARIETIES.

BREDA.

Small, roundish, sometimes rather four-sided, one of the best varieties; free stone, yellow flesh, ripens early. Originated in Africa.

BLACK.

Small and round, resembling a dark round plum; skin pale red in the shade, but reddish purple in the sun, covered with slight down; flesh red next the skin, yellow near the stone, adhering to the stone somewhat, juicy and pleasantly flavored; very hardy, small oval foliage. June.

EARLY GOLDEN.

Free stone, medium size, roundish oval, skin light orange, flesh yellow and juicy; tree vigorous grower; ripens early in June.

HEMSKIRKE.

Large, roundish, resembles Moorpark; orange skin

with crimson cheek; flesh rich and juicy; stone small; ripens earlier than the Moorpark.

KAISHA.

Medium, roundish, light yellow, mottled with red in the sun; flesh yellowish, tender, juicy, parting freely from the stone; tree tender and unhealthy; a variety from Syria. Season medium.

LARGE EARLY

Medium, oblong and compressed; suture deep; skin orange, with spotted cheek, slightly downy; flesh orange, juicy, sweet, and separates readily from the stone; tree vigorous and productive. Season early.

LARGE RED.

Large, deep orange red; flesh rich and juicy, separating freely from the stone; tree hardy; a variety of Peach apricot. Season medium.

MOORPARK.

Large, roundish, skin orange in the shade, deep orange or brownish red in the sun, with numerous dots and specks; flesh bright orange, firm, very juicy, separating freely from the stone. A fine variety, very popular and widely disseminated in this country; ripens late.

ORANGE.

Medium, roundish, orange, with a ruddy tint in the sun; flesh yellow, tolerably juicy, does not separate entirely from stone. Small stone, roundish; season medium.

PEACH.

Roundish, very large, skin orange, with deep orange cheek, spotted with brown, resembles the Moorpark, only a little larger, and ripens about the time of it; flesh very rich and juicy. One of the best apricots that we have. July.

ROYAL.

Large, roundish oval; skin yellow; flesh light orange, firm, juicy, delicious, slightly vinous. Season medium.

ROMAN.

Size medium; skin pale yellow, sometimes dotted with red in the sun; flesh dull yellow, soft, dry; stone oblong, with bitter kernel. The blossoms will bear a severe frost without injury. One of the largest growing and hardiest apricots we have.

RUSSIAN.

Very valuable, being productive and of good quality and ripening early; tree hardy.

SHIPLEYS.

(*Blenheim*). Small or medium size; skin orange; flesh deep yellow, juicy and moderately rich; stone roundish with bitter kernel; growth vigorous but slender. Early variety.

ST. AMBROISE.

Large, early; color yellow, reddish next the sun; flesh juicy, sweet and rich. Almost the size and earlier than the Moorpark; season medium.

TURKEY.

Roundish, of medium size, yellow, with brownish orange cheek; flesh yellow, firm, sweet and slightly acid; freestone. Season late.

CHAPTER XXIV.

THE BLACKBERRY

Is indigenous to this country and at the South grows wild in great profusion. On account of the abundant supplies of this berry, which may be gathered from our old fields, it has been cultivated, in most sections of the Southern States, to a very limited extent. The fruit is very valuable, being used for cooking in various ways, evaporating, wine-making, etc. It is much improved by

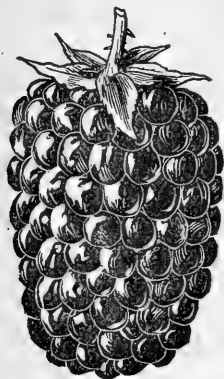


Fig. 87.—Wilson's Early.

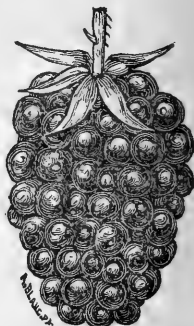


Fig. 88 —Kittattinny.

cultivation, requiring about the same pruning as the raspberry. The propagation from suckers and root cuttings is very easy and rapid. White varieties of this fruit are sometimes found growing wild among the blacks. While something of a novelty, they are of no especial value. The fruit of the trailing dewberry is superior to

that of the high bushes, and ripens several days earlier. Of the improved kinds, Wilson's Early and Kittattinny are among the best. Even at the South a rich spot of ground planted in the best varieties of blackberries, properly pruned and cultivated, gives very satisfactory results.

DESCRIPTIVE LIST OF VARIETIES.

LAWTON.

(*New Rochelle.*) Large, oval, very black when fully ripe; quite sweet and juicy, rather soft and tender; the granules are larger, consequently the fruit is less seedy than any other kind; of vigorous growth, strong spines, hardy and very productive.

WILSON'S EARLY.

Large, oblong, oval, black; flesh firm, sweet; growth trailing somewhat; hardy, productive; said to be the earliest variety yet introduced; valuable for market. May and June.

CRYSTAL WHITE.

Medium, oblong, creamy white, translucent; sweet, very good; vigorous grower, suckers freely, not hardy; desirable simply as a curiosity.

DORCHESTER.

Large, oblong, conic, glossy black; sweet and highly flavored; high bush; a vigorous grower, heavy bearer; before they are gathered, the berries should be fully matured.

HOOSAC THORNLESS.

Medium, fine quality, hardy and prolific; almost thornless; a very promising variety.

KITTATTINNY.

Very large, roundish, conical, rich shining black, moderately firm, juicy, rich, sweet, luscious; canes hardy and productive, ripening early and continuing a long time. The best variety for general planting, either for home use or market.

CHAPTER XXV.

THE CHERRY.

The cherry, which came originally from Asia, is esteemed both for its fruit and its shade. In some countries large numbers of the trees are planted along the road-side, from which the traveler gathers the fruit at pleasure. The wood is susceptible of a high degree of polish, and is considered very valuable. The cherry is divided into two distinct classes. The trees of the first class, which comprises the Hearts and Bigarreaus, are of very vigorous growth, with luxuriant foliage, spreading branches and drooping leaves, while the fruit is of heart-shape, sweet and tender. Of the second class, which comprises the Dukes, Morelloes and common Pie cherries, the trees are smaller and of more compact growth, and the fruit decidedly acid. The cherry is propagated by budding and grafting on seedling stocks. For standard trees, stocks are obtained from the seeds of the Mazzard, a very free growing sort; but as standards do not succeed in the warmer portions of the Southern States, seedlings of the Mahaleb or Perfmued cherry are used, as they dwarf the growth, thus inducing fruitfulness, and they succeed on a greater variety of soils than the standard stocks. Plant the seeds in fall; they can be kept till spring, but if sprouting begins before they are planted, there is danger of their being lost. The seeds should be

covered lightly, and if the ground is liable to become crusted on top, a light mulch of some kind should be

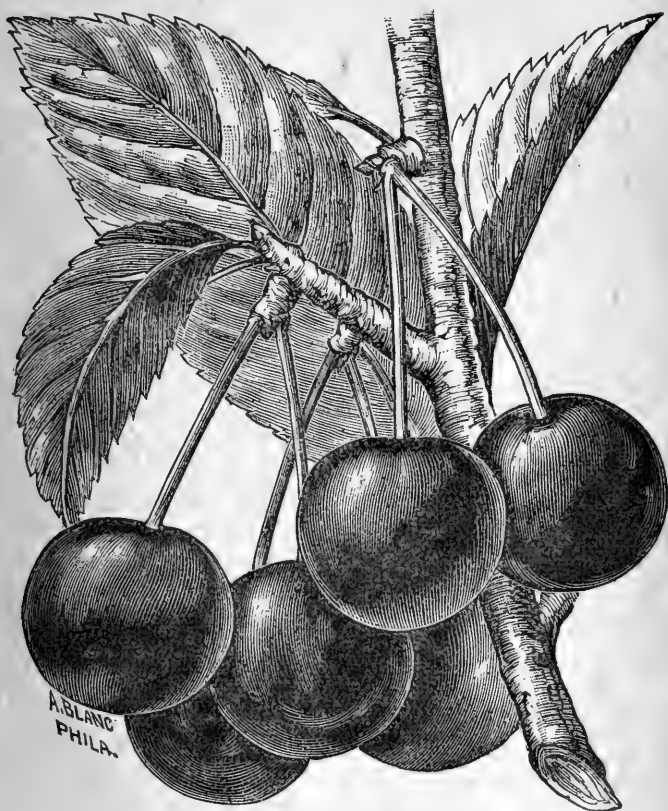


Fig. 89—Early Richmond Cherry.

used. The cherry is grafted very early, before the buds begin to swell. It succeeds best on dry soils of only

moderate fertility, and requires very little pruning. When large limbs are cut, gum exudes from the wound which often induces decay. Start the trees while young with short bodies and well balanced heads, and when grown little pruning will be necessary. A few trees of common Pie cherry, planted in hard ground near the house, will usually give large quantities of fruit of fair quality; but do not rely on these entirely; plant some of the improved kinds also.

DESCRIPTIVE LIST OF VARIETIES.

DUKES AND MORELLOES.

BELLE DECHOISY.

Round or slightly depressed; amber colored, mottled with red; skin very thin; stalk short and swollen at the upper end; flavor mild, subacid; trees make a fine pyramid; need good cultivation. Originated in France. May and June.

BELLE MAGNIFIQUE.

Large, roundish, bright red; stalk long, slender, in open, medium cavity; flesh tender, juicy, subacid; tree hardy; moderately vigorous, productive. June.

CARNATION.

Large, round, yellowish white, mottled with red; stalk stout; flesh tender, juicy; moderate, but regular bearer; foliage large, wood strong; fruit hangs a long while on the branches. Season of ripening medium.

EARLY RICHMOND.

Medium dark red; flesh melting, juicy, sprightly, very good; tree a splendid grower, with roundish, spreading head, exceedingly productive; one of the most hardy varieties; fine for cooking purposes. May.

EMPRESS EUGENIE.

Large, roundish, flattened, dark red; suture broad, shallow; stalk short in deep cavity; flesh red, tender and juicy, very good; dwarf in habit; shoots stout, very productive. May and June.

ENGLISH MORELLO.

Large, round, heart-shaped, dark red; flesh dark red, tender, juicy, subacid flavor; very productive, valuable for preserves, a very fine fruit. May and June.

MAY DUKE.

Large, roundish, red, almost black when ripe; flesh reddish, tender and melting, excellent flavor at maturity; tree very hardy, early, though often varying in its season of ripening. Origin France. May.

OLIVET.

Large, globular, bright, deep red; flesh red, tender, rich and vinous; it possesses the fertility of the best of Duke tribe, and is the largest, perhaps, of that class. Of French origin, said to be very early, and to ripen over a long period.

REINE HORTENSE.

Very large, roundish, skin bright red, slightly mottled; suture distinctly marked by a line without any depression; flesh tender, juicy, subacid, delicious; tree healthy, productive, very handsome. French origin, of Duke habit. Medium season.

ROYAL DUKE.

Large, roundish, and oblate or flattened; skin dark red; flesh reddish, tender, very juicy, good; of upright growth, compact head, branches less slender than Mayduke; moderate bearer.

HEART AND BEGARREAU.

AMERICAN AMBER.

Medium, roundish, heart-shaped, slightly indented at the apex; skin thin, light amber, mottled with red;

stalk long and slender, inserted in narrow cavity; flesh tender, sprightly; tree vigorous and productive, raised by Daniel Bloodgood, of Flushing, Long Island. June.

BAUMANNO'S MAY.

Small, heart-shaped; deep red, very dark when fully ripe; stalk an inch and three-fourths long, set in narrow cavity; flesh purplish, tender, juicy; growth vigorous, very productive, of good quality, of foreign origin, early in the season.

BLACK EAGLE.

Large, dark red, nearly black, excellent quality; flesh deep purple, tender, highly flavored; stalk medium length and rather slender; branches strong, with large leaves; moderate bearer.

BLACK HEART.

Large, heart-shaped, little irregular, dark crimson, almost black; flesh tender, highly flavored; growth hardy; an old variety everywhere esteemed.

BLACK TARTARIAN.

Large, heart-shaped, irregular and uneven on the surface, black; flesh purplish, thick, half tender, rich, juicy; tree vigorous growth, bears well, very popular. It is a Russian and West Asian variety, introduced into England about 1796, and brought into this country. May and June.

BOWYER'S EARLY HEART.

Medium, obtuse, heart-shaped; amber shade and mottled with red; flesh tender, juicy, vinous, very hardy and prolific; excellent for culinary purposes. May.

CLEVELAND.

Large, round, heart-shaped; suture broad, almost round; bright red, on yellowish ground; flesh fine and juicy; thrifty grower, spreading, productive and a fine fruit. Raised by Professor J. P. Kirtland.

COE'S TRANSPARENT.

Medium, remarkably round and regular in form; amber and red; meat tender, very sweet and juicy; tree vigorous and hardy, with round and spreading head. May.

EARLY LAMAURIE.

Large, purple, flesh rich, very juicy, excellent, similar to early purple Guigne, but earlier and a better tree. May.

ELTON.

Large, heart-shaped, pointed; skin thin, pale yellow cheek mottled with red next the sun; flesh firm, nearly tender and quite juicy; tree vigorous, readily known when in foliage by the dark red color of the foot stalks of the leaves. Last of May.

FLORENCE.

Large, heart-shaped, amber, mottled with red; flesh amber color, firm, rich and sweet, very good; stone small. Originally brought from Florence, Italy; fruit hangs on the tree a long time, will keep several days after gathering. June.

GOVERNOR WOOD.

Large, heart-shaped, pale yellow, marbled with red; flesh nearly tender, juicy, sweet, of excellent flavor; tree vigorous, forming a regular head, prolific. May.

IDA.

Medium, conical, compressed, suture slight; whitish yellow, almost covered with red; stalk medium length, slender, inserted in large, deep cavity; flesh tender, juicy; tree very vigorous, hardy, upright, profuse bearer. June.

KIRTLAND'S MAMMOTH.

Large, heart-shaped, bright yellow, marbled with red; flesh nearly tender, sweet and juicy; tree vigorous, but poor bearer.

NAPOLEON BIGARREAU.

Large, heart-shaped, inclining to oblong, pale yellow, marbled with red; flesh firm, juicy, fine flavored; stalk stout, short, and set in a narrow cavity; a good and constant bearer, vigorous grower. June.

OHIO BEAUTY.

Large, heart-shaped, very handsome, almost covered with red on light ground; flesh tender, brisk, juicy; tree vigorous and productive, with spreading head, a very valuable kind. Originated by Professor Kirtland. May.

ROCKPORT.

Large, roundish, heart-shaped, bright red, with a shade of amber; flesh rather firm, juicy and very sweet; tree vigorous, healthy, upright, a good bearer; raised by Dr. Kirtland, Cleveland, Ohio, one of the very best in quality. May.

WERDER'S EARLY BLACK.

Large, roundish, heart-shaped, black; flesh purple, tender, sweet and excellent; tree vigorous, spreading, moderately productive; an early variety.

CHAPTER XXVI.

THE CURRANT.

For a long period this cooling and healthful fruit has been much esteemed and largely cultivated in climates adapted to its growth. It succeeds admirably in the mountainous regions of the South, but near the coast it is not successful. The fruit is produced on a low growing shrub, and being a great improvement on the small sour fruit of the original species, it is considered almost indispensable in cool climates. The currant is propa-



Fig. 90.

gated very readily from cuttings, from six inches to a foot in length, taken from the last year's growth and planted in good soil, about two-thirds of their length in the ground (see chapter on cuttings). The cuttings can be set every two inches in rows fifteen inches apart. They will be sufficiently rooted the succeeding fall to be planted where they are to remain. It is some protection against the summer's sun to plant them on the north or

east side of a fence. As the fruit of the currant is borne on wood two or more years old, a succession of young shoots should be provided for by annually thinning out the old bearing spurs where they are too thick. By training them as a bush, letting the limbs start within a few inches of the ground, and keeping the heads properly thinned out, the best specimens of fruit are obtained, but in warm climates they will perhaps succeed better if allowed to sucker moderately. If to be trained as a bush, all the buds that will be under the ground should be cut off before planting the cuttings. After currant trees are six or eight years old, their places are usually supplied with young trees. The currant responds readily to good cultivation, pruning and manuring, delights in rich, moist soil, and is well worthy of attention wherever it will succeed. Currant worms can be destroyed by a few light applications of powdered white hellebore while the trees are wet.

Ashes applied in the same manner are often beneficial.

LIST OF VARIETIES.

BLACK NAPLES.

Large, black; bunches small, with a musky flavor; an excellent black kind.

CHERRY.

Very large, round, dark red, acid; clusters short; growth tall and luxuriant.

LA VERSAILLAISE.

Large, deep red, acid; bunches long; a valuable kind, resembling the cherry.

RED DUTCH.

Large, deep red, with a rich acid flavor; prolific.

RED GRAPE.

Large, red, sweet and good; bunches very long; a slow, spreading grower.

WHITE DUTCH.

Medium, yellowish white, somewhat acid; bunches rather long.

WHITE GRAPE.

Large, of excellent quality; growth spreading and moderately vigorous.

CHAPTER XXVII.

THE FIG.

From time immemorial the fig has been a favorite fruit of warm climates. In this country it is raised in the open air without protection in most sections south of Virginia, but north of that State it requires protection during the winter, which is effected by bending the trees down and covering them securely with dirt, or by placing evergreens around them while standing. The usual height of the fig tree is from ten to fifteen feet, but in its native country it often grows to the height of twenty-five feet.

The flowers do not open to view, but on examining the interior of the fruit, it is found to be composed of a large number of minute flowers. The ripened fruit is very wholesome and much esteemed. The fig is propagated from seed, layers, suckers or cuttings, the latter method being used principally at the South. A favorable situation is near a building with a southern aspect. The trees bear two crops annually, the first on the wood of the previous year's growth, the second on the new wood, both of which mature at the South.

A moderately rich soil of a calcareous nature is the best.

When the growth of the tree is very luxuriant at the expense of the crop, root prune at any time during

the winter by digging a trench around the tree at a distance from the body of about half the length of the branches. Every home in the South should be provided with fig trees of the hardiest and most reliable kinds, as their yearly crops of delicious fruit will handsomely repay the cultivator for the attention bestowed upon them.

LIST OF VARIETIES.

ANGELIQUE.

Small, obovate; skin greenish yellow; flesh white, not very sweet; tree hardy and prolific.

BLACK GENOA.

Fruit long, obovate; skin nearly black; pulp bright red, excellent flavor.

BRUNSWICK.

Large, reddish brown, rich flavor; tree a very strong grower.

BLACK ISCHIA.

Medium, roundish, flattened at the apex; skin dark violet, almost black when ripe; pulp deep red, sweet, and of fine flavor.

BROWN TURKEY.

Large, oblong; skin dark brown; pulp red and finely flavored; tree a regular and abundant bearer. One of the best.

WHITE ISCHIA.

Small, roundish; skin yellowish green; pulp purplish, of good flavor; prolific.

WHITE MARSEILLES.

Small, roundish; skin nearly white; pulp white, sweet and of rich flavor.

NERII.

Small roundish; skin greenish yellow; pulp red, rich flavor.

CHAPTER XXVIII.

THE GOOSEBERRY.

The gooseberry, like the currant, delights in a rich, moist soil, and succeeds best in a cool climate. In this



Fig. 91—Houghton Seedling Gooseberry.

country it is very popular at the North, where large quantities are used for various purposes—pies, jellies,

etc. It is propagated from cuttings the same as the currant, also from layers which are made soon after fruiting. In soil naturally very dry, a mulch of some material that will aid in retaining moisture is exceedingly beneficial. The gooseberry is more impatient of heat than the currant, but can be grown with tolerable success in some portions of the Southern States.

LIST OF VARIETIES.

HOUGHTON'S SEEDLING.

Small oval; skin thin, reddish brown, marked with greenish lines; flesh tender, sweet, of pleasant flavor very prolific. A very reliable kind.

DOWNING.

Medium to large, oval, pale green, of good quality; bush a strong, upright grower; productive.

MOUNTAIN SEEDLING.

Similar to Hughtom's Seedling, but larger, has thicker skin, and rather inferior in quality.

CHAPTER XXIX.

THE GRAPE.

From the earliest period the grape has been cultivated and esteemed. It is now one of the most popular and profitable of American fruits, and ranks in importance with the apple, the peach and the pear. The foreign grape is unsuited to our climate, but from our native species have sprung a large number of varieties that rival even the finest grapes of Europe. It has been said by a writer on horticulture that raising grapes is as easy as sliding down hill. This statement is about correct, the long, intricate and useless instructions of amateurs to the contrary notwithstanding. It is so easy to have an abundant supply of delicious grapes annually that it seems almost criminal for any family to be without them. Even the person on the crowded city lot, with only a few rods of spare ground, need not despair; he, too, has room for grapes. Where space is limited, they can be trained on fences, buildings, and in many places where they will not be in the way of anything else. The grape is propagated by grafting, and from seeds, layers or cuttings. In this country grafting is not practiced to a great extent, and seeds are planted only to obtain new varieties. See chapters on layers and cuttings, the principal means of propagating the grape, in another part of this work.

Grapes will thrive in this country on almost any kind

of soil of a dryish nature that will produce ordinary farm products. Only moderate fertility is necessary, but annual manuring will in most cases be beneficial, the



Fig.

quality and the quantity of the manure being determined by the soil and the condition of the vine. Ashes, lime, ground bone and barn-yard manure are all good. As in planting all kinds of fruit trees the ground for the grape should be well prepared by thorough plowing, and holes dug large enough to receive the roots when spread

out as represented in *fig. 92*. Strong, well-rooted vines of one or two years' growth are selected. *Fig. 93* represents a well grown one-year vine trained to a single stem. A good root is indispensable, while a few well

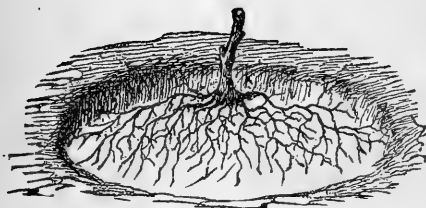


Fig. 92.—Transplanting.



Fig. 93.—One-year vine trained to single shoot.

developed buds make up all the top that is necessary to the young vine.

Very long, slender roots are shortened and the tops cut back to a few buds, *fig. 92*. The vine is planted a little deeper than it grew in the nursery, and the holes filled with surface soil thoroughly mixed with a mod-

erate quantity of some kind of manure. Half a peck of stable manure and cotton seed compost to each hole will give good results.

When many vines are to be planted, it can be done very expeditiously by laying off furrows with a large shovel-plow, followed by a subsoil, and applying some-



Fig. 94.—The young vine as it appears in summer.

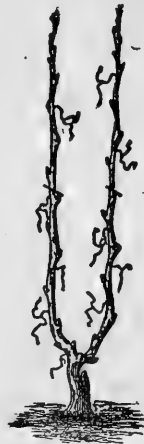


Fig. 95.—Young vine trained to two shoots.

such fertilizer as Merryman's Dissolved Bones at the rate of two or three hundred pounds per acre, to be bedded on the same as for cotton. The vines are then planted in the bed from six to ten feet apart, according to variety, deep enough to keep the roots out of the way of the plow. A top dressing of ashes, or a light coating of stable manure before bedding, is excellent. When the buds on the young vine begin to grow in the spring,

all but the most thrifty one are rubbed off. The one that is left is trained to a stake, and after it grows several feet the top is pinched off to strengthen the cane.

Fig. 94 represents the vine during the summer of the first year. In the following fall it is cut back to a few buds, two of which are to be left to make canes if the vine has made a strong growth. At the end of the second season it presents the appearance of *fig. 95*. These two canes should be from twelve to fifteen inches from the ground. By thus retarding the growth of the vine and preventing it from bearing during the first two years, the root becomes so strong and well established that in after years it produces full crops of the finest fruit without injury. Many young vines are ruined by overbearing.

At this period training may begin; and while many of our best varieties of grapes grow and bear crops without any attention in the way of pruning and training, more than supplying a frame of some kind to run upon and a bungling cleaning out every few years, the great superiority of the fruit, when intelligent pruning and training are practiced, ought to induce every owner of a grape vine to give these operations some attention. Various systems have been adopted, each of which has its advocates and advantages. Some of these systems appear very complicated to the beginner, but by applying a few principles, which are easily understood, they will all be readily comprehended, and can be adopted in whole, or with such modifications as may suit the circumstances. In all systems the principal object should be to obtain the proper quantity of strong bearing wood, the fruit being produced on the shoots of the current

year's growth. If it is desired to train to stakes, let them be of durable wood and well set in the ground. Each stake will support from one to four canes, which should be tied up neatly. If more than four canes are left, it will be necessary to have another stake or a trellis.

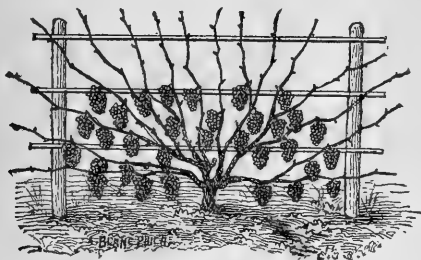


Fig. 96.

Fan training, which is represented in figure 96, is a very good method, though not so symmetrical as some others. The vines are fastened to the trellis, and each year young canes are trained up to produce bearing shoots for the following year. The vine must be kept in sufficient bounds to be under perfect control by cutting out old and useless canes in the fall, and rubbing off unnecessary shoots in the summer. The canes must be tied to the trellis at sufficient distances apart to give the bearing shoots plenty of room, and the ends of the shoots should be pinched off when three or four leaves are formed above the last bunch of fruit. Let it be determined each fall how many canes are to be left for the next year's fruiting, also how many young canes are to be trained up

to supply the places of those that will be cut away the following fall.

The fall pruning will be governed accordingly.

All unnecessary canes from which no young shoots are to grow the next year will be cut entirely away, while those from which new canes are to be grown will be cut back to the desired number of buds.

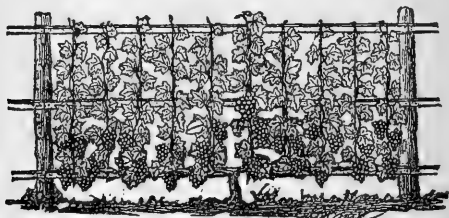


Fig. 97.—The Fuller method of training.

The Fuller system, which is represented in figure 97, is doubtless one of the best. It is in substance as follows:

The trellis is made by planting posts two feet deep, in a row with the vines, between each two, and equally distant from them.

The figure shows three slats nailed to the posts, but if the trellis is not more than four feet high, as recommended by Mr. Fuller, two will be sufficient. The slats are from two to three inches wide, and one inch thick. They are nailed to the posts, one a foot from the ground, the other at the top. Wires are then fastened to the slats by twisting them around, from eight to twelve inches apart. The two canes, figure 95, are cut back to four feet, and fastened to the bottom slat. In order that

the buds may all get an even start in the spring, the arms are sometimes bent down to the ground till the young shoots are a few inches long. When fastened to the trellis at once, the sudden bend near the base of the



Fig. 98.

cane so checks the sap that the buds at that point are unduly developed, while the strong tendency of the sap to the extremity makes the buds there grow more rapidly



Fig. 99.

than those on the middle of the cane. See figures 98 and 99. When the two arms are fastened to the trellis, five or six buds are selected on the upper side of each, at which wires are placed:

The wires are left so they can be moved to any desired position. When the young shoots are several inches long, they are tied to the wires and all other buds and shoots are rubbed off. To equalize the space, it is sometimes necessary to train up a bud from the bottom of the cane. The upright shoots are not allowed to reach much above the trellis, and the laterals are kept pinched back. The entire vine must be kept equally balanced, with the same number of canes to each arm, and all kept at the same

height. At the end of the first year of training the vertical canes are cut back to two buds each, which make canes for the next year's bearing—twice as many as there were the first year, or two to each spur. At the end of the second year, the upper cane of each spur is cut away entirely, and the other is cut back to two buds, which make canes for the next year's bearing. It is thus kept up year after year, and may be varied and enlarged upon in many ways. The underlying principle is the horizontal arm, from which young fruiting shoots are grown each year. Bow training to a single stake is represented



Fig. 100.—Bow system of training.



Fig. 101.—Multiplied bow training.

in *fig. 100*. One of the canes (*fig. 95*) is left to form the bow for next year's bearing, and the other is cut back to two buds, which make upright canes. At the close of the season, the bow has borne a crop, and is cut away,

while one of the upright canes is left to make a bow for the next year, and the other cut back to two buds, which produce two more upright canes, thus repeating the process. In very strong vines two or more bows may be left. *Fig. 101* represents multiplied bow training, which is, perhaps, more ornamental than useful.



Fig. 102.—Horizontal method of training.

The horizontal method is shown in *fig. 102*. The trellis is made three or four feet high. The cane is trained to the middle wire, which should be fastened to the posts, so as to be a little lower than the others. This causes the laterals to grow at a slight angle upward, which aids the flow of sap and promotes growth.

GRAFTING THE GRAPE VINE.

This is comparatively little practiced in the United States, but it is resorted to largely in Europe, as a means of protection against the phylloxera, a destructive insect which infects European vineyards. American kinds are used as stocks, and the results of their use during the last few years have proven very beneficial. This method of propagating the vine has been practiced to a limited extent for a great many years, and various methods have been employed, but it is still regarded as somewhat difficult and uncertain on account of the profusion of sap and the thinness of the bark. As the grape is so readily

propagated from layers and cuttings, there is really little necessity for resorting to grafting in this country, except in a few instances. On many farms, in almost all vineyards, there will be found large, healthy vines, whose fruit never matures, or is of very inferior quality. If such vines can, in a short time, be made to produce abundant crops of choice grapes, it is certainly important that the process of grafting be applied rather than destroy them and depend on new vines to fill their places. Again, it is often desired to obtain vines of some new variety as rapidly as possible, and as the wood is scarce, every bud should be utilized. This is done by means of grafting, and the growth of a bud in a single season is often from fifteen to twenty feet. Another purpose for which the grafting of the vine is very effective is the early testing of new varieties. We sometimes obtain fruit of the new kind the first year by grafting on a vigorous bearing vine. At the South the fall or early winter is probably the best season for performing the operation. In colder climates it is usually done in the spring. The method generally applied is cleft grafting, and it is successful on stocks of almost any size. (See chapter on grafting). The dirt is cleared away from the root of the stock to the depth of about four inches, and it is then sawed or cut off horizontally below the surface of the ground.

A cleft is made with a sharp instrument one or two inches deep, cutting rather than splitting. The scion is prepared in the same manner as for apples, and inserted very carefully so that the inner bark of the stock and scion will fit nicely together. If the stock does not press the scion tightly, it will be necessary to tie. See

fig. 103. The ground is then filled in firmly around the stock, up to the bud at the top of the scion. The whole



Fig. 103.

should be covered with a mulch of some light material, such as hay or straw, as a protection against freezing,



Fig. 104.

which sometimes raises the scions from the stocks. Remove the mulch in spring as soon as freezing is over. The stocks should be vigorous and healthy. Scions are

taken from the well matured wood of last summer's growth, about the size of a lead pencil, containing only one bud, unless the wood is very short-jointed, in which case two buds are allowed. Very small stocks can be whip-grafted like apple trees. Large stocks are sometimes grafted in the manner shown in *fig. 104*.

A thin wedge is taken out with a very sharp knife and the scion cut so as to make a perfect fit. It is then securely bound and covered as directed for ordinary cleft grafting. The cleft is sometimes made in very large and twisted stocks with an open saw. The slit is made about two inches deep, and the scion is cut to fit exactly, leaving shoulders resting on each side of the stock, as shown



Fig. 105.

in *fig. 105*. Persons desiring to try their skill in grape-grafting, and not caring to risk the entire vine, can do so by grafting the end of a layered cane (*fig. 106*), covering the point of union the same as in grafting the entire stock. Saddle grafting is represented in the figure. In the latter part of summer, the layered cane can be separated from the parent and transplanted in the fall. Grafting the grape above ground is not so successful. If

the grafting is to be done late in the spring, the scions should be cut in the fall. Grafting clay, in preference to ordinary grafting wax, is sometimes applied to the vine

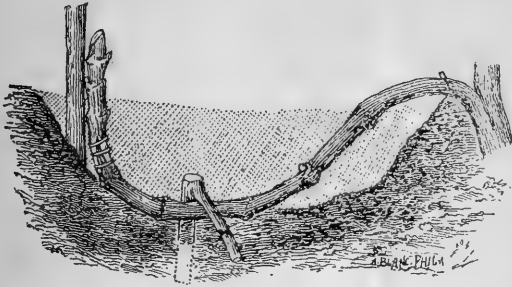


Fig. 106.

before banking up with dirt. Success in the operation depends upon the vigor of stock and scion, the smoothness of the cuts and the perfect union of the inner bark of the two parts.

GRAPE WINE.

“Wine-making,” in detail, would compose a large volume, but the following brief suggestions will be found useful when it is desired to make a few gallons without expensive preparations: The grapes must be dry, sound, clean and ripe, and all vessels used must be thoroughly cleansed. Crush the grapes and let them stand from 24 to 48 hours. Draw off the juice from a hole near the bottom of the vessel, then press the skins and put all the juice together in a barrel or keg, filling it within about an inch of the top. Add from one to two pounds of granulated sugar, dissolved in water, to every gallon of unfer-

mented juice. Do not fill so full that the lees will escape, but during violent fermentation keep the juice within an inch or two of the bung by the addition of similar juice. Close the bung by laying a grape leaf over it and placing on top of this a small bag of sand from three to four inches square. This permits the escape of the gas that rises during fermentation. In the winter following, draw off without shaking to other clean vessels. After the second fermentation in spring draw off to the vessels in which it is to remain.

NATIVE GRAPES.

LIST OF VARIETIES.

In the following list of varieties, *Labr.* indicates that the variety belongs to *Vitis Labruska* or Fox Grape; *Aest.*, *Vitis Aestivalis* or Summer Grape; *Ripa.*, *Vitis Riparia* (the grape of the river banks); *Rotund.*, *Vitis Rotundifolia* or *Vulpina* (muscadine); *Hybrd.*, Hybrid Varieties:

ADIRONDAC.

(*Labr.*) Bunches large, compact, sometimes shouldered; roundish berry, large, black, covered with a delicate bloom; tender, juicy and vinous; a slow grower, not very valuable.

AGAWAM.

(Rogers' Hybrid, No. 15.) Bunch medium, compact, often shouldered; berries very large; skin thick; dark red; vine vigorous and productive; long-jointed; ripens soon after Concord.

ALLEN'S HYBRID.

(*Hybrd.*) Bunches large and long; berries large; skin thin; nearly white; flesh tender, juicy and delicious; good quality; ripens about with Concord.

ALVEY.

(*Hybrd.*) Bunches medium, shouldered; berries small,

black; a slow grower; wood short-jointed; moderately productive.

ARIADNE.

(Ripa.) Bunch medium, compact; berry small, black with a blue bloom; flesh tender, juicy and sweet; vine moderately vigorous and very prolific, with short-jointed wood; a good wine grape.

BACCHUS.

(Ripa.) An improved seedling of Clinton, which it resembles in bunches and berry.

BARRY.

(Rogers' No. 43) Bunch large, compact; berry large, roundish, black; skin thin; flesh tender, of a pleasant flavor; vine vigorous; as early as Concord.

BERCKMAN'S.

A cross between Clinton and Delaware; bunches and berries larger than Delaware, which it resembles in color; good quality; vine vigorous and prolific.

BLACK EAGLE.

(Hybrd.) Bunches large; berries large, black, with blue bloom; good quality; vine a vigorous grower.

BRIGHTON.

(Labr. X.) An excellent variety, resembling the Catawba in color, bunch and berry; vine vigorous grower; prolific; ripens soon after Hartford Prolific.

CATAWBA.

(Labr.) Bunches large, compact, shouldered; berries large, round, deep red, with lilac bloom; skin thick; flesh juicy, with some pulp, vinous; vine a vigorous grower. Last of August. Discarded in many sections on account of its liability to rot.

CHAMPION.

(Labr.) Bunches large, compact, shouldered; berry medium round, bluish black; skin thick; inferior to Hartford in quality; vine a strong grower and prolific; very early, and valued chiefly on that account.

CLINTON.

(Ripa.) Bunches medium, compact; berries below medium, black, with a thick bloom; flesh juicy, with some acidity and brisk vinous flavor; vine a very strong grower and profuse bearer; makes a good wine.

CONCORD.

(Labr.) Bunches large, compact; berries large, almost black, with blue bloom; flesh juicy and sweet; vine a very vigorous grower and good bearer. July. A most popular and profitable grape of second rate quality; a good wine grape.

CREVELING.

(Labr. X.) Bunches long and loose; berries medium to large, oval, black with blue bloom; flesh tender, sweet, of good quality; vine a fine grower, uncertain bearer; not very popular; ripens early.

CYNTHIANA.

(Aest.) Very much like Norton's Virginia, but ripens a little earlier.

DELAWARE.

One of the finest grapes. Bunches medium, compact, shouldered; berries medium, round; skin thin, light red, with a whitish bloom; flesh juicy, sweet, of delicious flavor; vine moderately vigorous and productive; ripens about a week after Hartford Prolific.

DEVEREUX.

(Aest.) Bunches long, slightly shouldered; berries small, black, sweet and vinous; vine a strong grower, moderately prolific; good for wine.

DIANA.

(Labr.) Bunches large, compact; berries large, roundish; pale red, with lilac bloom; flesh sweet, vinous and rich; very productive and a standard variety.

DUCHESS.

(Hybrd.) A fine white grape; bunches large, compact, shouldered; berries medium, oval; skin thick; flesh

tender, juicy and of excellent quality; ripens soon after Concord.

EARLY DAWN.

(Hybrd.) Bunches medium, shouldered; berry medium, black; skin thin; flesh sweet, rich and of good quality; vine vigorous and productive; earlier than Hartford Prolific.

EARLY VICTOR.

(Labr.) Bunch medium, compact, sometimes shouldered; berry medium, black with blue bloom; some pulp, juicy, vinous, good; vine vigorous, healthy and prolific; ripens with or before Hartford Prolific.

ELVIRA.

(A seedling of Taylor.) Bunches small to medium, compact, shouldered; berry larger than Taylor, round, white; skin thin; pulp tender, juicy and of excellent flavor; vine very vigorous and productive; from one to two weeks later than Concord.

EUMELAN.

(Aest.) Bunches medium, moderately compact; berry medium to large, round, black, with fine bloom, adhering firmly to the bunch; flesh tender, rich and vinous; vine a strong grower; wood short, pointed; ripens early and evenly.

EXCELSIOR.

(Hybrd.) Bunch large, shouldered, compact; berry pale red, sweet and aromatic; vine moderately vigorous, short-jointed; ripens about with Catawba.

FLOWERS.

(Rotund.) Bunches medium size; skin dark black; flesh vinous and sweet. October.

GOETHE.

(Rogers' hybrid, No. 1.) A good late kind; bunches large; berries large, pink when ripe; vine healthy and productive.

GOLDEN GEM.

(Hybrid) Bunch small, sometimes shouldered; berry small, golden; flesh tender, juicy and of the best quality; vine moderately vigorous, with short pointed wood; ripens with Hartford Prolific.

HARTFORD PROLIFIC.

(Labr.) Bunches large, shouldered, compact; berries medium, round, black; skin rather thick; flesh pulpy, sweet and musky; vine grows rapidly and bears abundantly. July.

HERBERT.

(Rogers', No. 44.) Bunch large, long shouldered; berry large, round, black; flesh sweet and tender; vine very vigorous, an excellent early grape.

HERMANN.

(Aest.) Bunch long; berry small, black; a good wine grape; vine vigorous.

HERBEMONT.

(Aest.) (Warren.) Bunches large and compact, shouldered; berries small, black and blue bloom; skin thin; a delicious grape, sweet and well flavored; highly esteemed for wine. August.

HIGHLAND.

(Hybrid.) Bunch large, compact, long, heavily shouldered; berry large, round, black, with a blue bloom; little pulp, juicy, sweet, vinous, of good flavor; vine a strong grower, with short-jointed wood; ripens after Concord; a cross of Concord and Jura-muscat.

HUMBOLDT.

(Ripa X.) Bunch and berry medium; round, yellowish, sweet and of good flavor; vine vigorous; a good white wine grape.

ISABELLA.

(Labr.) Bunches large, loose, shouldered; very handsome; berry large, oval, black, with beautiful bloom;

flesh juicy, musky; pulp tough, acid; vine vigorous and prolific.

IVES.

(Labr.) Bunches and berries large; skin thick, black; flesh sweet and musky; vine vigorous and prolific; a good wine grape. July.

JANESVILLE.

(Labr. X Ripa.) Bunch medium, compact; berry large, black, with thick skin and pulpy flesh; similar to Hartford in quality; vine vigorous and productive; ripens about with Hartford; supposed to be a cross of Hartford and Clinton.

JEFFERSON.

(Labr. X) A handsome red grape; a cross between the Concord and Iona; bunch large, compact, shouldered; berry large, oval; flesh tender, sweet and juicy; ripens soon after Concord.

LADY.

(Labr.) A seedling of Concord, and a little earlier; bunch and berry large; skin yellowish green; handsome; fair quality; vine vigorous.

LADY WASHINGTON.

(Hybrid.) Bunch very large, shouldered, moderately compact; berries medium, round, pale amber; flesh tender, sweet, juicy and of good quality; vine a good grower, short-jointed; ripens with Concord; produced by crossing Concord with Allen's Hybrid.

LENOIR.

(Aest.) Bunch large, moderately compact; berries small, dark purple, juicy and vinous.

LINDLEY.

(Rogers' Hybrid, No. 9.) Bunch medium, long shouldered, loose; berries large, round, red; flesh tender, with little pulp, rich and aromatic; vine very vigorous, long-jointed; early.

MARION.

(Ripa.) Bunch medium, compact; berry medium; round, black, juicy and sweet; vine rather straggling, vigorous grower; ripens late.

MARTHA.

(Labr.) A white Concord, rather inferior in quality.

MASSASOIT.

(Rogers' Hybrid, No. 3.) Bunch medium, short, shouldered; berry large, dark red; flesh tender and sweet; vine moderately vigorous and productive. Ripens with Hartford Prolific.

MAXATAWNEY.

(Labr.) Bunches medium; berries large, oblong; skin greenish white; flesh sweet and delicious; one of the best of the white kind; not a very strong grower.

MERRIMACK.

(Rogers' Hybrid, No. 19.) Bunch medium, short, compact; berry large, black, very good; vine healthy and a strong grower. Ripens in August.

MRS. McCLURE.

(Hybrd.) A cross between Clinton and Peter Wylie; bunch medium, shouldered; berry medium, white, fair quality; vine a strong grower; foliage resembles the Clinton.

MOORE'S EARLY.

(Labr.) An excellent early grape; a seedling of the Concord, which it very much resembles, ripening about two weeks earlier.

NIAGARA.

(Cross of Concord and Cassady.) A new grape, promising well; a cross of Concord and Cassady; bunch medium to large, uniform, compact, sometimes shouldered; berry large, roundish, with a thin, tough, greenish yellow skin, and a whitish bloom; flesh tender and in quality about the same as Concord; ripens with or soon after Concord.

NOAH.

(Rip. X.) A prolific, strong-growing, white grape; bunch medium, compact, shouldered; berry large; skin thin, transparent; ripens a week after Concord.

NORTON'S VIRGINIA.

(Aest.) Bunches long, compact; berries small, dark purple; skin thin; flesh vinous, sweet and juicy; an excellent wine grape. August.

PERKINS.

(Labr.) Bunch medium to large, shouldered; berries medium, lilac when fully ripe, with white bloom and thick skin; flesh pulpy, sweet and juicy; vine a strong grower, prolific. Ripens several days after Hartford Prolific.

PETER WYLIE.

(Hybrd.) Bunches large, shouldered, loose; berries medium, round, transparent, golden yellow at maturity; flesh melting, vinous, of excellent quality; vine vigorous, short-jointed. July.

POCKLINGTON.

(Labr.) A seedling of Concord; bunch and berry large; golden, fair quality; vigorous; ripens with Concord; a good shipper.

PRENTISS.

(Labr.) A white grape of good quality; slow grower, productive; wood short-jointed.

REBECCA.

(Labr.) A good white grape; bunch and berry medium; slow grower, not productive.

SALEM.

(Hybrid—Rogers', No. 53) Bunch large, compact and shouldered; berry large, dark and chestnut with little pulp; flesh tender, sweet, aromatic, of good quality; large foliage; vine vigorous and healthy; can be propagated readily from cuttings; nearly as early as Concord.

SCUPPERNONG.

(Rotund.) Bunches small, rarely containing more than

eight or ten berries each; berries large, round and of a bronze color; skin thick; flesh juicy, sweet and vinous, free from rot, a rapid grower, very prolific; an excellent wine grape; very popular and profitable. August and September.

SECRETARY.

(Hybrid.) Bunches large, compact, shouldered; berry large, oval, black with handsome bloom; flesh sweet, vinous; vine vigorous.

SENASQUA.

(Hybrid.) Bunch medium to large, compact; berry large, black, with blue bloom, of excellent quality; flesh of a brisk and vinous flavor; vine moderately vigorous and productive; ripens soon after Concord.

TRIUMPH.

(Hybrid) Bunch and berry very large, pale green to golden yellow; thin skin, no pulp; flesh sweet, vinous, of excellent quality; a showy variety; vine healthy and productive; ripens later than Concord.

TENDER PULP.

(Rotund) A seedling of Flowers, ripening earlier.

THOMAS.

(Rotund.) Bunch very small; berries large, of a violet color, transparent; tender, sweet and vinous. August to September.

VERGENNESE.

(Labr). Bunch large; berry large, round, amber with blue bloom, of rich flavor. Early, vine very hardy, vigorous; good wine grape.

WALTER.

(A cross of Delaware and Diana). Bunches and berries medium to large, in shape and color resembling Delaware; flesh tender, rich and sweet, almost equal to Delaware; moderately vigorous and productive. Wood short jointed. Ripens about with Delaware.

WORDEN.

(Labr). A seedling of Concord, a little earlier; bunch and berry large, black; vine very hardy, and strong grower. Resembles Concord.

CHAPTER XXX.

THE MULBERRY.

The mulberry is a deciduous fruit tree, cultivated to a considerable extent in some sections of the Southern States. The trees are propagated by grafting and from seeds or cuttings. Stocks are sometimes obtained by

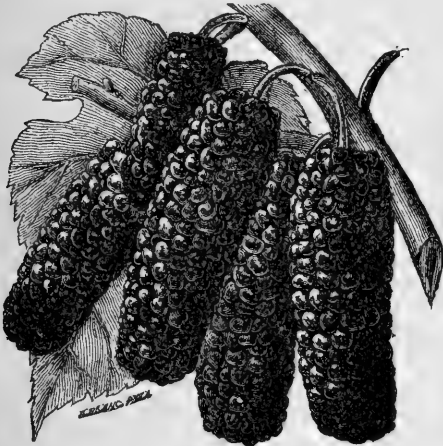


Fig. 107.

planting seeds of the white mulberry, but the best stocks can be had by planting cuttings of the variety known as *Morus Multicaulis*. The Hicks and Downing ever-bearing are the most popular kinds. They bear immense

quantities of fruit during three or four months of the year, which is excellent for hogs and poultry. Every farmer would find an orchard of this fruit a profitable investment.

LIST OF VARIETIES.

BLACK ENGLISH.

The best black, hardy and prolific, growth rather slow.

DOWNINGS.

Flesh rich, subacid; tree a rapid grower, not so prolific as Hicks.

HICKS.

Flesh sweet and insipid; tree a fine grower and bears large crops for three or four months in the year.

RUSSIAN.

Large jet black, fine flavor, commences to fruit when two years old. A very pretty rapid growing tree.

STUBBS.

A new variety; fruit large and of good quality.

WHITE MULBERRY.

The best variety for silk worms.

CHAPTER XXXI.

THE NECTARINE.

The nectarine is nothing more than an accidental seedling of the peach, with a smooth skin, which is shown by the fact that the same tree sometimes produces both peaches and nectarines. The growth of the tree is the same as that of the peach from which it is not easily distinguished. The fruit is not so large as the peach, free from down, and in flavor resembles the peach leaf. The nectarine is usually propagated by grafting or budding on peach stocks, and the cultivation, pruning, etc., are the same as required by that fruit. Failures to produce crops are more common with nectarines than with peaches, owing principally to the destructive attacks of the curculio or plum weevil. By following the directions given for destroying the curculio, regular crops may be obtained. It is well to plant the trees where hogs will have access to them, as they destroy large numbers of the worms by eating the fallen fruit. Protection against borers is the same as for peach trees. Persons desiring an assortment of fruits should by all means leave room for a few nectarine and apricot trees.

LIST OF VARIETIES.

BOSTON.

Large and handsome, roundish oval; yellow with crimson cheek, mottled slightly with red; flesh yellow, sweet, not very rich, pleasant flavor; separates from the stone; flowers small; tree hardy and productive. Medium season.

COOSA.

Large, red; flesh white, quality very good, a new seedling.

DOWNTON.

Large, roundish oval, light green with crimson cheek; flesh pale green, slightly red at the stone, melting and rich; separates from the stone; flowers small; season medium.

EARLY NEWINGTON.

Large, roundish ovate, pale green, almost covered with red, marbled and mottled with very dark red; flesh greenish white, red at the stone, sugary, juicy and rich; flowers large; season early.

EARLY VIOLET.

Large, roundish, yellowish green in the shade, almost covered with dark red, mottled with pale brown dots, when exposed; flesh whitish, red at the stone, melting juicy, rich; tree hardy and productive. French Origin; flowers small. Season early.

ELRUGE.

Medium, roundish oval; pale green with red cheek and small brown specks; flesh pale green, melting, juicy, of excellent flavor; separates from the stone; season medium.

GOLDEN CLING.

Medium, clingstone, yellow with scarlet cheek; flesh orange yellow, firm, sweet and juicy; flowers small. Ripens medium season.

HARDWICK.

Large, oval, freestone, light green with crimson cheek; flesh greenish white, red near the stone, juicy and rich; resembles the Elruge somewhat. One of the best and hardiest Nectarines; excellent bearer. Season medium.

HUNTS TAWNY.

About medium, slightly enlarged on one side, pointed at apex; skin orange and deep red, with brown in spots;

flesh yellow and juicy; separates from the stone; hardy, and abundant bearer; flowers small.

NEW WHITE.

Large, nearly round, freestone, skin white, slightly tinged with crimson; flesh white, juicy and vinous; stone small, separates freely; flowers large. Early.

PITMASTON ORANGE.

Large, roundish, deep yellow, with brownish cheeks; flesh yellow, red at the stone, rich, juicy and excellent flavor; stone small, separates freely; tree vigorous; flowers large.

RED ROMAN.

Large, roundish, or little flattened at the top; skin yellow or greenish, and dark reddish brown, with spots of russet; flesh yellow, red near the stone, rich and juicy; one of the best of clingstone nectarines; tree healthy and productive; season medium; flowers large.

VICTORIA.

Large, roundish, flattened at the top; greenish yellow, red on the side next the sun; flesh rich and sweet; flowers small; season medium.

CHAPTER XXXII.

THE ORANGE.

The orange is now grown very extensively in Florida, and to some extent in other States. The trees, which grow to a height of twenty or thirty feet, are the most attractive of all fruit trees, while the fruit is highly esteemed and sells at such prices as render orange culture under favorable circumstances very profitable. The trees are propagated from seeds and by budding. By planting the seeds of good varieties, excellent trees are obtained, which begin to bear when seven or eight years old; trees budded on stocks three or four years old begin to bear in two or three years after budding. The orange requires clean, shallow cultivation and liberal manuring. Peavines turned under, cotton seed, stable manure and muck are all good fertilizers. The trees are very prolific; in some instances yielding ten thousand oranges each. They have few diseases, and with proper attention live to be very old. The fruit begins to ripen in October, and in mild winters will remain in good condition on the trees the year round.

CHAPTER XXXIII.

THE PEACH.

This popular fruit is a native of Persia and was introduced into this country about two hundred years ago. It succeeds admirably here anywhere south of 40° north latitude, and is now raised in greater quantities and with less labor than in any other country. The soil and climate of the Southern states are peculiarly adapted to its culture, and it has become one of the most profitable of Southern fruits. Requiring a soil of only moderate fertility, having so few enemies at the South, and giving so rich and speedy returns, it is no wonder that the peach has become a favorite among fruits, and is cultivated so extensively in some sections of the Southern States. The trees are shorter-lived than most fruit trees of our climate, but with proper treatment they live and bear crops from ten to thirty years. In rare instances they have been known to live from fifty to one hundred years. The different varieties of the peach are distinguished by the presence or absence of glands (slight protuberances) on the leaves, by the size and color of the blooms, and by the quality of the flesh, whether cling or free-stone.

The propagation of the peach is very easy and rapid. Seedlings sometimes bear fruit the second year, and budded or grafted trees often yield moderate crops when only two years from the bud. In planting orchards of the peach, trees one year from the bud or graft are usual-

ly selected. The soil should be a dry, moderately rich, sandy loam, rather than heavy clay, well prepared by deep plowing. Orchards on elevated sites are considered least liable to injury from frost. Some kinds of peaches produce the same, or with slight variations, from the seed. Seedling trees are very hardy, and their fruit is often of good quality; but this method cannot be relied upon to propagate our improved varieties, as it is the natural tendency, when their seeds are planted to deteriorate—go back to the lower type from which they sprang. Trees combining hardiness with superior quality of fruit may be obtained by planting well matured seeds from vigorous seedling trees in hills the proper distance apart for the trees, on ground where they can remain, and budding on them the kind it is desired to propagate. Several seeds should be planted in each hill, and when a few inches high all but the most vigorous one of the seedlings can be removed; with the proper attention in the way of pruning, cultivation and protection from insects, trees raised in this way will live many years.

One great difficulty in peach culture is the result of bad pruning. When the limbs are left to take their own course, they soon become long and slim with very few branches near their base, as represented in figure 108. The tendency of the sap is strongly to the extremity of the limbs at the expense of the buds on the lower part, which are usually lost if not excited into growth the first season after their formation. As the fruit is borne on the wood of the preceding year's growth, a system of pruning must be practiced that will keep the tree constantly supplied with young bearing wood in all its parts. The

method adopted is known as the shortening-in system which consists in cutting off each year about one-half of



Fig. 108.

the previous year's growth. When the ends of the limbs are pruned off, the rush of sap to the extremities is



Fig. 109.—The badly pruned peach tree, broken down by overbearing.



Fig. 110.—The well preserved peach tree.

checked and shoots come out on the lower parts, thus supplying the trees with abundance of bearing wood; the limbs grow shorter and stronger, not so liable to be

broken by overbearing ; the fruit is better, and the trees longer-lived. But we must not go from one extreme to another. While no pruning leaves the tree unsightly and short-lived, the results of shortening-in are about as bad if the proper attention is not given the trees afterwards. The dense undergrowth which follows the pruning must be kept thinned out, so as to admit air and sunlight, and leave the tree with an open, well-balanced head. Good judgment and some experience, on the part of the peach grower, will enable him to keep his trees in symmetrical shape and well supplied with bearing wood, at the same time guarding against injuries caused by the breaking of limbs from overbearing. The hardiest and longest-lived trees of an orchard are often found in fence corners where they are protected against the hot summer sun and injuries from the plow.

An application of woods earth, or chip manure mixed with ashes or lime, is an excellent fertilizer for peach orchards.

VARIETIES OF FREESTONES.

ALBERT SIDNEY.

Medium, oblong, creamy white, with crimson cheek; flesh rich, melting; Chinese type. July.

AMELIA.

Large, conical, white skin, with a shade of crimson; flesh white, very juicy and sweet; flowers small. July.

ALEXANDER.

Medium, dark red skin; flesh greenish white, very juicy and sweet; adheres slightly to the stone; tree vigorous and productive; the most popular of the very early kinds. May and June.

AMSDEN.

An excellent, very early peach, considered identical with Alexander.

BALDWIN'S LATE.

Large, oblong; swollen point; greenish white, with red cheek; flesh firm, juicy; flowers small. October.

BEATRICE.

Small, dark red, mottled with a deeper hue of red; flesh juicy, vinous; matures soon after Alexander; requires rich soil and thinning. June.

BRIGGS' MAY.

Large, highly colored cheek, on white ground; flesh greenish white, vinous, of excellent quality; adheres somewhat to the stone. Early.

CANARY.

Medium, oblong, bright yellow; flesh yellow, juicy, melting; flowers small; season early.

COLUMBIA.

Very large, excellent; skin downy, yellow, with red cheek; flesh yellow, rich and juicy; very popular variety in the South; easily reproduced from seed. July.

CORA.

Above medium, white, with delicate pink cheek; flesh white, juicy; improved seedling of Lady Parham. September.

CRAWFORD'S EARLY.

Very large, oblong, yellow, with crimson blush; flesh yellow, melting, rich and excellent; tree vigorous, fruitful and hardy; flowers small; one of the most popular market varieties. July.

CRAWFORD'S LATE.

Very large, roundish, shallow but distinct suture; yellow, with red cheek; flesh very deep yellow, red near the stone, rich, juicy, vinous; flowers small; season medium.

DRUID HILL.

Large, roundish, the cavity of stalk narrow, suture very slight; skin greenish white, with clouds of carmine; flesh greenish white, purple near the stone, rich, vinous; tree very vigorous, bears abundantly; flowers small. August.

EARLY LOUISE.

Medium, bright red; thin skin; flesh juicy, excellent; not a good market kind. June.

EARLY TILLOTSON.

Medium, round, yellowish white, nearly covered with red; flesh whitish, red at stone, juicy, melting; flowers small. June.

EARLY RIVERS.

Large, straw color, with pink blush; flesh white, sub-acid, very vinous and very juicy; flowers large; very prolific. June.

ELBERTA.

Very large, handsome, yellow and red; flesh yellow, flavor excellent, supposed to be a seedling of Chinese cling; fine variety for shipping. July.

FAMILY FAVORITE.

Large, inclining to oblong, suture shallow; apex medium; skin cream-color, with crimson blush; flesh streaked next the stone, firm, juicy; tree vigorous with large leaves; flowers small; earlier than its parent, Chinese Cling.

FLAT PEACH OF CHINA—(PEEN-TO.)

Small, flattened, forming a deep hollow at both ends; yellowish green skin, with red on one side; flesh yellow circle of red round the stone, sweet, juicy; tree of dwarfish habits; flowers large. Ripens in Florida from April 15 to May 10.

FLEITAS ST. JOHN.

Large, roundish, orange yellow, with crimson blush; flesh yellow, juicy, sweet; originated in New Orleans. Ripens with Early Tillotson.

FOSTER.

Large, slightly flattened; suture slight; flesh yellow, of good flavor, earlier than Early Crawford, which it resembles; valuable for market.

FRUITLAND.

Large, greenish white, mottled with red; flesh greenish white, very juicy, vinous, red at the stone. Originated at Augusta, Ga. First of September.

GAYLORD.

Large, round, sharp point, rosy skin, with crimson blush; flesh white, rich and juicy. Origin Mississippi; flowers small. August.

GREAT EASTERN.

Very large, greenish white skin, with a shade of red; flesh white and juicy, rather coarse; flowers small. Originated at Augusta, Ga. July.

GROSSE MIGNONNE.

Large, roundish, slightly depressed, with hollow suture at the top, greenish yellow, mottled with red and deep red cheek; flesh yellowish white, red near the stone, melting, juicy, rich and vinous flavor; flowers large; season medium.

HALE'S EARLY.

Medium, nearly round, greenish, mottled with red; flesh white, juicy, rich; tree hardy and productive; flowers large. June.

HONEY.

Small, oval, whitish yellow, marbled with red; flesh white, juicy, delicious; flowers large. June to July.

LAGRANGE.

Large, oblong, greenish white; flesh white and finely flavored. Late in the season.

LADY PALMERSTON.

Large, greenish yellow, marbled with red; flesh light yellow, melting; flowers small. August to September.

LATE RED RARERIFE.

Large, oval; suture depressed at the top, where the

swollen point is distinctly sunken; skin pale yellow, covered with red spots, cheek deep red; flesh white, red at the stone; flowers small; season medium.

LATE ADMIRABLE.

Very large, roundish; bold suture, dividing the fruit all around, and small, swollen point at the top; yellowish green, red cheek, marbled with darker red; flesh greenish white, red at the stone, very juicy; flowers small; season medium.

LORD PALMERSTON.

Large, skin white, with pink cheek; flesh firm, juicy and rich; flowers large. August.

MOUNTAIN ROSE.

Large, white, washed with a carmine; flesh tinged pink, juicy, vinous, subacid; flowers small; tree a strong grower, prolific. June to July.

MUSCOGEE.

Large, round, yellow, almost covered with red; flesh white with red streaks near the stone, melting, juicy; flowers small; resembles Columbia. August.

OSCEOLA.

Medium, round; suture medium; yellow, with orange cheek, veined with red; flesh yellow, streaked with red, sweet; flowers large. September. Origin Georgia.

OLD MIXON FREE STONE.

Large, roundish, one side swollen, and the suture visible only at the top; cavity slightly sunk at the stalk; skin yellowish white, mottled with red, red cheek; flesh white, red at the stone, tender, rich and excellent, flowers small. August.

PICQUET'S LATE.

Very large, yellow, with crimson cheek; flesh yellow, rich and sweet. Originated by Antoine Picquet, Esq., Belair, Ga. August to September.

PRINCESS OF WALES.

Large, round, cream-colored, with a shade of blush;

flesh melting, deep red at the stone, quite juicy and rich; flowers large. September.

REEVE'S FAVORITE.

Large, roundish, point swollen; skin yellow with red cheek; flesh deep yellow; red at the stone, juicy, melting, vinous; flowers small. July.

ROYAL GEORGE.

Above medium; skin white, sprinkled with red dots; cheek deep red; flesh white, red at the stone, juicy, very rich; flowers small. July.

SNOW.

Large, globular; suture faintly marked, except at the top; skin pure white; flesh white, sweet, sprightly; flowers small. August.

STUMP THE WORLD.

Very large, white, with bright cheek; flesh white and juicy; flowers small. July.

SUSQUEHANNA.

Very large, yellow and crimson skin; flesh yellow, rich and juicy. Last of July.

THURBER.

Very large, pure white, crimson mottlings; flesh quite luscious, of fine texture. A seedling of Chinese Cling, which it resembles in size and color. Originated by Dr. L. E. Berckmans, Rome, Ga. July.

WHEATLAND.

Large, roundish, a distinct suture, not large; cavity medium; skin deep golden yellow, shaded with crimson; flesh yellow, sweet, juicy, pale red around the stone; tree very vigorous, healthy, resembles Crawford's Late; flowers large. August.

YELLOW ST. JOHN.

Large, resembles Early Crawford, but of a deeper color; flesh yellow, juicy, very sweet. Ripens early.

CLINGSTONE.

ANNIE WYLIE.

Large, globular; suture shallow, extending beyond the apex, which is a small joint; cavity narrow, deep; skin creamy white, with crimson cheek; flesh white, juicy, vinous; tree vigorous and a good bearer; flowers small; originated in Chester, S. C. September.

BUSTIAN'S OCTOBER.

Large, white, late variety, of good quality.

BORDEAUX CLING.

Large, oblong, inclined to be one-sided; suture shallow; skin pale yellow, with carmine cheek; flesh yellow, red at stone, juicy; flowers large. August.

CHINESE CLING.

Large, globular, sides compressed; suture shallow; skin creamy white, with crimson cheek; flesh white, red at stone, juicy and deliciously flavored; a very desirable variety for market; flowers small. July. General Lee and Stonewall Jackson are excellent sub-varieties of Chinese Cling.

CROFT'S GOLDEN.

Large, deep yellow with red cheek; flesh yellow, sub-acid, vinous. July to August.

DARBY.

Large, round, creamy white skin, excellent variety, matures middle of October. Origin, South Carolina.

DEMMING'S SEPTEMBER.

Large, oblong, yellow, with carmine cheek; flesh yellow, red near the stone, very juicy and vinous; similar to Lemon Cling, but later.

DUFF YELLOW.

Very large, round, with sharp point, yellow and nearly covered with a dark hue of red; flesh yellow and juicy, red at the stone; flowers small. July.

EATON'S GOLDEN.

Medium, round; suture shallow; skin golden yellow, with a few pink spots near the base; flesh golden yellow, sweet, juicy, with flavor of the apricot; flowers large. September.

FLEWELLEN.

Large, dark red, of the Indian type; flesh red, very juicy and sweet, vinous; ripens in July.

GOODE'S OCTOBER.

Large, round or oblong, white, with veins of carmine, downy; flesh white, with red near the stone, very juicy and subacid. Originated in South Carolina. First of October.

GENERAL TAYLOR.

Medium, white or almost covered with red tinge; flesh white, juicy and sweet. July. Originated in Mississippi.

HEATH LATE WHITE.

(Henrietta.) Large, oval, apex-pointed; skin white; flesh white to the stone, juicy, sweet, good quality, excellent for preserving. September.

HEATH RED.

Large, oblong, the skin white, with red wash; flesh juicy, red near the stone, of good flavor, rich and melting; flowers small. August.

INDIAN BLOOD CLINGSTONE.

Large, roundish, oval, distinct suture; skin downy, of a deep, almost purple red; flesh same color, firm, juicy; flowers small. August.

LARGE WHITE CLINGSTONE.

Large, round, suture slight, and the swollen point at the top small; skin creamy white with light red cheek; flesh whitish, tender, melting, juicy and very sweet; flowers small. July.

LEMON CLING.

Large, oblong, point swollen, like that of a lemon; skin yellow, with brownish cheek; flesh firm, yellow, red at the stone, rich, vinous, juicy; flowers small. July.

NEWINGTON CLING.

Large, oblong, white with red cheek; flesh firm, juicy. August.

NIX LATE WHITE.

Large, oblong; suture medium, extending to the apex, which is a little sunk; white, downy, reddish in the sun; flesh white; flowers large. October.

OLD MIXON CLINGSTONE.

Large, roundish, swollen on one side; suture visible only at the top; creamy white, dotted with red, cheek a deep red; flesh white, juicy, of excellent flavor; flowers small. August.

SCOTT'S OCTOBER.

Medium to large, light yellow; flesh firm, with flavor of lemon. Originated in Columbia, S. C.

SHELBY.

Large, white, with crimson blush, juicy, finely flavored. July and August.

TINLEY'S OCTOBER.

Medium, oblong, white, slightly tinged with red; flesh white, juicy, vinous; flowers large. Origin Macon, Ga.

TUSKENA.

Above medium, oblong, yellow and deep red; flesh subacid, vinous. Origin Mississippi. June.

WASHINGTON CLINGSTONE.

Medium, roundish, yellowish green, with gray specks; flesh juicy, luscious; flowers small. August.

CHAPTER XXXIV.

THE PEAR.

The wild pear of Europe and Asia is one of the most austere of all fruits, entirely unfit for the palate, but through the ameliorating influences of cross-breeding and reproduction from seeds, it has become a favorite fruit of modern times. The trees, under favorable circumstances, are very long-lived and exceedingly prolific. Instances are on record of trees reaching the age of four hundred years, and from one hundred to one hundred and fifty bushels of fruit have been gathered from a single tree. The pear is propagated by budding and grafting on its own roots for standards, and on the roots of the quince for dwarfs. For orchard culture, standards are much preferred, but for garden and amateur culture, dwarfs are very interesting. Some varieties are grown readily from cuttings. As was stated in the chapter on seeds and seedlings, it is more difficult in this country to raise seedlings of the pear than of any other fruit tree. The soil should be deep, rich and moist (not wet.)

It is useless to plant pear seeds on poor, dry soils. The seeds may be planted either in the spring or fall, and require the best of cultivation to induce a vigorous growth during the early part of the season, without which failure often results.

Good stocks may be obtained from the seeds of the hardy common sorts, often found growing on farms, in a

very thrifty condition. If planted in a seed-bed in rows about eighteen inches apart, to be transplanted to nursery rows, which is the usual practice, the tap roots are shortened at the time of removal. If the seedlings are

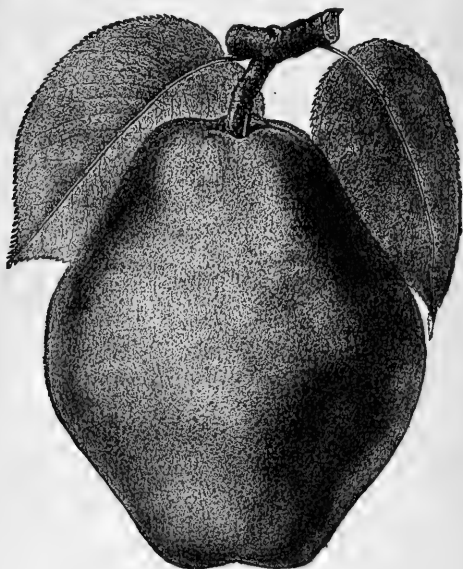


Fig. 111.—Kieffer Pear.

raised in nursery rows three or three and a half feet apart, the tap root can be shortened by running a sharp spade under them in the fall, and they can be budded or grafted where they grow. When seedlings are bought, they can be budded during the summer after setting out, if they are growing vigorously; if not, they are grafted the following spring.

Suckers are sometimes used as stocks, but seedlings

are much preferred. The pear adapts itself to a great variety of soils; it requires good cultivation, and on most soils liberal manuring will be necessary. Ashes and lime are very beneficial.

Standard pears require about the same pruning as apple trees. The fruit of most varieties of the pear is very much improved by ripening off the tree. It should be gathered carefully to prevent bruising, when matured, but not colored. The proper time is when some of the full grown but unsound fruit begins to color and drop from the tree. If carefully packed in boxes with something between the layers, and kept in a cool, dry place, the fruit will be fully ripened in from five to fifteen days. The greatest difficulty in the way of pear culture is the disease known as blight. It seems to attack mercilessly trees of almost all ages, varieties and localities; and, although many theories have been advanced and remedies suggested, its ravages continue almost unabated. Its presence is indicated by a sudden withering and turning black of the leaves in certain portions of the tree, while the other parts remain apparently in full vigor. Unless the disease is checked, the tree is soon destroyed. Trees that are attacked by blight often recover after having the diseased portion pruned off. Always cut a considerable distance below the affected part.

Damp soils, which induce a late growth and imperfectly matured wood, are unfavorable for the pear.

THE LECONTE PEAR.

The introduction of this pear has, during the last few years, created quite a stir at the South in pear culture. It was introduced into Liberty county, Ga., in 1856, from

a Northern nursery, and the original tree is still alive, and bears large crops annually. The LeConte is a hy-



Fig. 112:

brid, the result of a cross between the Chinese Sand Pear and some cultivated variety. The tree is of rapid growth, very prolific, bears young, and is comparatively free from blight. The fruit is large, of good quality, an excellent shipper, and sells at high prices. It is gathered when the color first begins to change, and, if intended for shipment, each specimen is wrapped in paper, and packed in crates containing about one bushel each. The propagation is principally from cuttings. In furrows the width of a spade, about fifteen inches deep, well enriched, cuttings of the last year's growth, ten or twelve inches long,

are planted, with one or two inches of the top uncovered, and the dirt pressed firmly about them. They must be kept clear of weeds and watered in dry weather. The time for planting cuttings varies in different localities

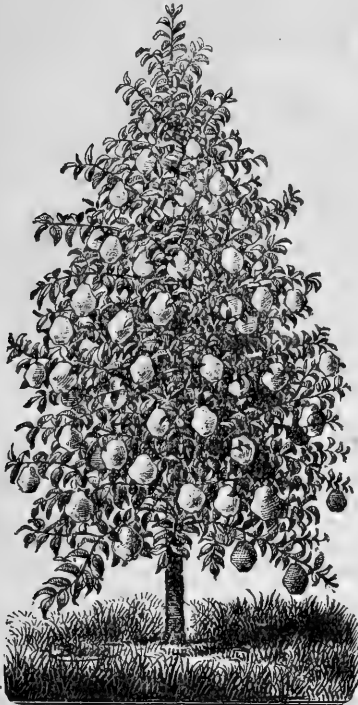


Fig. 113.—Young Kieffer Pear Tree.

from September to February. Perhaps the best time in all places is soon after the years growth has stopped. Sometimes three-fourths of the cuttings will live at other

times all fail. When planted in the orchard large holes should be dug, and well enriched with good manure and top soil thoroughly mixed together. The young trees should be cut back to within two feet of the ground, and have one-half of their growth cut back annually for a few years, always leaving the last bud on the outer side of the limb, so that the growth will be from the tree and make a more open head and a larger bearing surface. The trees require good cultivation and manuring. They are hardy anywhere in the United States, but are most valuable at the South. The Kieffer, another hybrid of late introduction is becoming very popular, especially so at the North.

LIST OF SUMMER VARIETIES.

BARTLETT.

Large, oblong, obtuse, pyriform, yellow; flesh white, buttery, juicy, vinous; open calyx, in shallow basin; tree a strong, upright grower, and a very early and abundant bearer; a most popular kind of English origin. July and August.

BELLE LUCRATIVE.

Medium to large, yellowish green, slightly russeted; flesh juicy, melting, delicious, of excellent quality; medium basin, with open calyx; tree is upright, moderately vigorous and prolific. July and August.

BLOODGOOD.

Medium, turbinate, yellow, with russet dots; flesh whitish, buttery, melting, aromatic; open calyx in very shallow basin; the tree is a good grower, and bears early and regularly. July.

BRANDYWINE.

Medium, pyriform, greenish, russeted with a brown blush; flesh white, rich, juicy and excellent; open calyx

in shallow basin ; tree a strong, upright grower, prolific. July. Origin Pennsylvania.

BEURRE GIFFARD.

Medium, pyriform, yellow, with red cheek ; flesh white, melting, juicy and finely flavored ; small basin, with closed calyx ; tree a straggling grower. June.

BUFFUM.

Medium, obovate, deep yellow, with a broad red cheek, and slightly russeted ; flesh white, buttery, sweet and of very good quality ; tree a strong, compact grower, productive. August. Origin Rhode Island.

CHAMBERS.

Medium, obovate, yellow, red next the sun and dotted with green ; flesh white, of fair quality ; tree a spreading grower of moderate vigor. July.

CLAPP'S FAVORITE.

Large, ovate, yellow, with brown dots ; flesh white, buttery, melting, sweet, of good quality ; tree vigorous, upright spreading, prolific. July and August. Origin Massachusetts.

DOYENNE d'ETE.

Small, roundish-obovate, shaded with and covered with grayish dots ; flesh white, sweet, melting and of agreeable flavor ; tree a strong, upright grower, bears early and abundantly. June.

FLEMISH BEAUTY.

Large, pyriform, pale yellow, with a brown cheek, russeted ; flesh whitish, melting and rich ; a handsome pear of good quality ; tree a strong, upright grower, bears early. August.

HENKELL.

Large, round-obovate, yellow ; flesh yellowish white, buttery, melting ; partially closed calyx in large basin ; tree upright, vigorous and productive. July.

HOWELL.

Large, wide-obovate, yellow, with handsome cheek and small dots ; flesh white, melting, buttery, aromatic, of fine quality ; small basin ; tree a strong, open grower, prolific. August.

LECONTE.

Supposed to be a hybrid between the Chinese Sand Pear and a cultivated variety. Large, oblong, pyriform, pale yellow; quality variable, usually second rate; much improved by ripening in the house; the tree is a very strong grower with dense foliage, bears early, comparatively free from blight; very valuable at the South; propagated readily from cuttings. August.

LOUISE BONNE OF JERSEY.

Large, pyriform, slightly one-sided, yellowish green, with red cheek; flesh yellowish white, juicy, melting buttery, of good quality; basin shallow; tree a good grower and heavy bearer; best on quince. August.

OSBAND'S SUMMER.

Small to medium, obovate, yellow, with a brown cheek, often slightly russeted; flesh white, granular, with a sweet, agreeable flavor; tree a good grower and productive. July.

OTT.

Small, roundish-obovate, greenish yellow, partly russeted, sometimes mottled with red; flesh resembles that of its parent, the Seckel; large calyx, in shallow basin; tree a strong, erect grower. July.

PETITE MARGUERITE.

Small, short, obovate, yellow; flesh juicy, melting and of good quality. June.

SECKEL.

Small, obovate, yellowish brown, with a red cheek; flesh very fine grained, sweet, juicy, melting, buttery, of the highest flavor—a standard of excellence; tree very hardy, but a slow grower. August.

STEVENS GENESEE.

Large, round-obovate, often flattened, yellow; flesh half buttery, granular, rich and well flavored; tree a vigorous grower.

ST. MICHAEL ARCHANGEL.

Large, pyriform, yellow, partly russeted; flesh rather

coarse, rich, aromatic; calyx closed, in small basin; tree pyramidal, a tardy bearer. August.

TYSON.

Medium, conic pyriform, yellow, with a reddish brown cheek, sometimes russeted; flesh juicy, melting, buttery, with an aromatic flavor—one of the finest summer pears; tree vigorous. July and August.

WHITE DOYENNE.

Medium to large, obovate, pale yellow; flesh white, melting, buttery, of excellent quality; small calyx in shallow basin; tree a strong grower and productive. August.

URBANISTE.

Large, short, pear-shaped, pale yellow, slightly russeted; flesh melting, buttery, somewhat acid, well flavored; tree a moderate grower, rather tardy bearer. August.

LIST OF AUTUMN OR WINTER VARIETIES.

BEURRE EASTER.

Large, obovate, yellowish green, slightly russeted, often with a red cheek; flesh fine grained, rich, melting, buttery, of good quality; small, closed calyx, in shallow basin; an excellent keeper; tree a good grower. November.

BEURRE LANGELIER.

Medium, pyriform, yellow, with some russet; flesh buttery, melting, with a sweet, slightly vinous flavor; tree a good grower, but rather tardy bearer. October and November.

BEURRE SUPERFIN.

Large, obovate, greenish yellow, somewhat russeted, with a brownish cheek; flesh juicy, subacid, melting, with an agreeable, vinous flavor; tree vigorous and a regular bearer. August.

DUCHESS D'ANGOULEME.

Very large, obtuse, pyriform, greenish yellow, often russeted; flesh yellowish white, melting, juicy and well

flavored; tree vigorous and a very reliable bearer; best on quince. September.

BEURRE BOSCH.

Large, very distinct pyriform, deep yellow, partially russeted; flesh juicy, buttery, sweet, excellent; basin shallow; tree a moderate grower, a regular bearer. Early autumn.

BEURRE CLAIRGEAU.

Large, pyramidal pyriform, with brown dots, and crimson toward the sun; flesh white, somewhat granular, buttery, melting, quality variable; tree of stout, erect growth, and a regular bearer. September and October.

BEURRE D'ANJOU.

Large, greenish yellow, with a red cheek, russeted; flesh yellowish white, fine grained, buttery, melting, highly flavored; sometimes a little astringent; fine tree and regular bearer. September.

BEURRE DIEU.

Very large, thick pyriform, dull yellow, dotted, with some russet; flesh rather coarse, rich, buttery; tree a vigorous grower. September.

DUCHESSÉ D'BORDEAUX.

Medium, roundish, yellow, with russet dots; flesh white, moderately juicy, sweet, of pleasant flavor; open calyx in medium basin; tree moderately vigorous. October to November.

GLOUT MORCEAU.

Large, short pyriform, greenish yellow; flesh white, fine grained, melting, buttery, sweet, of excellent flavor; tree a spreading grower, rather tardy bearer, best on quince. October.

HEBE.

Very large, round, obovate, lemon color, russeted; flesh melting, buttery, sprightly, coarse, with a vinous flavor, a good keeper; tree thrifty and productive. Origin South Carolina.

KIEFFER.

Said to be a hybrid, between the Bartlett and China Sand Pear; fruit large, handsome; skin deep yellow, with a bright vermilion cheek and some russet; flesh white, brittle, juicy, of fair quality; tree very much like LeConte, bears early. September and October. Originated near Philadelphia.

LAWRENCE.

Medium, pyriform, lemon color with numerous small dots; flesh white, buttery, with a rich, aromatic flavor; tree a spreading, moderately vigorous grower, bears early and abundantly. September and October.

ONONDAGA.

(Swan's Orange.) Large, nearly in the form of a double cone, yellow, numerous dots, sometimes with a brown cheek; closed calyx, in narrow basin; flesh somewhat coarse, buttery, melting, of fair quality; tree vigorous and productive. September and October.

PASSE COLMAR.

Medium to large, distinct pyriform, yellow, often russeted; flesh fine-grained, buttery, sweet, of very good flavor; tree a slender grower, inclined to overbear. October and November.

POUND.

(Winter Bell, Angora.) Very large, pyriform, crown wide, yellow, with a brown cheek; flesh compact, good for cooking; tree a strong, upright grower, and a good bearer. October and December.

VICAR OF WINKFIELD.

Very large, long, pyriform, conical toward the crown, yellow, with red cheek; flesh whitish, juicy, buttery, often astringent; good for cooking; best on quince; very productive. October.

WINTER NELIS.

Medium, roundish, pyriform, yellowish green, russeted; flesh yellowish white, fine grained, buttery, of excellent flavor; tree a slender and straggling grower. October to December. Origin Belgium.

CHAPTER XXXV.

THE PECAN NUT.

Of the nut bearing trees, the walnut, chestnut and filbert are all worthy of cultivation, but they are far less valuable than the pecan (*carya olivae-formis*) which is of the same genus as the hickory, and succeeds wherever that tree grows. The natural range of the pecan is in

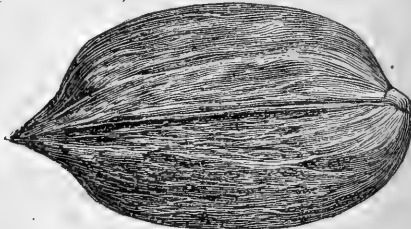


Fig. 114.

the valleys of the Western rivers from Illinois to Texas, and it is cultivated with remarkable success in most states of the Union, especially so at the South. The tallest tree of which we have any account is growing near Philadelphia, Pa., and the largest nut which has yet been brought before the public was obtained from Illinois. There are fine specimens of the trees growing in the Southern States, which often bear fifteen bushels of excellent nuts per tree; and as they sell readily at from three to five dollars per bushel, the net

income from a single pecan tree is often more than from several acres of ordinary farm products.

It is truly surprising that this nut has not ere now received the attention it so richly deserves. The trees are exceedingly prolific, hardy, and long-lived. After they begin to bear, each year adds greatly to the yield and they continue to increase in vigor and productiveness until more than fifty years old. During the last few years, considerable attention has been given to the culture of pecans, and as the people begin to understand their merits, the trees will be planted until at no distant time, pecan groves will be as popular and profitable at the South, and in many of the Northern States, as orange groves now are in Florida. Many persons who read this will doubtless live to regret that they did not take my advice to plant a pecan grove at once. The following quotation from an article written by E. T. Hollister, and published in the *Rural World*, shows how high an estimate is placed upon the pecan by one who is in every way capacitated to judge of its worth :

“The pecan is one of the most remunerative crops a farmer can produce. Young man, plant a pecan grove, and it will support you in your old age and enable you to pass the evening of your life in luxury, free from the toil and care necessary to the ordinary callings. Old gentleman, whose tide of life is upon the ebb, and whose tottering footsteps are slowly carrying you towards the other side of the great river, plant a pecan grove, because it does not require the amount of care and cultivation necessary to other crops, and if you do not live to reap the benefits from it yourself, those who come after you, and for whom it is your duty to provide, while enjoying

the fruit of your labor and forethought, will always have a green spot in their memory for the good old man who was so thoughtful as to provide bountifully for them in his old age, and they will plant a fresh flower on your grave with every recurring spring."

Plant a grove of at least one hundred trees next fall; do not wait till next year. There can be no doubt that in a few years they will prove to be the most profitable investment you ever made. Read what Mr. A. C. Daniel, of Crawford, Ga., has to say of the pecan:

"I have a row of trees at the back of my garden of different sizes. The largest one is five feet in circumference, and I gathered from it day before yesterday eleven bushels and one peck of nuts, which I sold in Athens, to Mr. Jester, for forty-five dollars (\$45.00). I have trees six or seven years old that are bearing. I believe they can be made to bear at four or five years of age. A pecan nut raised in this climate is far superior to others. I can sell all the nuts I raise to my neighbors; can retail them at twenty cents per pound—\$8.00 per bushel. I am going to set me out an orchard and push them from the jump."

Pecan trees are propagated by planting the nuts and by budding or grafting. There is a great difference in the quality and market value of the nuts from different sections and from different trees.

Some are small, thick shelled, of poor quality, and should be carefully avoided. The best varieties are large, very thin shelled, of fine flavor, and come into bearing in a much shorter time than the ordinary kinds. Nursery trees two or three years old are of very suitable size for planting in groves, and if properly pruned they can be

transplanted about as successfully as any fruit tree of the same age. They will grow in almost any soil with little attention, but much better results will be obtained when planted in rich soil, and well cultivated and manured. Rich bottom land, if not too wet, is excellent for them; but the largest tree that I have ever seen is growing in an elevated place, and has received very little attention. It is now 8 feet in circumference, two feet from the ground, has very long branches, and bears immense crops of fine nuts.

Plant the trees thirty feet apart in large, well manured holes. Cultivate well.

Examine the trees often and burn all twigs cut by the girdler. This insect is the same that attacks the hickory. It is not very injurious to large trees.

CHAPTER XXXVI.

THE PLUM.

While not so valuable as the peach or the pear, the plum is largely cultivated in this country, and some of the best varieties are highly esteemed. It is propagated by budding and grafting on its own roots, or those of the peach, which are chiefly employed, and on most soils considered superior to the plum stocks. On very compact, clayey soils, it will succeed better on its own roots. If plum stocks are to be used, they are obtained from the seeds of free growing kinds, managed in the same manner as peach seeds, requiring more care to prevent them from becoming dry. The native or Chickasaw plum is sometimes used as a stock. When this is used, the tree should be planted deep to induce rooting above the graft. The Wild Goose, an exceedingly popular improved variety of the Chickasaw, is a very profitable market fruit. It is not injured by the curculio so much as other varieties, bears early and abundantly, ships in a perfect condition to almost any distance, and often sells in Northern markets for as much as twelve dollars per bushel.

As with some other fruits, the best flavor of the Wild Goose is obtained when gathered as it begins to color and ripen in the house. The trees are short-lived, but as every farmer can raise as many as he needs by grafting on peach seedlings, it matters little if a few die every

year. Market orchards of this plum would doubtless be profitable in most sections of the South.

Plum trees are heavy croppers, and to remain vigorous and healthy require liberal manuring and good cultivation. The pruning of the tree is similar to that of the peach.

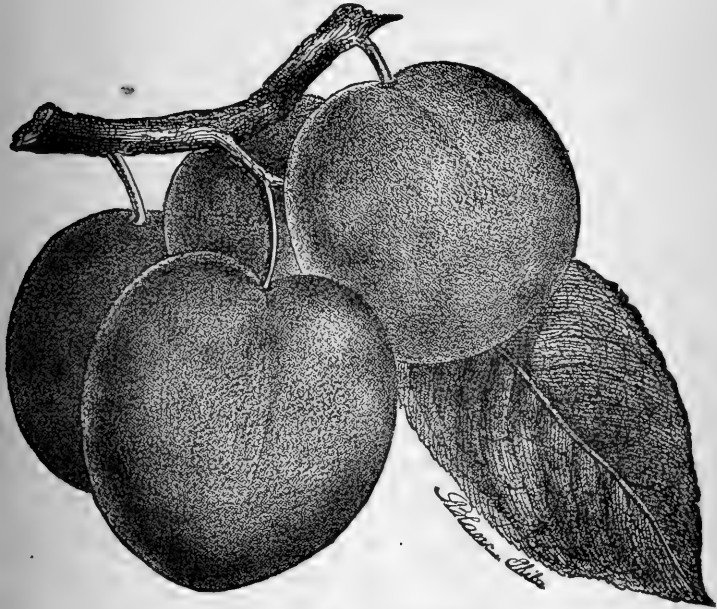


Fig. 115.—Wild. Goose Plum.

The greatest drawback to the successful cultivation of the plum is the curculio or plum weevil, which is noticed in the chapter on insects.

LIST OF VARIETIES.

In this list (*f*) indicates a foreign variety; (*c*) Chickasaw or native kind. Plums of the latter class are very vigorous, productive, and comparatively free from attacks of the curculio, but the foreign kinds are superior in quality.

BASSETTE'S AMERICAN. (*c*.)

Small, crimson, with heavy bloom; flesh sweet, rich, of good quality; tree bears young and exceedingly prolific; excellent for cooking. August.

COE'S GOLDEN DROP. (*f*.)

Large, oval; skin light yellow, with dark-red spots; stalk about an inch long; flesh yellow, firm, adhering close to stone, rich, sweet and delicious; tree moderately vigorous. August.

CUMBERLAND. (*c*.)

Large, yellow, very sweet and juicy Origin Augusta. August and September.

COLUMBIA.

Large, brownish purple, dotted with fawn-colored specks, covered with much bloom; stalk about an inch long, stout, inserted in a narrow, small cavity; flesh orange, not very juicy, but very sugary when fully ripe, separates freely from the stone, except on the edge. Medium season.

DAMSON (COMMON BLUE, WELL KNOWN.) (*f*.)

A valuable market sort; very prolific; comparatively free from attacks of the curculio; separates partially from the stone. September.

DECARADEUC. (*c*.)

Medium, round; skin yellow, with dull red cheek; flesh juicy and finely flavored; this excellent variety is hybrid between the Chickasaw and a European variety. Origin South Carolina. June.

DUANE'S PURPLE. (*f*)

Large, oblong; handsome skin, a reddish purple; flesh amber-colored, juicy and of good flavor, adheres partially to the stone; tree prolific and a strong grower. Season medium.

EARLY YELLOW PRUNE. (*f*)

Large, oval; yellow, with red dots in the sun; flesh yellow, sweet, juicy, with a very agreeable flavor; separates from the stone; tree a good grower and bears well. July.

GERMAN PRUNE. (*f*)

Long, oval; one side swollen, dark purple, with a blue bloom; flesh sweet, green and of a very agreeable flavor, separates from the stone; much esteemed for drying, abundant bearer. August.

GREEN GAGE. (*f*)

Small, round, yellowish green; flesh pale green, of best quality; usually separates from the stone; tree a spreading, slow grower. July.

HULING'S SUPERB. (*f*)

Large, roundish, oval, with distinct, though shallow suture; greenish yellow, covered with pale bloom; flesh greenish, yellow, rather coarse, but with rich, sprightly flavor; tree very vigorous, upright, large foliage, moderate bearer, good quality, adheres to the stone. July.

IMPERIAL GAGE. (*f*)

Large, greenish yellow, rich, juicy, of fine quality; usually nearly free from the stone; a vigorous, upright grower, prolific. July.

ITALIAN PRUNE. (*f*)

Medium, oval, dark blue; flesh yellow, sweet, of good quality, separates from the stone; tree a strong, spreading grower. August.

LOMBARD. (*f*)

Medium, oval; skin red; flesh yellow, juicy and of agreeable flavor adheres to the stone; tree strong grower, prolific. July.

MARIANNA. (c)

Seedling of Wild Goose. Of Texas origin; large, round; skin bright red; good quality, prolific.

MAGNUM BONUM (YELLOW EGG.) (f.)

Very large, oval, yellow, with white dots; flesh yellow, sweet, of fair flavor; tree moderately vigorous and productive. July.

MOROCCO. (f)

Medium, roundish; skin purple, covered with a pale thin bloom; flesh greenish yellow, juicy and finely flavored, adhering slightly to the stone; growth rather slow and moderate bearer; a good early plum, free from curculio.

MINER. (c)

Medium, oblong, red, with a fine bloom, adheres to the stone; tree a strong grower, prolific. September.

NEWMAN'S. (c)

Medium, oval, light scarlet, with a thin bloom; flesh pinkish, juicy, adheres to the stone; tree healthy, hardy, vigorous and productive. July.

ORLEANS. (f)

Medium, round, a little enlarged on one side of the distinct suture; skin dark red, purple in the sun; flesh yellowish, sweet, somewhat acid, separates freely from the stone; tree vigorous; season medium.

POND'S SEEDLING. (f)

Very large, oval, skin yellowish, nearly covered with red or carmine, thin whitish bloom, sprinkled with brownish dots; flesh yellow, a little coarse, juicy and sweet; tree very vigorous and productive. August.

PRINCE'S YELLOW GAGE. (f.)

Above medium, deep yellow; flesh yellow, rich and sweet, productive. August.

RED MAGNUM BOMUN (RED EGG.) (f)

Large, oval, red, with gray dots; flesh greenish, coarse, subacid, separating from the stone; tree a slow grower. August.

RICHLAND. (*f*)

Medium, oval, a little pointed at apex; skin reddish purple, covered with a thin bloom; stalk in a small cavity; flesh greenish yellow, juicy, sweet, adheres partially to the stone; tree upright, vigorous, very valuable for market.

SHROPSHIRE DAMSON. (*f*)

Resembles common blue Damson; but little superior to it, almost free from curculio; blooms late and is very prolific.

WEAVER PLUM.

Medium, purple, with blue bloom; of fine quality; bears regularly and profusely; tree very hardy. August.

WILD GOOSE. (*c*)

An improved variety of the Chickasaw; large, oblong; skin bright red; flesh firm, juicy, sweet, cling; tree very prolific; a very profitable market fruit. Ripens in June.

QUACKENBOS. (*f*)

Large, oblong, roundish; skin deep purple, covered with bluish bloom; suture hardly apparent; stalk long and slender, set in a slight depressed cavity; flesh greenish yellow, a little coarse, but sweet and juicy, adheres slightly to the stone; a rapid, upright grower and productive. Origin Albany. August.

CHAPTER XXXVII.

THE POMEGRANATE.

This beautiful fruit succeeds perfectly in the warmer portions of the Southern States, and can be grown in colder latitudes if protected in winter. The pomegranate has an agreeable, sweet flavor, and is much esteemed. The skin of the fruit is hard, of an orange color with a red cheek. The peculiar crown on the blossom end is the result of an enlargement of the calyx.

The tree grows from ten to twenty feet; has numerous small branches.

It is propagated by layers, cuttings, suckers or seeds, requires very little pruning, and gives best results when planted in rich soil.

CHAPTER XXXVIII.

THE QUINCE.

This small, hardy, irregular growing tree, as usually seen, is, perhaps, the most unsightly of all fruit trees; but by a little attention by the way of pruning and

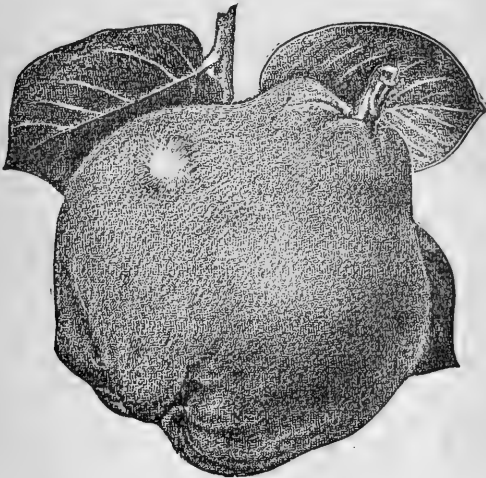


Fig. 116 —Orange Quince.

training, it becomes an object of ornament, both when in blossom and when laden with its ripe orange-colored fruit.

It succeeds admirably in this country and is highly

esteemed. The trees seldom grow higher than fifteen feet, and have a strong tendency to send up numerous suckers from their base. They are sometimes trained with several stems from the same roots, but they have a much neater appearance if only one is left, about two feet high.

The trees are propagated by grafting, and from layers and cuttings. They are gross feeders, and to be healthy and productive, must have a generous supply of nutriment. In very cold climates, the roots are injured by deep freezing, and mulching is resorted to as a means of protection. The roots of quince trees are very near the surface, hence their cultivation should not be very deep. A small quantity of salt applied to the soil will be found beneficial to most fruit trees, especially so to the quince. The two principal obstacles in the way of quince culture are the blight and the borer.

There is always a good market price for fine specimens of this fruit, and the person who devotes his attention to its culture, studies its habits and learns to minister properly to its wants, will certainly be highly pleased with the results, and amply repaid for all his trouble.

LIST OF VARIETIES.

ANGERS.

Large, pear-shaped, good quality ; tree a thrifty grower and very prolific.

APPLE OR ORANGE.

Large, roundish, bright golden yellow, cooks tender, fine flavor ; highly esteemed for preserving ; the most popular of the old varieties.

CHAMPION.

Large and handsome; fruit good quality; tree very productive.

CHINESE.

Very large, greenish yellow; tree grows luxuriantly; blooms very early in spring; fruit of fair quality and will keep till March.

PORTUGAL.

Large, of mild flavor, esteemed for baking; tree a strong grower, but not so certain bearer as the Orange Quince.

REA'S MAMMOTH.

Very large, said to be a seedling of the Orange Quince, which it very much resembles; fruit of good quality; tree thrifty grower.

CHAPTER XXXIX.

THE RASPBERRY.

The raspberry is a low growing shrub common to both Europe and America. The wood is biennial—that of one year's growth, bearing the succeeding year, and dying soon after fruiting. It is divided into two distinct classes, known as the upright growing, which includes the red kinds, and the cap, which includes the black kinds. The first class is propagated from suckers, which spring up from the roots every year. They are increased very rapidly from root-cuttings, which are pieces of roots an inch or two long, planted in the fall or early spring, and



Fig. 117.

covered one or two inches deep. A mulch of some light material will prevent the ground from baking. Numerous plants can be obtained by cutting circles with a spade a few inches apart around the plant. The cut portions of root will make strong plants by the end of the season. In taking up sucker kinds be careful to re-

tain a portion of the old root, as represented in *fig. 117*. The cap varieties are propagated from the tips or ends of the young canes which bend over and take root. To facilitate rooting the ends of the canes are covered with a few inches of soil in the latter part of summer, or as soon as they stop growing. They will be ready for taking up in the fall. The tip varieties can be increased very rapidly by checking the new growth when it gets

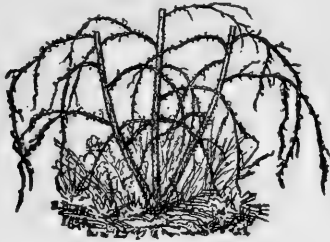


Fig. 118.

about two feet high, as shown in *fig. 118*. This causes the plants to throw out side branches, which are in turn shortened in when a foot or two long, and produce other branches. In this way a single bush will furnish a large number of tips to be layered late in the season.

The soil for the raspberry should be deep and rich. For garden culture they can be planted in stools of three or four plants each, two or three feet apart. The growing canes should be pinched back when three feet high—not allowed to obtain their full growth. By this means they grow strong and branching, produce better fruit, and do not require supports. If the tops and side branches are kept properly pinched back while growing, they form a perfect hedge and bear immense crops of the

finest specimens of berries. In cultivating, all young canes are kept cut away, except those that are to be left for the next year's bearing. After fruiting, the bearing

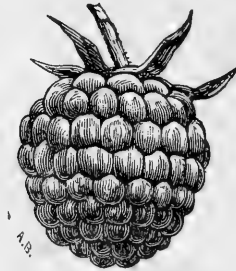


Fig. 119.—Cuthbert.

canes are of no further use, and are cut away to give the young canes a better chance to make a vigorous growth. If supports for raspberries are desired, they can be kept in hills and tied to stakes, or strips nailed to the tops of posts three feet high may be used. The raspberry has become one of the most profitable of small fruits, and large quantities are marketed, both fresh and evaporated. It succeeds best at the South when planted on the north side of a fence or building. By planting the earliest and latest kinds, the season of this berry may be extended over a period of several weeks. They may be had late in the season by cutting down the stools to within a few inches of the ground in spring. The young canes that come up will mature their crop in August and September.

Raspberries delight in rich soil, and respond readily to good cultivation, but no one should be deterred from planting them by the thought that they require too

much attention to be profitable. A few rows near the house with only a little attention in the way of pinching and cultivating will supply a family with this fruit for several weeks in the early summer. Even from a few plants that are put out in fence corners, and have an occasional cleaning out of weeds and old wood, moderate quantities of fair fruit are obtained. Coming in at so



Fig. 120.—Gregg.

favorable a season, being a certain crop, and bearing so large quantities of fruit in a small space and with little attention, it is surprising that every family is not supplied with the raspberry. Of the red varieties, the Cuthbert is one of the best, while of the black, the Gregg is very popular.

LIST OF VARIETIES.

BRANDYWINE.

Medium, roundish, obtuse, conical, bright red; flesh firm, moderately juicy, sprightly, subacid. Origin said to be Delaware.

CAROLINE.

Large, roundish, oblate, orange yellow, with a slight bloom, grains medium size; flesh soft, juicy, sweet and rich; canes strong, vigorous, sometimes branching, pale red in the sun, with a thin whitish bloom and a few slender green spines; a very prolific bearer; it is thought to be a seedling of Brinckle's Orange and a Golden Cap.

CUTHBERT.

Medium, roundish, bright red or crimson, a darker shade when fully ripe; grains small, compact, separates freely from the stalk; flesh firm, sweet and juicy; canes strong, vigorous, upright, often branching; spines short, stout, purplish and numerous; it suckers freely; fine for family and market use.

DAVISON'S THORNLESS.

Similar to the American Blackcap, only it ripens a few days earlier; almost as vigorous and about as productive, not so large, but sweeter; canes have no spines, except small ones on the leaf stalk. Origin New York.

DOOLITTLE.

Similar to the American Black, though much better; canes vigorous, branching; spines whitish, stout and numerous; very productive; fine for market.

GOLDEN THORNLESS.

Oblate, sometimes conical, slight bloom, dull orange; tolerably firm, sweet and juicy; moderately vigorous, very productive, and has very few spines.

GREGG.

Large, roundish oblate, black with slight bloom grains large, compact; flesh moderately juicy, rich and sweet;

similar to the Mammoth Cluster in quality, but larger and more productive; it is one of the largest of the Black-cap family, hardy, strong grower; canes strong, branching, with a few sharp greenish spines; it commands the highest price in market.

HERSTINE.

Very large, bright scarlet; flesh moderately firm, sweet and juicy; separates from the core freely; canes strong, erect, spines short, strong, scattering, greenish white, a little purple.

MAMMOTH CLUSTER.

Larger than Doolittle Black Cap, but a little later.

PHILADELPHIA.

Medium, roundish, dark crimson; flesh soft, mild, sub-acid, separates freely; canes vigorous, tall, branching, almost free from spines.

SOUTHERN THORNLESS.

Medium, roundish, conical, brilliant red; grains of medium size, compact; flesh soft, sweet, not rich; canes vigorous, reddish on the sunny side; upright, not often with branches; few short, purple spines; foliage large and abundant, productive; a nice variety for family use.

CHAPTER XL.

THE STRAWBERRY.

It is uncertain how the name "strawberry" originated, but it is a fact patent to all that it is applied to the earliest, most beautiful and most delicious of small fruits.

Strawberries should find a welcome at every home. No spot of ground on the farm will give so rich returns as the strawberry bed that receives the proper attention, and in field culture the profits are sometimes almost fabulous. The plants are raised principally from runners, which are thrown out after fruiting, take root during the summer and autumn, and are ready to transplant in the fall or the following spring. One hundred rooted runners are sometimes taken from a single plant in one season. While the strawberry will grow and bear crops on almost any kind of soil, with the most indifferent treatment, to give the best results, it requires a deep, rich soil, good cultivation and abundance of moisture. It is indeed a gross feeder, and there is little danger that the supply of nutriment will be too great.

Almost any kind of manure is received with thanks, and a top dressing of ashes is very highly appreciated.

A large number of varieties have been introduced, many of which have special merits that adapt them to certain localities, but it often happens that the variety which succeeds best at one place is wholly unsuited to another. Hence, in making large plantings of the strawberry it is best to use only such kinds as are known to succeed in the particular locality. Some varieties of this fruit are bisexual, or have perfect flowers, and produce fruit when planted alone; others have imperfect flowers, and are either entirely barren, or bear fruit only when their flowers are fertilized with the pollen from other

flowers. *Fig. 121* represents a perfect flower, having both stamens and pistils; a pistillate flower, having only the female organs, is shown in *fig. 122*. Flowers of the staminate or barren kind, having only male organs.

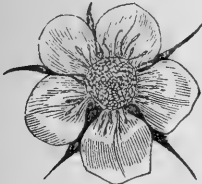


Fig. 121.

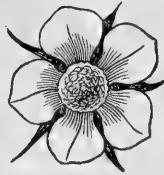


Fig. 122.

Some of our most popular varieties of strawberries are pistillate and require fertilizing with the pollen from the male organs of other flowers to be fruitful. This is

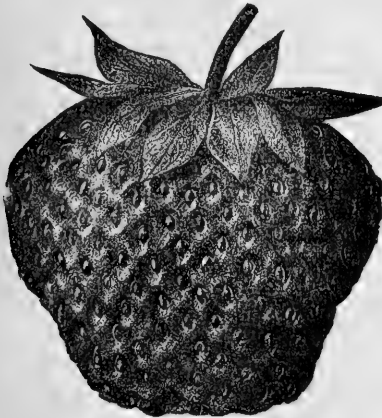


Fig. 123.—Sharpless.

usually done by planting one row of a kind producing perfect flowers to every four or five rows of the pistillate varieties.

Staminate plants are of very little value, as the per-

fect flowering or bisexual kinds will bear crops and fertilizes the pistillate varieties at the same time. Do not mix the two classes of plants in the same row. They can be kept separate, if the rows are only a few feet apart, by cutting off all the runners, but the fruit of the pistillate kind will be a cross, and the seeds from the fruit when planted may produce valuable new varieties, but the chances are not very favorable. When seeds are to be planted, the thoroughly ripened fruit is mashed up and well mixed with sand, and the whole planted in a partially shaded place, or in a box, and covered very lightly, not more than an eighth of inch deep, with fine soil. If well watered, the plants will be large enough in the fall to set out in the bed. Some of them may develop superior qualities, but we already have so many valuable kinds, superior seedlings will be obtained only in rare instances. At the South, fall is the usual time of setting out strawberries. If done in August or September, and the plants are well watered and protected from the sun, they will bear good crops the next spring

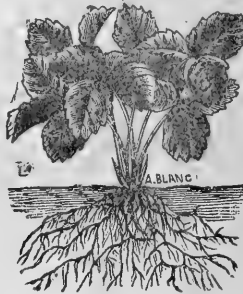


Fig. 124.

after planting. The ground must be deeply plowed and thoroughly enriched. If for field culture, the rows are made three or three and one-half feet apart, with a space of one to two feet between the plants. For garden culture, they can be planted much closer together, leaving the plants far enough apart to be cultivated conven-

iently. Rooted runners of one year's growth are used. They should be taken up very carefully and the roots kept straight, until ready for planting, and placed



Fig. 125.—A Badly Dug Strawberry Plant.



Fig. 126.—A Badly Planted Strawberry Plant.

placed in the ground up to the crown of the plant, with the dirt thoroughly worked in among the roots. Fur-

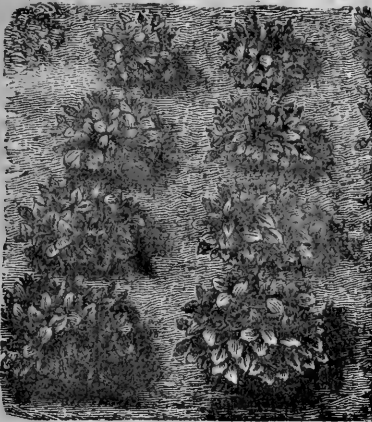


Fig. 127.

rows may be made with a plow, or holes made with a dibble or trowel, anything, so the roots are not matted, and the dirt is pressed firmly about them. (See fig. 124).

In dry weather the roots should be wet before planting. Various systems of cultivation are in practice, each of which has its advocates and advantages. In the hill system all the runners are kept cut away before they take root, as represented in *fig. 127*. By this method, which is well suited to garden culture, the quantity of the fruit is reduced while the quality is improved. The largest specimens may be raised by cutting off all the young berries, except a few of the most promising, and keeping the plants well watered. The matted row system is represented in *fig. 128*. The runners are allowed to take

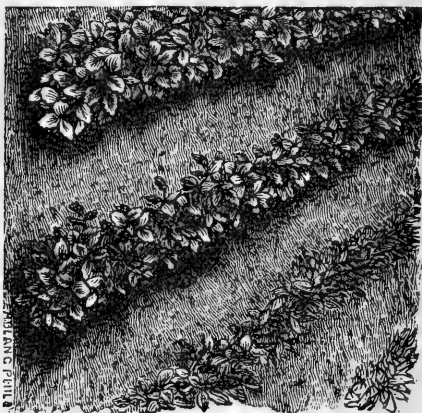


Fig. 128.

root on the row, the middle being kept clean by cultivation. Large quantities of fruit are obtained in this way, but considerable labor is required to keep down weeds and grass, much of which has to be done by hand. Modifications of these systems are sometimes adopted. Matted hills are preferred by some. The runners are allowed to take root, but are kept in hills by cultivating both ways.

They are sometimes left in rows and only a portion of the runners allowed to take root.

Whatever system of cultivation is adopted, abundant nutriment and moisture are indispensable. As a means of protection during winter in cold climates, and at the same time for the purpose of retaining moisture, mulching is resorted to. Such material as hay, straw or pine leaves is used. A covering an inch or two deep put on in the fall prevents the freezing and thawing, by which the plants are often raised out of the ground and die in consequence. The mulch is sometimes left on till fruiting is over. If the ground becomes hard, the mulch should be removed and a good stirring given before the blossoms are set. It can then be replaced to remain till fruiting is over, as a protection to the crops. By some, the mulch is retained during the summer; others prefer clean cultivation after fruiting. A coating of well rotted manure or compost spread over the vines acts as an excellent mulch and fertilizer.

Cotton seed applied in the fall and forked in lightly in the spring enriches the ground and protects the plants during winter.

The crowns of the plants must not be smothered by too deep covering. Strawberry beds or plantations should be renewed every few years. This is sometimes done by letting the runners take root in the middles and plowing up the old vines. The season of the strawberry can be very much prolonged by planting the latest and earliest kinds in northern and southern exposures, respectively.

LIST OF VARIETIES.

BIDWELL.

Medium to large, bright crimson; flesh red, firm, juicy, subacid, rich, very vigorous, with light, green leaves, productive, and continues long in bearing.

CHARLES DOWNING.

Large, deep scarlet; flesh sweet, luscious; plant vigorous and very productive.

CRESCENT SEEDLING.

Medium, conical, uniform in size, brilliant red, excellent quality; plants strong, vigorous, yield abundantly; fine for market. Pistillate.

DUCHESS.

Medium to large, roundish, regular in form, scarlet; flesh pale red, firm, juicy, sprightly, subacid; plant vigorous; foliage medium size, of a very dark green, very productive.

GLENDALE.

Medium, long, conical, light red; flesh firm; plant hardy, healthy, vigorous, large green leaves, very productive.

MONARCH OF THE WEST.

Large, light red; flesh moderately firm and delicious; plant strong, vigorous, leaves unusually large; very early, valuable for market.

SHARPLESS.

Large, roundish, conical, bright scarlet; flesh light red, firm, sweet and pleasant flavor; plant vigorous, large, dark green leaves.

TRIOMPHE DE GAND.

Large, roundish, often coxcomb shape; bright red next the calyx, greenish white at the point; flesh firm, white, hollow at the core; vines vigorous, hardy.

WILSON'S ALBANY.

Large, pointed, deep crimson; flesh tender, acid and agreeable; productive and hardy; valuable for family use and market.

WINDSOR CHIEF.

Large, conical, deep scarlet; flesh dark red, soft, rich and acid; vigorous grower, with healthy foliage of a dark green. Pistillate.

MINORO MINER'S PROLIFIC.

Medium roundish, surface irregular, dark red; flesh pale red, moderately firm, subacid, juicy; plant hardy, vigorous, light green foliage; prolific bearer.

KENTUCKY.

Large, conical, bright red; flesh white, firm, sweet and juicy; plant vigorous, strong and productive; long fruit stalks, bearing the berries up from the ground.

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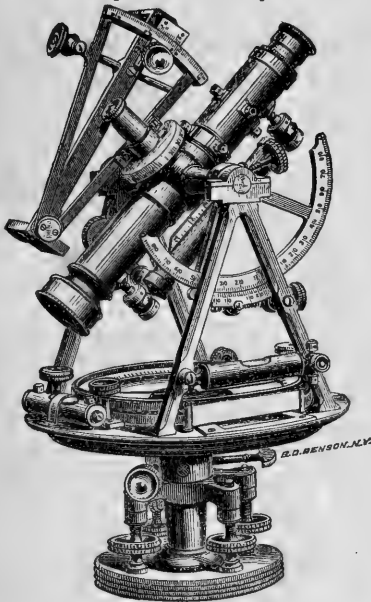
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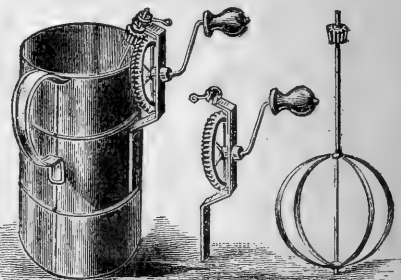
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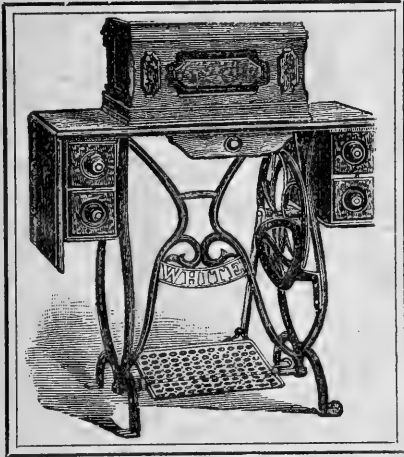
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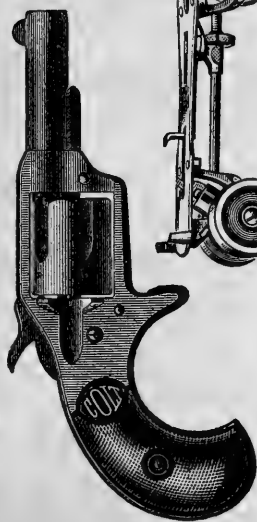
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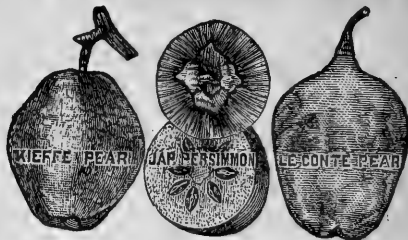
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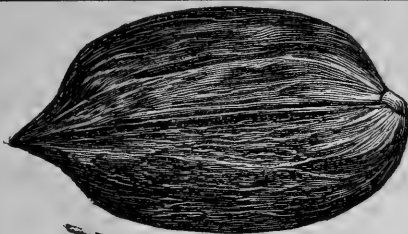
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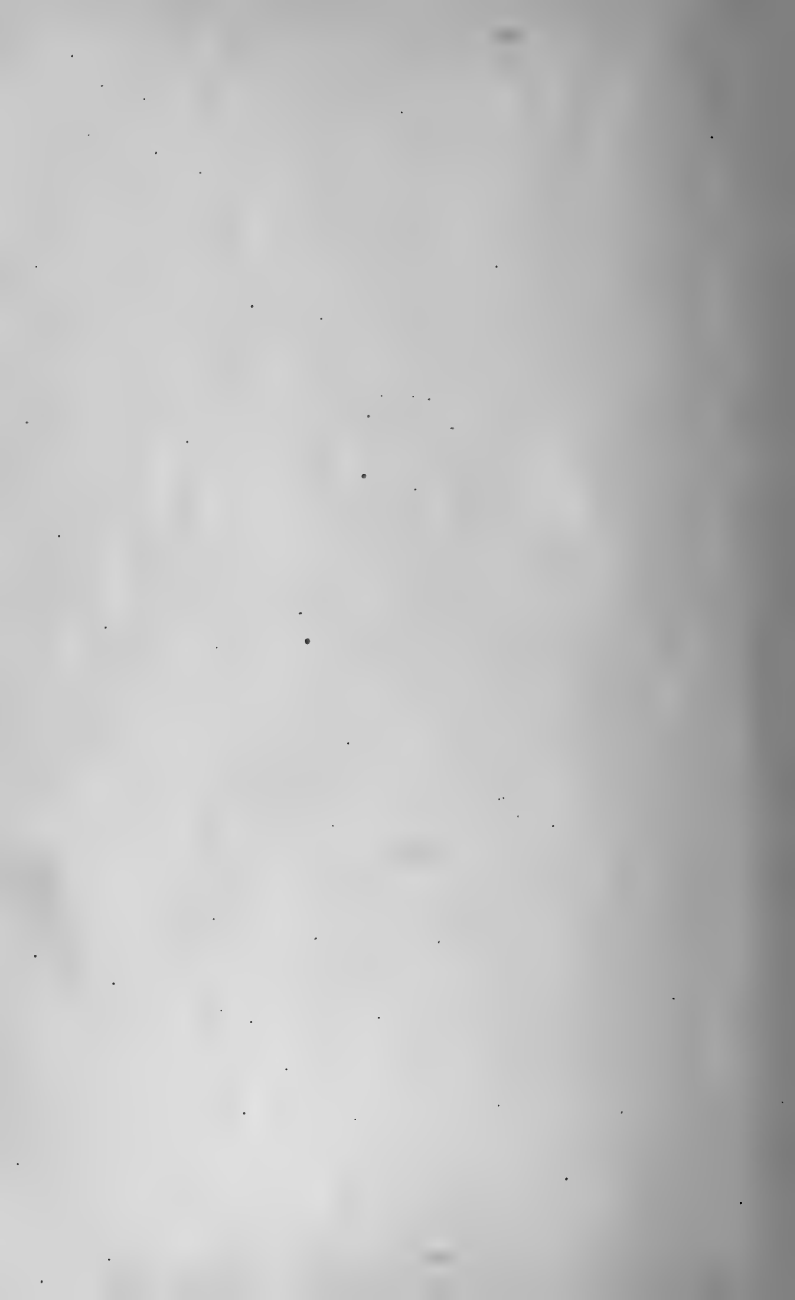
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