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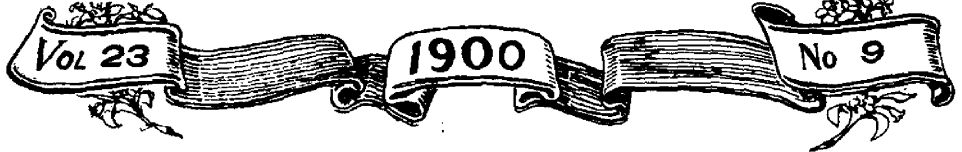
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FIG. 1892. THE CUMBERLAND RASPBERRY.

Photo by Miss Brodie


THE CANADIAN HORTICULTURIST



** SEPTEMBER **

OUR PLANT DISTRIBUTIONS FOR 1900.

THE CUMBERLAND BLACK RASPBERRY.

 ON the 11th of July, we received a basket of fine branches of the Cumberland Raspberry from Mr. W. E. Wellington, grown at Fonthill. Nearly all the berries on each branch were fully ripe, and as Gregg was not yet in the market we were impressed with the earliness of the variety, as well as its evident productiveness. We accordingly took a photograph of it which forms the frontispiece of this number, and have decided to place it on our spring plant distribution list for 1901. The berries are of fine size and good flavor, and these characteristics combined with their earliness and productiveness make the Cumberland a most promising commercial variety. This year it began to ripen at Fonthill about the 5th of July. The plant is thought to be a seedling of Gregg, with a dash of blackberry blood in it. It originated nine years ago with David Miller, of Maryland, and is thought to be the most profitable and deservable market variety yet known. If we are to believe all the introducers say of it, it is the "Business Berry," having immense size, firmness and great

productiveness and wonderful hardiness, enduring without injury, we are told, 16° below zero, (Fahr). In size it is said to be "simply enormous," the berries often reaching $\frac{7}{8}$ of an inch in diameter; those photographs were $\frac{3}{4}$ of an inch in diameter, but the dry season would account for their being a little below size. Now, if the berry equals half what its introducers say of it, surely it is well worth introducing to Canadian Fruit Growers.

SPIRÆA, ANTHONY WATERER,
(*S. Japonica Bumalda.*)

At the same time that the Cumberland Raspberry came to hand, July 11th, we also received from Mr. Wellington a basket of the new Spiræa, which is one of the most desirable of the newly introduced shrubs for the lawn. He writes, "They are quite a sight in the Nursery rows, and they continue blooming till frost comes." The R. N. Y. says of it, "The most satisfactory Spiræa in existence; a constant bloomer. The plant is of low growth, the umbels a bright pink color. A profuse bloomer."

Prof. McCoum, of the Central Experimental Farm, Ottawa, writes the following description of it: "Origin, Europe; height, 1 foot; begins to bloom first week in July, and continues in flower a long time. Flowers, a bright, purplish red, borne in compact heads. One of the prettiest dwarf shrubs yet tested at Ottawa."

The members of the Ontario Fruit Growers' Association will be pleased to learn that these two plants, the Cumberland Raspberry and the Spiræa, Anthony Waterer, have been selected for the plant distribution in the spring of 1901, and our subscribers will have an opportunity of testing them.

TO REMOVE FRUIT STAINS from enamel saucepans use chloride of lime. Fill the saucepan with cold water, add one teaspoonful of chloride of lime to each half gallon, and boil until the stain is removed.—*Rural New Yorker.*



FIG. 1893. SPIRÆA, ANTHONY WATERER.

CURRENTS IN 1900.



FIG 1894. VERSAILLAISE (REDUCED).

FOR a few years past Currant growing has gone somewhat out of favor owing to the low prices prevailing. Fortunately for the grower a much more encouraging state of things prevails, and instead of 3 or 4 cents a quart, they are now worth in our best markets 5 and 6 cents, which leaves a good margin to the grower, even after expenses of sale are deducted. The acid of the currant is counted very wholesome, and in summer season the free use of currants, either fresh, spiced, or in jelly, is worth far more to the human system than most people imagine.

In our grandfathers' gardens currants were usually grown against the fences and often left unpruned or uncultivated, and the old Red Dutch was almost the only variety



FIG. 1895. FAY (REDUCED) SHOWING PRODUCTIVENESS.

known. The quality was excellent, for it had a brisk, sprightly, mild acid flavor, which gives it first rank; but its small size made it a poor market berry, and slow of harvesting.

Now a great change has come over currant cultivation. With the advent of the Cherry currant, so large in berry that it captivated the buyer, and so easy to gather as to reduce the cost of harvesting, there came a great impetus to planting, some asserting that \$200.00 an acre was a common return for the crop. Then came Fay's Prolific with a wonderful flourish, and everybody planted it; and now several others contest the first place for the commercial garden.

To determine the best variety of each color for our Ontario fruit growers to plant was the purpose of the Provincial Department of Agriculture in starting a Small Fruit experiment station at Burlington, in charge of A. W. Peart, who has now sixteen varieties of Red and White Currants in bear-

ing. On the 23rd of July the writer visited this station and found Mr. Peart quite ready to leave the interests of his four hundred acre grain farm to take us through his experimental plots on plums, pears, peaches, grapes and small fruits. In looking over his currants we found his Fays very fine, with bunches about four inches in length. The bush is not equal to that of the Cherry in vigor or endurance. The illustration, Fig. 1895, shows excellent fruiting habit, in which point there is little to choose between the two varieties, the latter of which is of European and the former of American origin. Very similar to these two popular varieties is the Versailles, from France, differing from the two former in having berries of less uniformity in size, and on the whole averaging smaller. Some of the bushes at Mr. Peart's were a marvel of productiveness, and we thought it worth while to take a snap to show their manner of fruiting. (Fig. 1894.) Belle de St. Giles, Fig. 1896, is a magnificent looking currant, so large and fine, but it does not appear to be as productive as the varieties mentioned above. The



FIG. 1896. BELLE DE ST. GILES (REDUCED.)

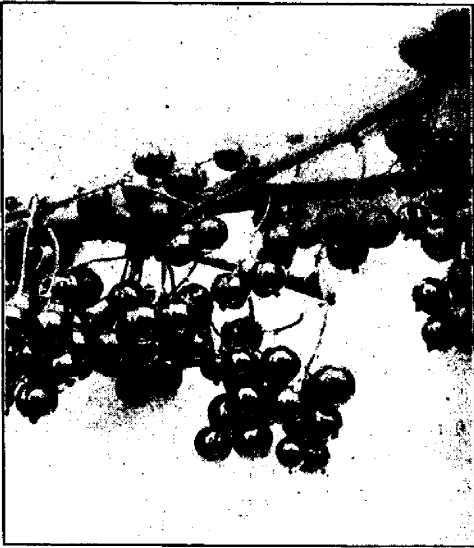


FIG. 1897. RED CROSS (REDUCED).

Wilder, in Mr. Peart's opinion, is the finest market currant in his collection. The bunches and berries are of the largest size, larger than either Fay or Cherry, and quite equal to those of the St. Giles, and in his opinion it is more productive than any of them and better in quality. Fig. 1899.

Fig. 1897 shows a fruiting branch of the Red Cross Currant, one of the newest varieties which was originated by Jacob Moore. It has little to distinguish it from Fay or Cherry in its size and appearance. Mr. Green, the introducer, says, "It makes twice the growth that these varieties make; the fruit is often so dense on the stalks as to hide the leaves entirely from view. Color bright red; berries set in a compact cluster with long stems; convenient for picking." Mr. Peart in his report for 1899 says the bush is medium in vigor and moderately productive. Another season's trial may settle the character of this variety with greater certainty.

Of the white varieties, the long bunch Holland has impressed us most favorably at

Maplehurst, the bush is so healthy and the bunch and berry so large. Bnt Mr. Peart places the White Imperial, Fig. 1898, at the head of his list of white currants. It is not quite as large a berry as the Holland and shorter in bunch, but perhaps it is more productive, and it has a mild pleasant flavor. There is no use planting white currants for profit, as there is little demand for them in the market, so that we can only recommend them for home uses.

The pruning of the red currant is so important that we add a few remarks thereon. The old method of training in tree form has been long given up by us, because the borer often destroys the old stem, and new shoots are needed to take its place. We always allow a half dozen shoots to grow from the root, cutting out the older stems from time to time. Those that remain we spur prune, cutting back all laterals to two or three buds, a treatment that will result in the formation of fruit spurs along the whole length of the main branch.



FIG. 1898. WHITE IMPERIAL (REDUCED).



FIG. 1899. WILDER (NATURAL SIZE). *

THE REPORT ON GRADING APPLES.—D. S. Beckwith, of Albion, N. Y., Chairman of the Committee on Grades, presented a report to the National Apple Shippers of the U. S., which was adopted in the following form :

“Resolved that the standard for size for No. 1 apples shall not be less than $2\frac{1}{2}$ inches in diameter, and shall include such varieties as the Ben Davis, Willow Twig, Baldwin, Greening and other varieties kindred in size. That the standard for such varieties as Romanite, Russett, Wine Sap, Jonathan, Missouri Pippin and other varieties kindred in size shall not be less than $2\frac{1}{4}$ inches, and furthermore that No. 1 apples shall at time of packing be practically free from the


action of worms, or defacement of surface or breaking of skin ; shall be hand picked from the tree and be of a bright and normal color and a shapely form.

“No. 2 apples shall be hand picked from the tree ; shall not be smaller than $2\frac{1}{4}$ inches in diameter. The skin must not be broken or the apple bruised. This grade must be faced and packed with as much care as No. 1 fruit.”

Every member of the National Apple Shippers' Association is requested to incorporate the above resolution in their apple contracts for this year and, as far as possible, use such grading when picking.—*Fruitman's Guide*.

POLLINATION IN ORCHARDS.

Varieties which are often self-sterile.

ELF-STERILITY is not a constant character with any variety. It is influenced by the conditions under which the tree is grown, as are the size, shape and color of the fruit. The adaptation of a variety to soil and climate has much to do with its self-sterility, and if a tree is poorly nourished it is more likely to be infertile with its own pollen. No one can separate varieties of fruit into two definite classes, the self-sterile and the self-fertile. Thus Bartlett and Kieffer are often self-sterile, but there are orchards of both which are self-sterile. The same may be said of many other varieties. The best that can be done, therefore, is to give a list of those varieties which *tend* to be more or less self-sterile and which it would be unsafe to plant alone.

Following is a conservative list of these risky varieties, drawn both from experimental work and from the reports of over five hundred fruit growers, who have favored me with their experience. *Pears* : Angouleme (Duchess), Bartlett, Clapp, Idaho, Kieffer, Nelis. *Apples* : Bellflower, Primate, Spitzenburg, Willow Twig, Winesap. *Plums* : Coes' Golden Drop, French Prune, Italian Prune, Kelsey, Marianna, Miner, Ogon, Peach, Satsuma, Wild Goose, and according to Waugh and Kerr, all other varieties of native plums except Robinson. *Peach* : Susquehanna. *Apricot* : White Nicholas. *Cherries* : Napoleon, Belle de Choisy, Reine Hortense. Most of these varieties are self-fertile in some places, but the weight of evidence shows them to be uncertain.

It must not be inferred that all other varieties are always able to set fruit when planted alone. There are some, however, which have exceptionally good records for faithfulness when planted in solid blocks, other

conditions being favorable. Among these are : *Apples* : Baldwin, Ben Davis, Fallawater, Janet, Oldenburg, Rhode Island Greening, Red Astrachan, Smith Cider. *Plums* : Burbank, Bradshaw, DeSoto, Green Gage, Lombard, Robinson and some of the common blue Damsons.

All this goes to show that the problem of self-sterility is as much a study of conditions as of varieties. We can set no limit ; we can only indicate tendencies.

Many large blocks of Kieffer are being planted with no other varieties intermingled, and it is an important point to know whether this practice will give the best results. Eight blocks of Kieffer in New Jersey and Delaware have been reported as completely or partially unfruitful because of self-sterility, and there are also many solid blocks of Kieffers in the same States which bear well. Kieffer is unreliable, especially on the Delaware peninsula. A large block of Kieffer may be productive, but it does not pay to take the risk, particularly since the pollen of other varieties is likely to give better fruit, as will be seen later on.

SELECTING THE POLLINIZER.

Let us suppose that we intend to plant a large block of an uncertain variety, as Kieffer, because it has distinct merits as a market sort. We wish to plant with it some other variety to make it fruitful. There are two points to be considered when selecting a pollinizer for Kieffer or for any other self-sterile variety ; the choice should not be indiscriminate. These are simultaneous blooming, and mutual affinity.

The first and most important point is that the two shall blossom together, since the only way in which a pollinizer can make a self-sterile variety fruitful is by supplying it

with pollen. This means that the pistils of the self-sterile variety must be receptive when the stamens of the pollinizer are ripe, which is possible only with simultaneous blooming.

The comparative blooming of varieties is more or less a local problem. Differences of latitude, altitude, soil, nearness to large bodies of water, and weather conditions during the blooming season not only hasten or retard the time of blooming but also disturb the order in which the different varieties open. Varieties blossoming together at one place may not another. The best that can be done in the way of generalizing on the question of simultaneous blooming for cross-pollination is to make a chart for each well marked geographical district. To this end several hundred fruit growers have kindly taken notes the past two seasons, and when sufficient data is collected these charts may be published. They will indicate in a general way which of our standard commercial varieties may be expected to bloom together; yet each fruit grower should be prepared to make minor corrections for his own farm. Until more definite knowledge is available, each orchardist should learn how varieties bloom in his own neighborhood before planting them for cross-pollination. It is better, but not always necessary, that the two should bloom exactly together; if they overlap two or three days that is often enough.

It is sometimes desirable to plant varieties of different botanical species together for cross-pollination, but this will often be impracticable because of the difference in their blooming seasons. Thus the Oriental pears, as Kieffer, and the European pears, as Bartlett, usually do not blossom together. Kieffer generally blooms several days before Bartlett, hence it necessary to pollinate it with a variety of its own class, as Le Conte or Garber. In some places, however, the two groups blossom approximately together, and then varieties like Bartlett and Seckel should

be used in preference to Le Conte or Garber, since their fruit has a greater market value and the trees are less likely to blight. Whenever the European pears are used as pollinizers for Kieffer it would be well, if otherwise practicable, to work them on quince roots. Standard Kieffers will often bloom two or three years before standard Bartletts planted at the same time, and unless early blooming dwarfs are intermingled they may be unproductive these first few years.

The three classes of commercial plums—Japanese, domestic and native—will usually bloom at different periods in the order named; but when a "spell" of warm weather succeeds a cold and backward spring, varieties of all these groups will come on nearly together and cross-pollination will result. In some places the blooming seasons of these groups overlap so that some varieties of each might be used regularly for cross-pollination.

THE MUTUAL AFFINITY OF VARIETIES.

Another point to be looked after when selecting a pollinizer for Kieffer, or for any other self-sterile variety, is the mutual affinity of the two. That is, will the pollen of the pollinizer fertilize the pistils of the self-sterile variety readily and also develop them into high grade fruit? At present but little is known about the matter. Taking first the possibility of cross-pollination between varieties of different species, there seems to be no doubt but that many varieties of native Japanese and domestic plums will fertilize each other. Orchard experience in many places indicate this; as when Satsuma is used to pollinate Coe's Golden Drop in California prune orchards. Several successful crosses between the three were also made at Ithaca the past season. Amongst these are Abundance \times Grand Duke (Fig. 1903), Georgeson \times Wayland, Berckman \times Coe Golden Drop, Coe Golden Drop \times Satsuma. That

is, if we wish to use Satsuma as a pollinizer for Coe Golden Drop, or Lombard for Wild Goose, the probability is that the combination would work, if the two varieties bloom together ; but since the three groups usually bloom at somewhat different periods there be no general cross-pollination outside the limits of the species.

Numerous crosses and common orchard practice have also shown that the European pears, as Bartlett, and the Sand Pear hybrids,

Fig 1900, compare the size of the Seckels which received Kieffer pollen with those which had Lawrence pollen. The specimens shown are typical of thirty fruits secured from these two crosses in 1899.

It is necessary to study not only the mutual affinity of varieties belonging to different species, but also of varieties of the same species. Some varieties will not fertilize each other, though blossoming at the same time. Kerr has found that Whittaker plum



FIG. 1900.—SECKEL. FROM KIEFFER POLLEN ABOVE, FROM LAWRENCE POLLEN BELOW.

as Kieffer, will fertilize each other regularly when they bloom together. Several Kieffer fruits from Bartlett pollen and Bartlett fruits from Kieffer pollen were secured in the crossing work of 1899. In fact, my experience has been that if Kieffer pollen is put on the pistils of our common pears, of the European class, it will usually produce larger fruit than pollen from most varieties of that type. Kieffer is a good pollinizer for Bartlett, Angouleme, Clapp, Nelis and the like varieties, when they bloom together. In

will not fertilize Wild Goose nor will Early Red help Caddo Chief. Again, the pollen of some varieties will give better fruit than that of others when used on the pistils of self-sterile or even on self-fertile varieties. There is very little definite knowledge as to what varieties are best adapted for pollinating self-sterile sorts. Waugh and Kerr have studied this point with native plums for several years and their judgment is united in a table of recommended pollinizers for plums (12th Report Vt. Ag. Ex. Sta.) A few results

from crosses made at Ithaca in 1899 will illustrate this point. Fig. 1900 shows the comparative size of Seckel when pollinated with Kieffer and with Lawrence pollen. Clapp pollinated with Kieffer was also larger than Clapp pollinated with Lawrence or Louise Bonne. Howell blossoms which received the pollen of Clapp gave fruits of nearly twice the size of those which received Bartlett pollen. Bartletts crossed with Angouleme were larger than Bartletts crossed with Sheldon. In some cases no difference could be noticed, yet most of our standard commercial varieties will be likely to yield

Prune, Green Gage, Italian Prune (Fellenburg); Satsuma with Abundance, Burbank, Red June; Miner with De Soto, Forest Rose, Wild Goose; Wild Goose with De Soto, Newman, Miner.

DOES CROSSING CHANGE THE APPEARANCE OF THE FRUIT?

In connection with mutual affinity of varieties which are selected for cross-pollination, there comes the question of the "immediate influence" of pollen. For instance, if Seckel pollen is put on Kieffer pistils, will it impart the Seckel flavor, color and characteris-

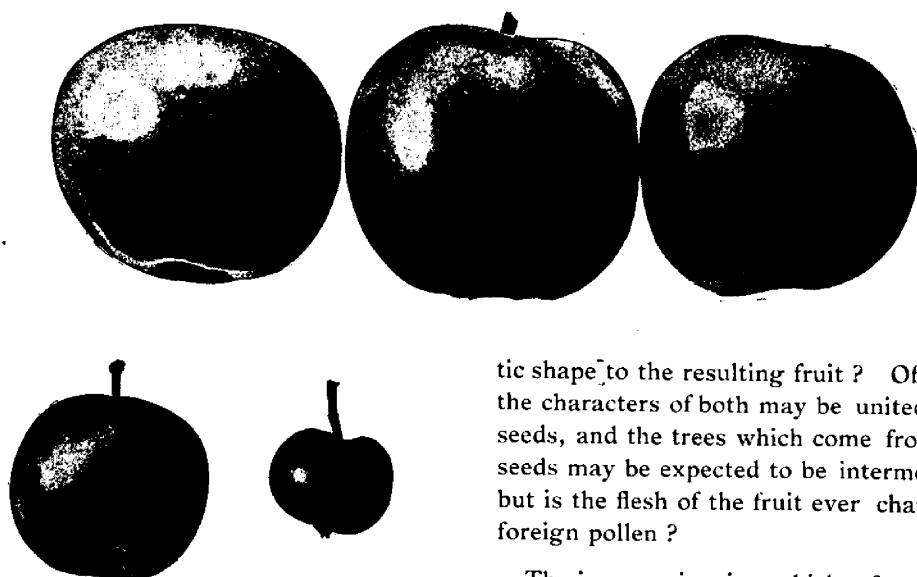


FIG. 1901.—Stark. From Wagener pollen above, from Stark pollen below. Marked benefit from cross-pollination.

enough better fruit when planted with some varieties than with others, to make a study of this point worth the while.

Some of the combinations which have been very successful in the commercial orchards of the country are: Bartlett with Nelis, Flemish Beauty, Easter, White Doyenne; Idaho with Bartlett; Kieffer with LeConte, Garber; Coe Golden Drop with French

tic shape to the resulting fruit? Of course the characters of both may be united in the seeds, and the trees which come from these seeds may be expected to be intermediates; but is the flesh of the fruit ever changed by foreign pollen?

The increase in size which often follows crossing cannot be called a true immediate influence, for the foreign pollen generally stimulates the fruit to be a better growth because it is more acceptable to the pistils, not because it carries over the size-character of the variety from which it came. In 1899, Hyslop Crab pistils which were fertilized with pollen from the great Tompkins County King, grew into fruits of the usual crab size. An immediate influence in size may be possible, for the size of the fruit is nearly as constant a varietal character as is the shape;

but most of the increased size in crosses of orchard fruits probably arises from the fact that the pollen is more acceptable.

Setting aside the usual gain in size resulting from crossing, we wish to know whether there will be any change in the shape, color, quality and season of ripening of the fruit. A few undoubted instances of this influence have been noticed with some plants in which

ence of pollen from observation, rather than from experimental proof. It does not necessarily follow that "sweet and sour" apples are due to cross-pollination, nor that the russet on Greening apples borne on the side of the tree next a Roxbury was produced by the influence of the Roxbury pollen.

Most of the changes in fruit which are attributed to the influence of cross-pollina-



FIG. 1902.—LONGFIELD. FROM GREENING POLLEN BELOW, FROM LONGFIELD POLLEN ABOVE. MARKED BENEFIT FROM CROSS-POLLINATION.

the seed is the principal part of the fruit, as the mixing of sweet corn and field corn; also perhaps in various peas and beans. When the seed is surrounded by a fleshy pulp, however, as in our common orchard fruits, it is still in dispute whether this pulp is influenced, however much the seeds themselves may be. Most men have formed their convictions about the immediate influ-

tion are due to variation. Every bud on a tree is different in some way from every other bud on that tree and may develop unusual characters, independent of all the other buds, according to the conditions under which it grows.

The best way to determine whether there is an immediate influence of pollen is by hand crossing. Among the forty-five different

crosses which were made in 1899 with this particular point in view, not one showed any change which could be positively attributed to the influence of pollen. Even the concentrated sweetness of Seckel made no impression on the poor quality of Kieffer; nor were there any constant differences in color, shape or season of ripening in any of the other crosses. Nearly everybody who has crossed varieties of orchard fruits has had a similar experience.

Most of the evidence supporting the theory that there is an immediate influence of pollen

sometimes exerted. But it is certainly much less frequent than is commonly supposed.

THE DISTRIBUTION OF THE POLLINIZERS.

Having selected a pollinizer with reference to simultaneous blooming and mutual affinity, the fruit-grower now wishes to know how many trees will be necessary to pollinate the self-sterile variety. There are three things to be considered here: The ability of the pollinizer to produce pollen, its market value and the class of fruit to which the self-sterile variety belongs.



FIG. 1903—ABUNDANCE. FROM ABUNDANCE POLLEN ABOVE, FROM GRAND DUKE POLLEN BELOW. SOME BENEFIT FROM CROSS-POLLINATION.

in the crosses of fruits comes from observation; most of the evidence against it comes from experiment. The observer, however careful, is likely to jump at conclusions; the experimenter tries to give due weight to every influence which might bear on the problem. Since many observers and a few experimenters have found what seems to be an immediate influence of pollen on the fruit, we cannot doubt but that this influence is

Varieties differ in the amount of pollen which they produce, and the pollen production of the same variety is also greatly modified by differences in locality and season. Other things being equal, the variety which produces pollen freely could be used more sparingly in a block of self-sterile trees than one of scanty pollen production. Little comparative observation has been made on this point as yet; but as a matter

of fact, most of our common varieties produce an abundance of pollen.

The number of trees of the pollinizer would also depend largely on whether it has value itself. If we are planting LeConte to pollinate Kieffer, we would naturally try to get along with the least possible number which will do the work ; but if Bartletts are to be used for the same purpose, we can afford to increase the proportion. Some

during the bright weather between showers. If using Garber or LeConte to pollinate Kieffer, every third row may be the pollinizer ; if using Bartlett, every other row. For apples, cherries and domestic or Japanese plums, the same proportion may be used. In a commercial orchard, the pollinizer should be planted in a solid row. Theoretically, it is much better to have the pollinizer more evenly distributed among the



FIG. 1904.—TALMAN SWEET. FROM TALMAN SWEET POLLEN ABOVE, FROM WAGENER POLLEN BELOW. NO BENEFIT FROM CROSS-POLLINATION.

growers plant every tenth row to the pollinizer, but the proportion should usually be greater. This might be enough if the weather during the blossoming season is very favorable for cross-pollination by wind and insects ; but if it is showery, the pollinizers should be more abundant, in order that cross-pollination may be more general

self-sterile trees ; practically, it will not pay to so mix them except in small orchards.

THE ADVANTAGES OF GENERAL MIXED PLANTING.

It would appear that the only thing to do now is to find out what varieties are inclined to be self-sterile and the varieties

which are best adapted for fertilizing them. But as a matter of fact, cross-pollination gives better results with nearly all varieties, be they self-sterile or self fertile. A variety may be able to bear good fruit when it is planted alone, but it will often bear better fruit if suitable varieties are near it. Mixed orchards are more productive than solid blocks, taking the country over. It is a common observation in Western New York that Baldwins in mixed orchards are more uniformly productive than Baldwins in large blocks. Furthermore, although a variety may be able to set an abundance of fruit with its own pollen, this fruit will often be smaller than if other pollen were supplied.

from cross-pollination, as Talman Sweet and Bradshaw, (Fig. 1904-5). The difference between the cross and self-pollinated Starks and Longfields is so striking that one would almost be tempted to think the self-pollinated fruits were wormy, but they are not. The self-pollinated Talmans and Bradshaws were apparently as fine in every way as the cross-pollinated fruits. Manning Elizabeth pear also was not benefited by pollen from other varieties.

The three self-pollinated Longfields here shown (Fig. 1902) have but five sound seeds; while the two crossed specimens had seventeen sound seeds. In general, cross-pollinated fruits have more good seeds than self-pollinated fruits, but there is no constant relation between the size of a fruit and the number of seeds it contains. Some of the biggest apples or pears may have only two or three good seeds. In case the ovules in one cell of an apple or pear core are not fertilized, that part of the fruit adjoining is often stunted and the fruit becomes lop-sided in consequence; but this likewise, does not always follow.

All of the above varieties are self-fertile, at least in Ithaca. They will produce fruit with their own pollen. But we have seen that some of them will produce better fruit if other pollen is supplied. Is it not worth while, then, to plant pollinizers even with self-fertile varieties—that is, to practice mixed planting with all varieties? There are three good reasons for doing this: First, some believe that self-sterility is likely to increase in the future, under the stimulus of right cultivation. Second, we can never be perfectly sure that any variety will be self-fertile on our soil and under our culture; even those varieties which are self-fertile elsewhere may be partially self-sterile with us. Third, most self-fertile as well as self-sterile varieties are benefited by cross-pollination. It is taking risks to plant a very large block of one variety. The trees



1905--BRADSHAW PLUM. FROM GERMAN PRUNE POLLEN ABOVE, FROM BRADSHAW POLLEN BELOW. NO BENEFIT FROM CROSS-POLLINATION.

From a number of experiments made in 1899, a few representative results are here given to illustrate this point.

Compare the size of self-pollinated and cross-pollinated fruits in our illustrations. In some varieties the differences were very marked, as with Stark and Longfield apples (Fig. 1901-2); in others the difference was not so marked, as Abundance (Fig. 1903); while a few showed no appreciable increase in size

may bear just as much and just as fine fruit as though other varieties were with them, but the chances are against it.

THE POLLEN-CARRIERS.

The pollen of one variety is carried to the pistils of another in two ways : by the wind and by insects. There are many kinds of insects which aid more or less in the cross-pollination of orchards fruits, principally bees, wasps and flies. Of these, the wild

bees of several species are probably the most important. In a wild thicket of plums or other fruits, they are usually numerous enough to insure a good setting of fruit. But few if any wild bees can live in a large orchard, especially if it is well tilled. As the extent and thoroughness of cultivation increases, the number of these natural insect aids to cross-pollination decreases ; hence it may become necessary to keep domestic honey bees for this purpose.

This article, with cuts, is kindly furnished by the Cornell University Experiment Station.

LAYING OUT HOME GROUNDS.

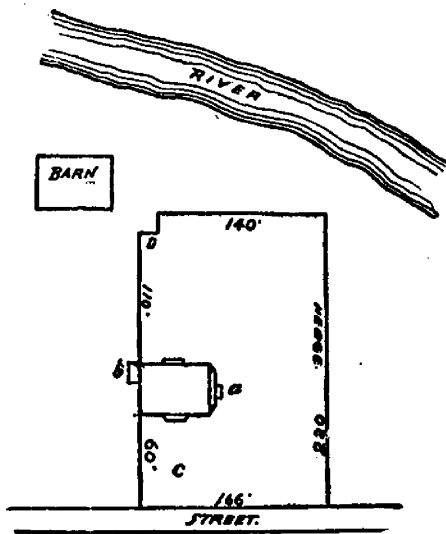


FIG. 1906. GROUNDS BEFORE PLANTING.
a, Front door; b, back door; c, croquet grounds;
d, seat.

Prof. Maynard in *American Agriculturist* gives a reply to a correspondent, describing the best method of improving his grounds by planting and arrangement of walks ; and as we so often have similar enquiries we give our readers his reply in full.

Fig. 1906 represents the grounds before laying out or planting. In Fig. 1907, the same grounds after planting are

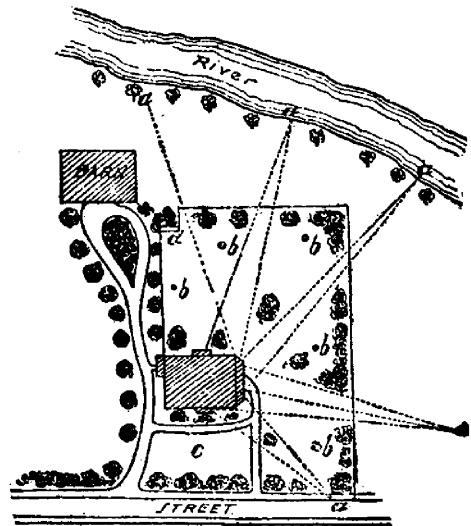


FIG. 1907. GROUNDS AFTER PLANTING.
a, Open vistas to pleasing views; b, covers for
objectionable objects; c, croquet grounds;
d, seat.

shown. The entrance or gateway that leads to the front door is placed on the street line about midway of the street front, the walk running in nearly a straight line to the center of the front of the house, the dismounting block or step being at the street edge.

A drive might be run from this point to the front of the house, where a turn-round

could be made, or it could continue by a graceful sweep to the stable and end in a turn-round as in Fig. 1907. The distance, however, from the street to the front steps is not too much for anyone but an invalid to walk easily, and as a drive must be maintained in the rear, it would serve both purposes and save the front lawn from disfigurement, and also save a great deal of expense in construction and repairs. Walks or drives possess no real beauty. They are expensive to build and to keep in repair and no more should be maintained than are absolutely necessary.

In grouping trees and shrubs, the principles to be followed are to so arrange them that as many as possible of the beautiful features of both near and distant views will be preserved and improved by the grouping, and all unpleasant features covered up. The dotted lines from the principal points of view at the dwelling and focusing at the points *a a*, etc., show how the beautiful outlook or important points may be kept in

view, while the groups at or near *b* show how such objects as are undesirable may be hidden from view. These lines show also from what points outside of the grounds pleasing views may be had of the dwelling and its surroundings, a feature not to be overlooked.

The barn, which is in most cases not an object to be made conspicuous, but rather to be somewhat secluded, is covered by the trees and shrubs grouped along the drive. The seat, *d*, is represented in full view, with trees over and in the rear of it, but if desired it could be easily secluded by arranging some of the groups in front of it. The croquet grounds, *e*, are hidden from the street by a border of large shrubs, but are in full view from the dwelling.

In planting groups of trees and shrubs, the largest and tallest should be set in the center, with the smaller ones on the borders and as much variety and beauty as is possible secured in their arrangement.

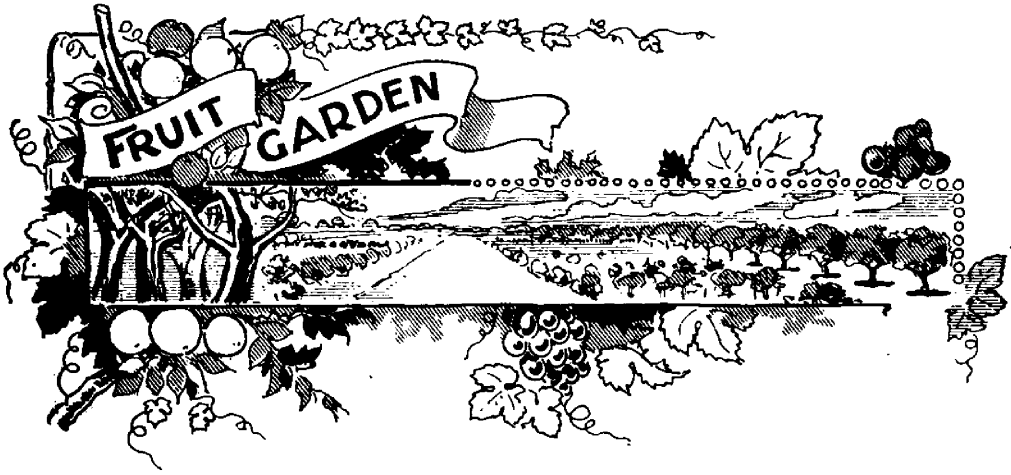
HOW TO MARKET GOOSEBERRIES—Gooseberries may be marketed either green or ripe. Some growers pick the smaller fruits green and allow the finest fruits to ripen. This is less exhausting for the bushes than it is to allow the whole crop to ripen. Others market the entire crop green, a method least exhausting to the bushes, and it also has this in its favor that the sooner the crop is in the market the less risk there is of its injury by sun-scald, mildew or other fungous or insect trouble. Each grower must determine for himself according to his local market conditions what method of handling the fruit is best for him. Green gooseberries are stripped from the branches quite rapidly. They may then be run through the fanning mill if necessary to free

them from leaves, sticks, etc., and then packed for market.

The style of package will be usually determined by the market demand. Some of the European sorts are best to grow for green gooseberries, because they attain considerable size very early in the season. Among the best sorts for this purpose are Industry (Whinham's Industry), Crown Bob and Lancashire Lad. These are red varieties and are favorite market sorts in England, either green or ripe. The Whitesmith is a white variety, excellent quality and productive. Wellington's Glory is also very productive, fruit large, yellowish, nearly white, and handsome in appearance.

New York.

S. A. BEACH.



FRUIT CULTURE—VII.

THE GRAPE.

NOTWITHSTANDING the fact that there are some four millions of grape vines in Ontario, many farmers even yet do not grow a single pound of this fine fruit, especially in the northern and eastern parts of the Province, where the difficulties of grape culture are supposed to be greater than they really are. The professional vineyardist of Southern Ontario who counts his vines by the thousand has possibly not a great deal to learn. The difficulty now is not so much the production of the fruit as the finding of a good market. But scattered through all parts of the country are people who own small vineyards which are by no means producing a high quality of fruit, and still others who, buying few or no grapes, yet have no vineyard of their own. It is to these classes more than to the commercial grower that the following remarks on grape culture are directed.

SOIL AND EXPOSURE.—The best site for a vineyard is a gentle slope facing to the south or southeast. In the low levels there is more danger from frosts, and on a northern exposure there will be some difficulty in ripen-

ing the later varieties. The grape loves a rich, warm and dry soil. The preparation of the land should include underdraining if the subsoil is at all wet or non-porous. It will thrive on sandy or gravelly soils, but on the very light soils there is a greater tendency to disease, especially to mildew. A rich, well-drained clay loam is the most satisfactory. The general opinion is that the quality of the fruit is higher on the heavier ground, though Fuller asserts the contrary.

PLANTING AND CULTIVATION.—Vines of the strong-growing varieties, like Niagara and Rogers, may be planted as one-year-olds. As a general rule strong two-year-old vines are the best to plant. Varieties like Delaware, Catawba and Moore's Early may be planted eight feet apart, but as most vineyards contain many of the strong-growing kinds which require more room, a good distance would be ten or eleven feet each way. This would allow convenient cross-cultivation before the trellis is put up, and give ample room for harrow, wagons, etc., between the rows later on. The vine should be planted fairly deep and the earth well packed

round the roots. If the roots are coarse and long cut back to about eighteen inches. Prune the top down to two three buds. Fig. 67, from Bailey's "Pruning Book," illustrates the pruning of one type of two-year-old vine. The top should be cut at A and B, the upper roots trimmed off at C and D, and the main roots cut in from E to F. Hoed crops can be grown the first three years between the young vines and thorough cultivation given. By the late fall the young vine should have made a growth of three or

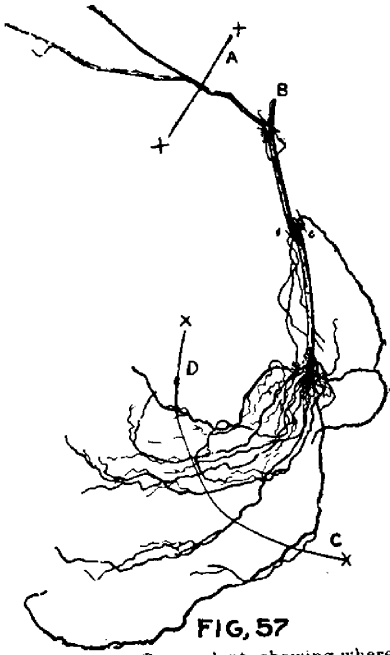


FIG. 57
Grape plant, showing where it should be pruned.

four feet, and should then or in the spring be pruned to a single cane and that cane should be cut back to two or three buds. The trellis may be put up the second spring or left till the third. The young vine having got thoroughly established during the first summer will, under good conditions, make a vigorous growth the second year, not more than two canes being allowed to grow. We now come to the end of the second season,

the treatment up to this time being practically the same whatever style of trimming may be adopted.

THE TRELLIS.—Various kinds of trellises have been in vogue at different times, but we need only here consider the post and wire method. Cedar or chestnut posts should be used. These can be eight feet long, sharpened at one end and driven down

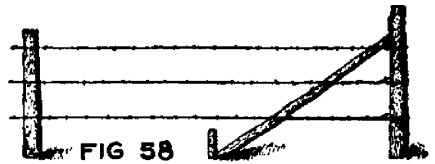


FIG 58

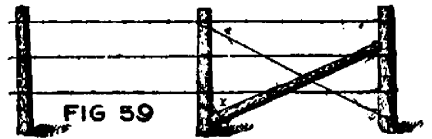


FIG 59

Bracing the end post. **BAILEY**

with heavy maul eighteen inches or two feet. This is the practice in the famous Chatauqua grape district. Or the posts may be nine feet long and a post augur used for the holes, which should be three feet deep. Two, three or four wires are used, according to the system of training. No. 12 wire is a suitable size, except in the two-wire trellis,

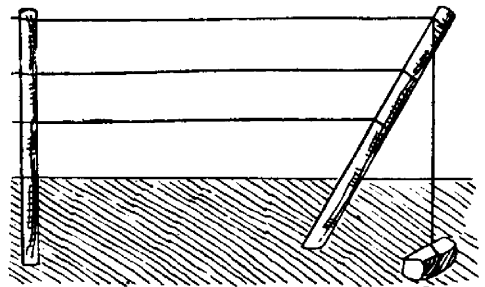


FIG 60

STONE AND WIRE BRACE AFTER BAILEY

when No. 10 wire should be used for the upper wire and No. 12 for the lower. Figs. 58, 59 and 60 show different ways of bracing the end post, upon which the heavy strain comes. Of these Fig. 59 is decidedly the

best. Either of the others will, however, be satisfactory where the rows are not too long. The posts should be set about twenty-five or thirty feet apart, two or three vines between the posts.

TRAINING.—Four systems of training are practised among vineyardists, each of which has its warm advocates :

1. The horizontal arm and spur system.
2. The Kniffen system.
3. The high renewal.
4. The fan.

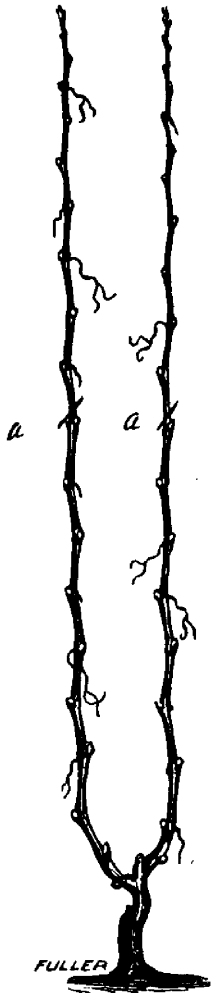


FIG 61



FIG. 62.

No hard and fast rules, however, can be laid down in this matter and various modifications of the many systems may be seen in all vineyards. "All intelligent pruning of the grape," says Bailey, "rests upon the fact that the fruit is borne in a few clusters near the base of the growing shoots of the season, and which spring from wood of last year's growth. A growing leafy branch of the grape vine is called a *shoot*; a ripened shoot is called a *cane*; a branch or trunk two or more years old is called an *arm*."

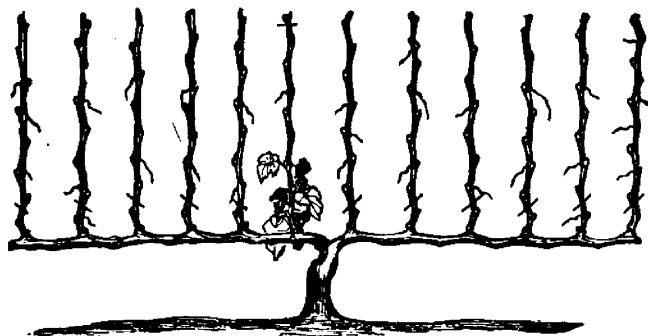


FIG 63 (FULLER)

The horizontal arm and spur method—called the *Fuller* system—is well suited for cold sections, where vines have to be laid down for the winter, and may be first dealt with. Fig. 61 represents the young vine at the end of the second season. The two canes are cut back at *a, a*, and bent down and covered for the winter, Fig. 62. In the spring the two arms are tied along the lower wire. A shoot will spring from each bud on

the canes, and at the end of the third season the vine will be as at Fig. 63. The vine is now pruned, the canes being cut back to a spur of two buds. As two bearing shoots will spring from each spur in the fourth season the arms may be slightly shortened so as to leave not more than five spurs on each arm. In the early summer any superfluous shoots that may have forced out from the trunk or arms, and all laterals or side shoots,



FIG. 64

which usually spring from the base of the regular shoot, should be removed and the ends of the main shoots should be pinched when the top wire is reached. At the end of the fourth summer there will be twenty canes, two from each spur. Every alternate cane will be cut off as close to the arm as possible, and the other cut back to a

THE HIGH RENEWAL SYSTEM.—In this system three wires are used, the lowest about eighteen inches or two feet from the ground and about the same distance between the wires. In the second season a single shoot or two shoots forming a Y trunk are tied to the wire, and in the third spring are tied along the wire, somewhat as



FIG. 65. High renewal before pruning. Catawba. BAILEY

spur of two buds—see Fig. 64. So that, as before, twenty bearing shoots will be provided for.

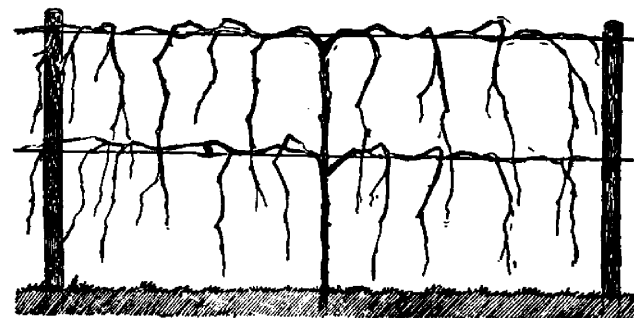
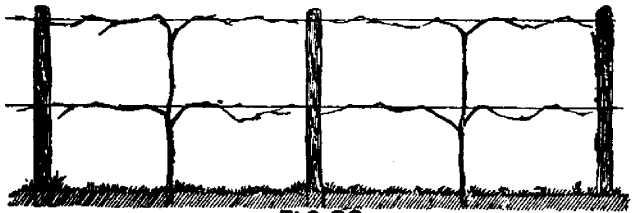
This, briefly, is a sketch of the horizontal arm and spur system. It necessitates more tying than other methods of training, but has many excellent features.

in the Fuller system. At the end of the third season the vine presents the appearance of Fig. 65. Instead of leaving two permanent arms and cutting back to spurs, as in the Fuller method, the old arms are cut away and two vigorous canes bent down. Two stubs, or long spurs, are also left, from which canes will be selected to form arms



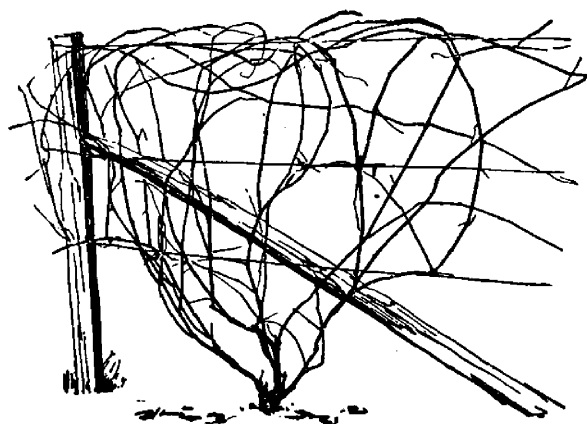
for another year—see Fig. 66. There is thus, in this system, a constant renewal of all wood except the main stem or trunk. The number of buds (from which the fruit-bearing shoots come) left on a vine after pruning would be from 25 to 30.

THE KNIFFIN SYSTEM.—This is perhaps the most popular method of training the vine amongst commercial growers, and is a system which, with various modifications, will probably be generally adopted in all large vineyards. The advantages that it possesses are three—it permits a cheaper trellis, there being only two wires employed; it necessitates no summer tying, the shoots being allowed to hang free; and it affords greater facilities for cultivating the



ground beneath the vine. All these things make for cheap production and, with present prices for grapes, cheapness of production has to be very earnestly considered. In the true Kniffin system two wires are used, the lower about three and a half feet from the ground, and the upper about five and a half feet. In the third spring a single strong cane is tied to the top wire and also to the lower. This cane will form the permanent trunk. At the end of the third season there will be eight or nine good canes on the main stem. Two of the upper ones are selected and cut

back to about eight buds each and tied to the wire. Two others, with five or six buds each, are tied along the lower wire, as in Fig. 69. At the end of the fourth season the vine will present the appearance in Fig. 70. The same process will then be repeated. Four strong canes will be selected and tied for the fifth season, as in Fig. 69. After a time the cutting back operation will leave a stubby, awkward lot of old wood where the horizontal canes start. It will then be wise to take, at the first opportunity, a shoot direct from the main stem and train it as an arm, cutting away all old wood that has gradually collected between the trunk and the horizontal canes. It will be noticed also that the Kniffin system simplifies pruning very much. There is no desire to urge here that the Kniffin system will give better re-



Fan-trained Concord. FIG. 67

sults than many other methods in operation. In many vineyards a combination of Kniffin and the Fan system is giving good results, but, properly managed, the Kniffin-trained vineyard will yield as well as any, and nobody can question its greater cheapness and the conveniences it presents. Success can be achieved with all systems, and in this matter of grape-training, there is lots of room for the expression of a man's individuality. The main things are—see that the vine is in a good thrifty condition ; do not

allow an unnecessary accumulation of old wood ; and let pruning be directed so that enough healthy last year's wood shall be left to produce the right number of bearing shoots this year. For one man who prunes too closely there are ten who leave too much wood. From twenty-five to forty healthy buds are ample.

Summer pruning need not be done except in the Fuller system, where some pinching in of the shoots is practised. With most systems, however, the vigorous growers, like *Brighton* and *Rogers*, will produce such immense shoots that cultivation is impeded. When they begin to get straggly and a nuisance, the ends can be trimmed off very quickly with a sharp sickle or corn knife. Importance should be attached to the early removal of superfluous shoots, and laterals or axillary branches. This operation does not take so very long, and is a true "thinning" process. These secondary shoots often bear one or two bunches, and second-class bunches at that. The vine will have enough fruit without them. The remaining fruit will be finer, and there will be a better lot of ripened canes to select from next year. As to the time of pruning : Any time through the winter where the vines can remain uncovered will be suitable. It is better to finish all pruning before the sap starts, though it is questionable if the bleeding of the vine does much harm, and it is hardly necessary to say that it is a vast deal better to prune late than not at all.

THE FAN SYSTEM.—In this system, which is not much in vogue in recent days, the wood is renewed almost from the ground every year. An excessive amount of old wood and a trunk are thus dispensed with, and after fall pruning the vine is easily covered, where winter protection is needed. Fig 67, from Bailey's "Pruning Book," shows a vine trained in this way. With so

much growing wood close to the ground there will be more difficulty in keeping the fruit clean than where a higher system is adopted, and the tying is somewhat inconvenient.

MANURING.—The fertilising treatment accorded to the grape should be on as liberal scale as that given to other fruits. Where a big growth of wood is being made it is a sign that enough nitrogen is present in the soil. Additional barnyard manure is not necessary, and will in fact tend to promote

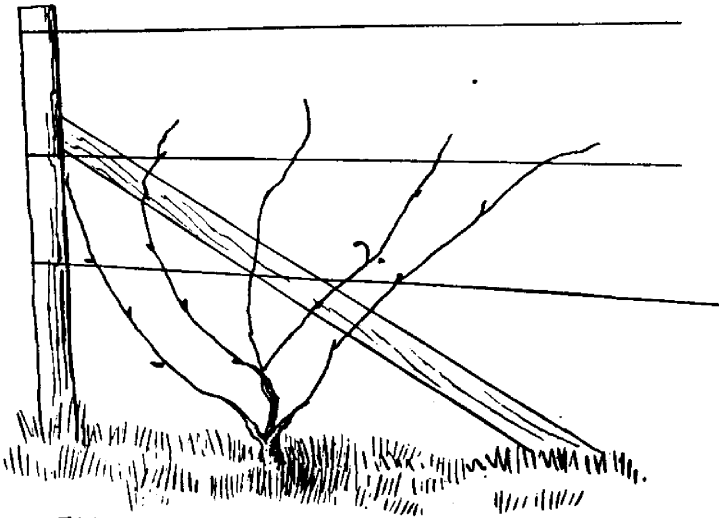


FIG. 68. THE VINE PRUNED

an overgrowth and induce mildew. A heavy dressing of ashes, or muriate of potash will then give excellent results, the grape being one of the heaviest consumers of potash of all fruits.

VARIETIES.—A good list for the commercial grower is the following :

Black.—*Worden, Roger 4, Roger 44, Concord.*

Red.—*Wyoming Red, Roger 9 (Lindley), Delaware, Roger 15 (Agawam), Vergennes.*

White.—*Niagara, Moore's Diamond.*

Many varieties of grapes have imperfect blossoms, and where this occurs, other varieties of a self-fertile character should be

planted near. *Rogers 4, Salem, Brighton,* and *Rogers 9 (Lindley)*, will be unsatisfactory when planted alone. *Niagara* and *Delaware* have an abundance of pollen, and *Concord, Roger 15, Vergennes* and *Worden* will fruit satisfactorily alone.

List of varieties for home use :

Black.—*Moore's Early, Worden, Rogers 4 and 44.*

Red.—*Brighton, Lindley, Delaware, Salem.*

White.—*Niagara, Moore's Diamond.*

With respect to this list, it may be added

that *Vergennes* is a good bearer, fair quality and excellent keeper, but it ripens too late for many sections. *Moore's Early*, although a good early black grape for the amateur, is not vigorous or productive enough for the commercial grower. *Wyoming Red* is early and prolific, but poor quality.

DISEASES.—Black Rot, Brown Rot, or Downy Mildew, Powdery Mildew, Yellow Leaf, Anthracnose, called Bird's-eye Rot when attacking the fruit are the

more common. It would take too long in a brief practical treatise, such as this, to describe different diseases. Readers are referred for full information to Bulletin 92 of the Ontario Agl. College and to "Fungous Diseases of the Grape and other Plants," by Professor Lamson-Scribner. Yellow Leaf is a disease of comparatively recent origin and little is known of its nature. The bright yellow color of the foliage, the shrivelling of the berries and the dying condition of the vine readily indicate the trouble. It is advisable to uproot diseased vines and reset with healthy plants. Bordeaux mixture is the standard remedy for the rot and mildews. For the common form—the Powdery Mildew—ordin-

ary flowers of sulphur will be as good or a better remedy than Bordeaux mixture. It can be dusted through and under the vines directly the leaves expand, and a second time when the grapes begin to form. The varieties chiefly subject to mildew are

Brighton, Rogers 44, Rogers 9, Salem and Agawam, but if the sulphuring is done early and thoroughly there will be no difficulty in growing a clean fine sample of these choice grapes.

St. Catharines.

M. BURRELL.

DISCUSSION ON VARIETIES OF FRUITS.

CROSBY.

Mr. McCollum inquired about this peach.

Mr. J. F. Hunt—I have fruited it in a small way for a number of years. It is a small peach with me, but extremely hardy. I think it is one of the best canning peaches, for flavor, but don't think much of it as a market peach.

Q.—Isn't it comparatively worthless as compared with the Crawford?

Mr. Willard—No, sir; I have fruited it for two seasons, and have been very much pleased with it in point of size and quality. Customers are pleased with it. I think soil and situation have a good deal to do with the development of good peaches.

Q. Isn't it too small for a market peach?

Mr. Willard—Not by any means; it is a good market peach.

Mr. E. Ashley Smith—I grew it this year, and the size was perfectly satisfactory.

Mr. King—I have fruited it, and it didn't prove satisfactory. The first fruiting was good size, but since that it has run small, even with close pruning.

Mr. Wood—We find that the older the tree the smaller the fruit. One thing in its favor is that it ripens in a season when we appreciate peaches.

Mr. Severn—The trouble is to get the right variety. If I had only known of the Crosby and had set my whole orchard to that variety, I should have been all right.

The Secretary—One firm, Lamming & Rudman, in the neighborhood of Rochester, sold their crop of Elbertas for over \$6,000.

A Member—I had Elberta and Crosby side by side; both grew well; but I like the Elberta full as well as the Crosby, and I think one Elberta would weigh as much as four of the Crosby.

Mr. Woodward—I agree with this gentleman. One basket of Elberta will sell for four times as much as Crosby, and you can raise four times as many.

A Member—Sixteen to one. (Laughter.)

CHAIRS' CHOICE.

Mr. B. J. Case asked after this peach.

Mr. Willard—There are some sections of the country where it is highly regarded and in demand. It does exceedingly well with me.

Mr. Pillow—It does better further south.

Mr. Willard—It originated south, but does well as far north as Sandusky, Ohio. Ripens about time of Late Crawford.

Mr. Barns—Mr. S. L. Quinby, of Marlborough, grew it, and says it is excellent. It bears well and looks well.

STEVENS.

Mr. Nelson Bogue—This peach is a seedling and originated on the grounds of the late Hon. R. S. Stevens, of Attica, N. Y. Fruit very handsome, nearly covered with a deep red, a little above medium size and ripens soon after the Early Crawford. Regular bearer, excellent shipper. Requires thinning. Tree very hardy and a strong grower.

DEACONESS.

Prof. Van Deman—Most of the fruit, I

have heard, has been either insignificant or worthless. I think the placing of this peach on the market one of the biggest frauds ever perpetrated in the state of New York. A firm of Ohio nurserymen worked this state last year selling what they labeled "Daniel Boone" and "Deaconess" peaches, warranted to be immune from yellows and to be very long-lived. I have heard of the Deaconess being delivered on which the Elberta tag had not been taken off. There are a number of gentlemen present who have been skinned to the bone. They have whistled to the tune of several hundred dollars. I think there were five thousand sold near Geneva.

Mr. Ira Pease—They worked Oswego.

Mr. H. R. McNair—A friend of mine was induced to buy some, and has them planted. Would you advise pulling them up?

Mr. Willard—I would not. There might be some Elberta among them.

TRIUMPH.

Suggested by Mr. Pillow.

Mr. Willard—I have understood from those who have grown it that it is not sufficiently large to warrant it as an orchard fruit.

WILLARD.

Mr. Willard—Some of the best fruits are oftentimes in your own locality. I have a peach myself, and I induced the Maxwell's to plant some. Don't you think the Willard a good peach, Mr. Anderson.

Mr. Anderson—We had some doubt about it for a year or two, but I would gladly say that this last year it proved very fine; would be glad to recommend it to anyone. Its season is after Early Crawford.

NIAGARA.

Mr. Woodward—We have a peach which is, I understand, an accidental seedling of the Crawford. I wouldn't set a Crawford. You could not give them to me if I could get the peach I refer to. It is about one

picking later than Crawford; averages a good deal better, better color, better leaf, and holds its size to the end of the season. You can't sell any other tree in that section if the variety I speak of can be obtained. It is called the Niagara.

Prof. Van Deman—I have heard the Niagara spoken of in the highest terms. Those who have fruited it prefer it to any other, and I think it even better than Elberta or Early Crawford.

Mr. Dewane Bogue—I think the Niagara is the Newark seedling.

Mr. Woodward—There isn't any doubt about it. I know the man on whose land it originated. I happened to get "defrauded" by getting two or three hundred trees of that variety instead of Crawford. I never found any fault. A year ago last fall I supplied Dansville Sanitorium with peaches. They wrote me half a dozen times this last summer to know if I could not send them some more. They bore a nice crop, and the fruit holds right up to the end of the picking. The quality is superb.

MARKHAM.

Mr. J. A. Anderson asked about this peach.

Mr. Willard—It originated at Hart, Mich. In correspondence with the best fruit grower I know, he said: "You remember being with me on Mr. Markham's place? He has one of the best peaches I ever saw grown. It is called the 'Markham.'" He finally secured some buds and sent them to me, and I have a few trees. From this man's statement, up in northern Michigan, where they require a hardy peach, and from his reputation as a peach grower, I am inclined to think that it might be a good peach. I will tell you next year.

CHAMPION.

Dr. Chas. A. Ring inquired if anyone knew anything of this variety.

Mr. Barns—We have two trees. It is a very desirable early peach. It is white with slight carmine cheek, freestone, and without exception the finest-flavored peach I ever ate. It is a good cropper, with season about same as Mountain Rose.

Mr. J. W. Smith, Winona, Ont.—Hynes Surprise is one of the best white peaches we have. I like the Champion; got it from Ohio. Quality is superb.

Mr. Hunt—One of the best white peaches I have, and am more than pleased with it.

KALAMAZOO.

Mr. C. A. Goetzman mentioned this peach.

Mr. Willard—I like it very much. It is one of the best they have in Michigan. A hardy variety, that gave us some superior fruit last year. Yellow, large size, a little late, good handler, and commendable in every respect.

CRAWFORD.

Mr. T. H. King—Is the Crawford doing as well as formerly? It is not with us. We are putting the Brigdon in its place. It bears a larger crop and is fully as fine.

Mr. Willard Hopkins—Is it not a fact that Early Crawford is more liable than any other variety to the disease known as "little peach"?

Mr. B. J. Case—We haven't any that excels Early Crawford, unless it is the Elberta; but Early Crawford is our stand-by yet.

Mr. Hopkins—Out of an orchard of 800 trees, after the first or second crop, about 500 were affected with the "small peach" disease. Were they grown from the pits, or is it a disease, or how did it come? I cleaned the whole orchard out.

Prof. Van Deman—This disease is just now being investigated by Dr. Smith, of Washington. As yet nothing definite is known about the germ, and there is no remedy known.

Mr. King—We had a little of it, but not

so much last season as a year ago. The affected trees were given four pounds of nitrate of soda each, and they seemed partially to recover.

BECKWITH.

Mr. Pease—It is a late peach, of rich dark color. If properly grown and thinned it is a freestone, otherwise it is a cling. In quality is very rich, and bears freely, and the trees are very hardy, but do not know if it is grown anywhere but Oswego.

GREENSBORO.

Replying to an inquiry, Mr. McKay said Mr. Maxwell had some. It is extremely early, but not absolutely freestone.

Prof. Van Deman recommend the trying of the Greensboro and Sneed, both very early peaches.

WIARD AND SNOW'S FAVORITE.

Mr. Edward A. Powell—This peach, the Wiard, is a new, very handsome and promising peach. Another good one, originating in Syracuse, is the Snow's Favorite, which ripens about the same time as Crawford's Early. Larger in size, higher colored, very fine in quality, of excellent flavor, and I consider it very desirable.

Who has experience in spraying peaches?

Mr. W. T. Mann—I made a careful experiment of spraying on dormant wood four or five years ago, and the treatment was successful. Last year similar experiments were made, and while there was not a large amount of curl there was sufficient to show favorably for the treatment, and I think you can depend on it as a practical preventive of curl.

Mr. Hopkins—What time do you do your spraying?

Mr. Mann—Just before the buds open. We also sprayed on the foliage after they were out, but that was harmful. I would not dare to use it on the leaf. I think you should spray on the dormant wood before the buds open.

Mr. Willard—Mr. Morrill took the ground that he could do the spraying all at the time suggested by Mr. Mann, but he has been doing it all winter. The result was magnificent, for he had a most wonderful crop last season. He cultivates thoroughly.

In a drouth can we work the soil too much?

Prof. Van Deman—I know of a gentleman in Illinois who undertook to determine the point. He had a piece of corn between the barn and the adjoining fields, and he had the boys, every time they drove out in the morning and at dinner time, run right through these rows, so that they made four trips and covered that piece with the cultivator almost every day, and he said he never raised such a crop of corn.

Hrof. Van Deman—We know the peach crop was a failure last year, especially about Mr. Morrell's neighborhood in Michigan, with the exception of his orchard; he had cultivated and thinned and pruned so thoroughly that his trees were in such condition they went through the terrible February blizzard all right. He took in nearly \$35,000 off from fifty acres. He sold some peaches as high as \$7 a basket; any three of them would weigh two pounds.

Has anyone had euperience in top-working Keiffer pear on the Bartlett or any other variety; if so, with what results?

Mr. Hooker—It grows readily on the Bartlett, but the Bartlett does not grow on the Keiffer. I don't know what pear will do well on the Keiffer.

Mr. Geo. T. Powell—Bosc will do all right on Keiffer.

Mr. Willard—There seems to be a lack of affinity between the Keiffer and certain other varieties. I have tried Winter Nelis, and it looks all right so far.

Is there any reasonable chance for profitable returns from the planting of nut trees, or for timber growth?

Mr. Woodward—We have a Paragon chestnut growing very nicely. If you get a dozen to grow out of a hundred you will be happy. It is about three times as large as the common sweet chestnut. After removing the film my taste is not good enough to tell one from the other. I believe there is a great future in growing black walnuts. I know of one tree that when I was a boy I dug up and took home, and now it is thirty-two inches in diameter. I believe there is profit not only in growing nuts but also nut trees.

Mr. Barns—We are making some experiments with chestnuts, but it is too early to show definite results.

Is the Champion quince of any value in this latitude?

Mr. W. H. Pillow—The Champion is all right, but it is too late here.

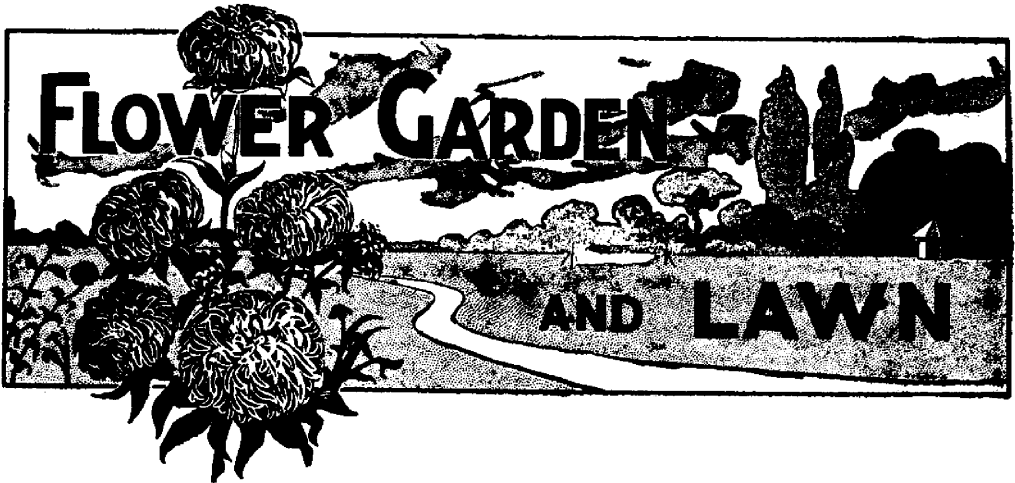
Winter Pears—What do members know about the Directeur Alphande and the Dorset; are they desirable to grow for market? Name their weak points, and are there any better varieties?

Mr. Barry—We have been growing Directeur Alphande for some years. It is a very handsome fruit. The tree is vigorous and a great bearer; but of course it is of too recent origin to state definitely its value. Dorset is large size, handsome, and good quality, valuable as a late pear and a good shipper. It is a question in regard to the introduction of new pears; you have so many already; but both of these are additions of considerable consequence.

What is the latest report regarding the Japan plum October Purple?

Mr. Willard—I have been disappointed in it. It bloomed well, but failed to set well. I do not regard it as a great acquisition and would not advocate planting it.

—Report W. N. Y. Hort. Soc.



TIMELY TOPICS FOR THE AMATEUR—VII.

SEPTEMBER is usually a time of uncertainty and uneasiness to those who have tender plants to care for, especially after the first week or two of the month has passed. Alternate periods of summer or chilly autumn weather, the mercury often rising or falling very rapidly in even a few hours, compels the plant lover to watch closely any indication of the approach of the first frost of autumn.

The change from summer heat to cold, even to freezing point, is often so sudden, that it is well to have the greenhouse and conservatory in readiness to receive the more tender plants early in September.

Plants in tubs or pots standing outside may be protected from early frosts by removing them to the shelter of a tree near at hand, a fence or building, or the more certain protection of a verandah. For beds of foliage or tender plants, a covering of cotton, or even a few newspapers, will often be sufficient protection to ward off slight frosts. The covering should be secured by means of stakes or wires, as close to the plant as possible without actually touching them. If the first few frosts of early autumn can be prevented from nipping foliage plants, they will often retain their rich coloring, and brighten

up the lawn and its surroundings, until the more gorgeous and resplendent tints of late autumn foliage appear to warn us to prepare for winter frost and storm.

Should any plants be unfortunately nipped by frost, keep them covered until the sun and heat of the following day has passed, as immediate exposure to sun and air is very disastrous to plants, even if only slightly frost-bitten. I have found this method of excluding light and air for a time from plants touched by frost, more successful in restoring them than syringing or plunging them in cold water. To be successful with either method, it is essential that frost-bitten plants under any circumstances, should at once have a gradually rising temperature to a few degrees above freezing point to recover in. This condition comes naturally during the increasing heat of the day, to plants exposed at night to early autumn frosts.

If you have a few choice tender plants, and feel doubtful whether there will be frost or not, it is always best to be on the safe side, and place them, if only for a single night, where they are safe. Many fine specimen plants have been ruined by leaving them outside just one night too long.

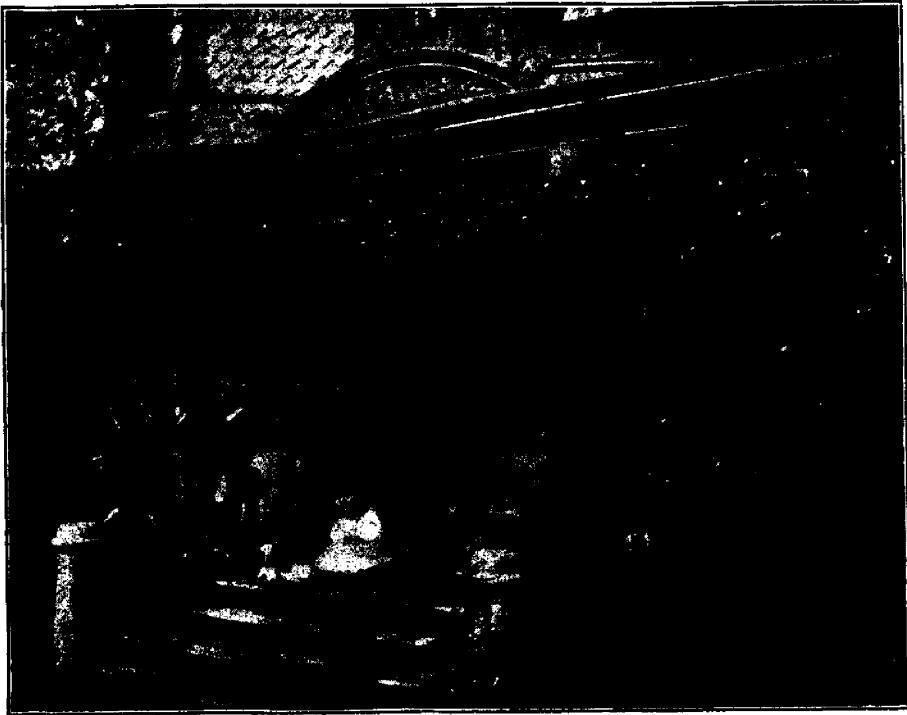


FIG. 1908. *CORÆA SCANDENS*, AT HAMILTON, NOV. 1899.

The trite old saying "Better be sure than sorry," should always be borne in mind and acted upon by horticulturists at all times, but more especially during the uncertain and changeable weather experienced during the early autumn.

THE GREENHOUSE.—See that the heating apparatus for this department is in good working order before heavy frosts commence, it might save your plants, and perhaps several nights of worry and watchfulness later on.

The cutting bed should be ready to commence propagating cuttings of geraniums, coleus and all perennial bedding plants, necessary to secure stock for next season's use. Coleus, achyranthes and ageratum cuttings more especially, should be secured before even the slightest frost has touched them, as it is very difficult to strike cuttings of these, or of any other plants, after being

exposed to cold, chilly weather. A few old plants of coleus and achyranthes may be lifted carefully from the beds or borders before being touched by frost, and potted in light loamy soil in four or five inch pots. These can be stood down on the floor of the greenhouse, where they will get a fair amount of light and sunshine during the winter. If watered carefully at the roots only, and placed where the drip from the bench does not bother them, they will often give a good supply of much needed cuttings during March and April, when perhaps cuttings from fall stock are hard to obtain. The third week in September as a rule, is early enough to take cuttings of geraniums, and the more hardy varieties of bedding plants.

Tender plants, such as stevias, abutilons, poinsettias, eupatoriums, bouvardias, etc., will require to be taken indoors before the first early frost, the poinsettias being

*Agave, Amer. Var.*FIG. 1909. DIERVILLA (*Weigelia*) ROSEA.

particularly susceptible to cold chilly weather. Freesias and Easter lilies started in pots outside, should be taken in before frost.

Agaves, palms, ficus elastica, azaleas, fuchsias, genistas, pelargoniums and other similar plants may be left outside until the weather gets cooler. Both varieties of the *Agave Americanus* will bear three or four degrees of frost for one night without injury, but it is not wise to risk them outside when the thermometer registers at freezing point, unless they are well protected.

Cinerarias, herbaceous caleolarias and cyclamens, may be left out in cold frames for perhaps a few weeks, but the sash should be placed over them on cold nights. Re-pot these plants into larger pots as required. Gloxinia bulbs out of flower should be gradually dried off. Re-pot old corms or bulbs of cyclamen.

Chrysanthemums grown in pots or planted outside, should be taken in about the middle of the month. Although most varieties of those useful plants are almost or quite hardy, a few degrees of frost will materially injure the flower buds, as well as induce an attack of mildew that will mar the beauty of both flower and foliage. Extremes of either heat, cold, dryness or moisture induces mildew, and should therefore be avoided as much as possible in growing these lovely autumn and winter flowers. If large flowers are required, disbudding will have to be attended to every day or two during the next few weeks. This is done by pinching off with the thumb nail and finger, or removing with a pair of scissors, all the small lateral buds, leaving only one or two perfect crown or terminal buds near the top of each branch or stem of the plant. A little liquid manure will help to

swell the buds during this period. Give the plants plenty of water, as the foliage of chrysanthus, especially at this stage, should never be allowed to wither and droop. A light shading for these, and all lifted or repotted plants, will still be found beneficial. Syringing early in the morning will also help to keep the foliage bright and fresh looking.

Carnations planted out in the borders, should be either potted or planted on the benches early in the month; syringe daily to keep down red spider. Bench roses will require plenty of water and regular daily syringing with tepid water, early morning will probably be the best time for this operation. Tea roses in pots that have been resting, should be pruned back as required, and repotted firmly into good, rich, clay loam soil. Hybrid perpetual roses grown in pots for winter flowering can be left a month later before being repotted, as a slight frost or two is beneficial to harden the wood of these before being taken indoors.

Young bushy plants of antirrhinums, (*snap dragons*) and ageratums, etc., if lifted and potted carefully, will often give a supply of bloom during a great part of the winter. Double white allysum plants cut back, and potted three or four in four inch pots, are also useful for this purpose, and will furnish an abundant supply of cuttings as well, early in the spring.

If petunias, heliotropes and similar quick growing plants are wanted from the beds or borders, cut them back a week or two before taking them up, and give very little root room for a time.

Geraniums grown in pots (as recommended in May number of Horticulturist, page 201) for winter flowering, should be taken indoors toward the end of the month and allowed to flower.

Close ventilators early in the afternoon, and keep the floors well dampened. A little fire heat may be necessary toward the end of the month, especially for bench roses and

tender plants. Paint the hot water or steam pipes in the greenhouse with flour of sulphur well mixed in water, it will prevent and keep down mildew.

WINDOW PLANTS.—The beautiful annual climbers that are used with such pleasing effect around and about windows and verandahs in summer, will soon lose their brightness and show signs of approaching cold weather. These can, however, by a little care and attention, often be made to look quite fresh and attractive long after the flower beds have been dimmed or blackened by the first frosts of autumn. The accompanying photo, Fig. 1908, taken in Nov., 1899, showing the beautiful Mexican climber, *cobea scandens*, with its profuse, delicate foliage and tendrils, and its large purple campanula shaped flowers still fresh and vigorous, proves that even the slight protection of an open verandah will prolong the beauty of the most tender plants almost into the winter months. Many methods of temporary protection to plants of similar character, will suggest themselves to those who wish to prolong the summer beauty of their pet window plants and climbers. *Cobea scandens* is especially useful as a summer climber.

A few plants of *lobelia*, white *alyssum*, etc., may be potted up from the borders to brighten up the windows until the early winter flowering bulbs commence to bloom. Later on, before the boxes are emptied, some plants of the variegated *vincas* (*periwinkle*) *tradescantias*, *isolepsis*, *Festuca glauca*, *cæthonna crassifolia*, etc., may be potted; these will help to fill up the window and furnish a supply for next season's use. A few cuttings of German ivy or the perennial *tropæolums* can be struck in pots in sand, and when rooted, grown on in hanging pots or baskets for the window in winter. The old fashioned, but pretty and graceful looking trailing plant, *saxifraga sarmentosa*, known perhaps better by its numerous local names, such as "mother of thousands," "creeping

sailor," etc., makes a very pretty, effective and easily grown plant for a hanging pot or basket. A nicely grown specimen of this plant, especially when in flower in summer, has a pleasing appearance suspended in a window. *Othronna crassifolia* succeeds best in a hanging pot or basket in winter.

Roman hyacinths bulbs may be potted two or three in a four inch pot at intervals of a week or two. By potting a few bulbs at a time at intervals, a succession of these useful and fragrant flowers can be had from October until April if required. For culture, see page 456, November, 1899, Canadian Horticulturist. Cuttings of geraniums, etc., can also be taken as recommended in the above mentioned number of this journal.

Avoid using larger pots than is necessary for wintering plants in; over potting, especially in winter, has proved fatal to many a pet plant. Use plenty of drainage when potting plants for winter effect. Water thoroughly all plants when water is required. Commence operations against insect pests early. Prevention is better than cure.

FLOWER GARDEN.—Asters and other late flowering annuals will be at their best during this month. A little weak liquid manure once or twice a week will help the dahlias, if the plants are not robust and strong.

German iris and pæonies may be divided and planted out toward the end of the month or early in October, as the rush of spring work often prevents these from being planted out early enough in spring to give flowering results the same season. A light mulch, applied late in the season will help the pæonies through the winter.

Japanese lilies growing in the open border should still be making a showy display early in the month. I prefer planting these valuable bulbs inside in large 7 or 8 inch pots, and plunge pot and all outside in the open ground, in slight shade if possible, about the end of May. The pots can then be lifted into the house if the plants are in

flower when the first frosts arrive, as is often the case. *Lilium auratum*, *L. rubrum*, *L. speciosum album* and many other varieties of these gorgeous Eastern lilies can be had in flower in this way until quite late in the autumn. If the bulbs are properly cared for and given their proper resting period they will still be useful for planting out permanently in the open border and give good results. Flowering shrubs and perennials have given grand flowering results this summer, many of them continuing in flower almost the whole of the summer. Amongst perennials the *campanula persicifolia alba* and the numerous varieties of herbaceous phlox have flowered very well indeed. The accompanying photo of *Diervilla* or *weigela rosea*, Fig. 1909, shows one of these beautiful shrubs in full flower in early June. At this date (August) there are several fine sprays of bloom on this plant.

FRUIT GARDEN.—Gathering in the early autumn fruits will be the principal operation in the fruit garden during this month. Fruit picking is often very carelessly done; too much care can hardly be devoted to this operation. It is very little use to devote a lot of time and attention in pruning, cultivating, and spraying fruit trees, and then lose 50 per cent. of the fruit, as it often the case, by careless handling at picking time. Handle fruit carefully and as little as possible.

Daily pickings of fruit, especially peaches, apricots, nectarines, and even plums, is advisable. A little practice will soon enable the close observer the proper time to start fruit picking and supply the table with luscious, healthful fruit from the garden. A dish of fruit from your own fruit trees, carefully handled so as to preserve the natural bloom, will be more pleasing to the eye, as well as tempting to the appetite, than a whole basketful of fruit would be with the natural bloom all smeared and smudged, to say nothing perhaps of bruises from careless handling. It is pleasing to

note the interest that is being taken by commercial fruit growers and the great advance made in this direction of recent years, so as to place our delicious Canadian fruits before the consumers in the best possible condition.

In arranging compartments of fruit for the table, a few bright colored, perfectly shaped leaves, taken if possible from the same trees as the fruit, and placed around and about it, will show the fruit off to the best possible advantage. Autumn tinted maple leaves, or the leaves, or even the long trailing shoots of the *Ampelopsis Veitchii*, are very pretty and effective for this purpose.

VEGETABLE GARDEN.—Make a sowing or two of spinach for early winter and spring use, one sowing early in the month, and another about two weeks later. The prickly seeded Spinach is the hardiest variety, but the Round Summer is much used for autumn sowing, and often come through the winter almost as soon as the prickly seeded variety. The latter is not considered to be as tender eating or as nice flavored as the summer varieties.

Onions will be about ready to harvest now; see that they are thoroughly dried before storing. Do not leave them too long on the ground when growth is completed, as they soon commence to grow again after reaching maturity, especially during wet weather, if they are not pulled from the ground. Store them in a dry, cool place, with a temperature

only a few degrees above freezing if possible. Keep the bulbs dry and cool, is the best secret in storing onions to keep well until spring.

Celery will require watering if dry weather prevails, and earthing up a little as growth progresses. Celery can be blanched by wrapping a thick sheet of coarse paper once or twice around each head, and fastening with a piece of twine. Long clean straw, or short pieces of board placed and fastened close up on each side of the celery will answer the same purpose. The wrapping process is probably the simplest and easiest, where small quantities of this useful and healthful vegetable is used.

Beet roots must be stored, or at least pulled and protected temporarily, before severe frosts; handle carefully so as not to bruise them; leave the roots intact, and a few inches of the tops on the beet, as trimming either of these too closely detracts from the color and flavor, as well as causing the roots to rot early in the winter.

Cut all vegetable marrows that are ready for use before frost. These will keep several weeks if placed in a fairly dry cool place. Carrots, parsnips and salsify may be left in the ground till later. A few roots of the two last named may be left in the ground all winter; they are much nicer eating in the spring than those that have been wintered in cellars or root houses.

HORTUS.

Hamilton.

THE AMARYLLIS.—Those who love a gorgeously-colored flower should try the *amaryllis johnsonii*. Truly, it is a queen among lilies. A year ago I purchased a bulb and planted it in a large jardiniere filled with rich soil. It soon sent up five stately leaves several feet in length, then a large flower-stalk from which soon developed

three large, drooping, bell-shaped flowers. The petals had the appearance of rich red velvet with a white satin stripe down the center. Words fail to give an idea of its loveliness. Many persons seeing it in the window came in to know the name of this rare plant, and to admire its wondrous beauty.—*Park's Floral Magazine*.

PREPARING PLANTS FOR WINTER.

I would never advise putting the plants intended for winter use in the open ground in summer, for these reasons: The growth of the season must largely be sacrificed in the fall, when the plant is lifted and potted. This operation checks it severely, and in consequence the plant is in a weakened condition at the very time when it ought to be strongest and most vigorous. The change from out to indoor conditions is always a trying one to a plant, therefore it needs all possible strength to take it through the ordeal. If it lacks vitality when taken into the house, it naturally follows that what vitality it has must be greatly lowered by the depressing conditions it has to meet, and the result is that if it survives the strain put upon it it takes it nearly all winter to get well established, or to recuperate, and while this is being done it cannot be expected to produce flowers. By the time it gets fairly to growing spring has come, and the winter's experience has been a most discouraging one to the amateur. Therefore, the importance of having two sets of plants will be readily apparent to the thoughtful reader; one to bloom in summer, the other to be held in reserve for winter work. The same plants cannot be made to do duty during both seasons. I make it a practice to grow young, strong, vigorous plants each summer for the coming winter, and the older plants, those which have passed their prime, are allowed to bloom to suit themselves throughout the summer, and are then thrown aside. But good plants do not outlive their usefulness in one season. If they are cut back well each spring and kept as quiet as possible until September, they can be carried through several seasons and will be found more satisfactory when two and three years old than when but one year old. This is especially true of the geraniums. I know that young plants are often advised; and some

writers say old plants are worthless. These persons do not know what they are talking about when they say this. I never expect a geranium to show what it is capable of doing before its second year, and the third year it will be more satisfactory if one has room enough for large plants such as old geraniums will be when properly grown. I have in my greenhouse geraniums over six years old, and they are as healthy and vigorous as new plants and have a score of flower-trusses when the young plants have one. Visitors often ask me if they are not rare kinds. They had supposed that these plants were worthless after the first year, and are surprised to find how far superior they become with age to the ordinary small plants.

If young plants of any kind are to be grown from cuttings for winter use, they should be started early in the season. Get them to growing, if possible, in March or April. Heliotropes, Begonias, Ferns—in fact all plants except such as are grown from seed—must have this early start if one wants plants of good size. Late started plants will be more intent on producing branches than on flowering, for they will not have reached that maturity which they must attain before they get down to the serious work of life. Roses should be cut back until October. Then let them grow all they will. The new growth will always bear blossoms if strong and healthy. Geraniums should have all buds removed up to the time of bringing the plants into the house. Then let them begin to flower, but remove some of the buds that form, thus holding the plants somewhat in reserve for the season when flowers will be more appreciated. Carnations seldom begin to flower much before late fall, therefore some of the first crop of buds can be allowed to develop.

E. E. REXFORD,
in *How to Grow Flowers.*

CARE AND CULTURE OF CACTI.



MOST people who admire a well-grown Cactus in some other person's collection would like to have some themselves if they thought they would be able to give the plants the proper care to produce the best results. The writer has found also a widespread belief that a cactus must be about seven years old before it will bloom, and the thought of that long wait is enough to deter a great many from possessing any of this most interesting species of plant life. Some ladies have persevered and patiently went through the term of waiting, in the hopes of having at last the long coveted bloom, and under their treatment it has perhaps taken the required number of years to comply with the tradition. But in the writer's experience this idea has been entirely exploded. Very small specimens of some varieties, which have only been rooted and grown for one and two years have cheerfully contributed their quota of beautiful waxy flowers. It is true that some species are extremely shy bloomers, and very large plants have been kept for years without ever rewarding the owner with a blossom, and to the flower lover who only prizes the plant for its bloom this is a serious drawback. To a collector of cacti, who sees sufficient beauty in the diversity of spines, shapes, growth and other features, to prize a specimen for its own sake, even if bloom is scarce, this does not matter. A few suggestions as to care along the lines that have been most successful in the writer's case may be of interest. One peculiarity that is common to all kinds of cacti, is that the plant that is given the best care and most elaborate treatment, almost invariably rewards the owner by dying. They will not stand forcing; for although if fed on plant food they will flourish for a while, the final

result is almost sure to be disaster. So then it seems that neglect is a better plan to follow, and one need only consider the conditions in which cacti grow in their native home, to realize that this is what they are used to, and what nature has fitted them for. In clear, hot sand beds, where nothing else can live, there will be found some varieties of cacti, covered in their season with their fine flowers, and flourishing under these apparently adverse conditions. How then are we to make conditions resemble nature in our house treatment of cacti? Supposing one has a lot of cuttings of different kinds with which they wish to make a start towards a small cactus collection, a simple way to start them in a south window or conservatory is to make a shallow box about three inches deep and fill it with nothing but very coarse sand, the coarser the better, set the slips in this just far enough to be held firmly, and then after moistening the sand it would be just as well to forget the box for a week before again watering. Never keep the sand very wet or the cutting will rot off, but by giving them a little of the neglect which they naturally expect, growth will very soon appear, when the plants may be separately potted. In potting them care must be taken to have the drainage perfect. Fill in the bottom of the pot with broken crockery, stones or mortar, and on this just a layer of soil, composed of one-third garden soil and two-thirds coarse sand. Leave a hollow space in the center of the pot large enough to set the plant in, and in this put the plant, in clear sand, filling up the pot to the required depth with the sand only. This allows the roots to extend into a little heavier soil when the plant requires a little more nourishment, and the plant itself rests on the sand, which seems to suit it best. For a large window box a nice effect can be

secured by having a variety of kinds and arranging them so as to contrast the colors of the spines in any desired way, and putting a layer of sandy soil in the bottom and setting the plants in two or three inches of clear, coarse sand.

In this paper a general talk is given on culture at the outset of a cactus collection, and in some later issues special varieties will be taken up and described, with the particular treatment that they require.

Woodstock, Ont. J. H. CALLANDER.

RHYNCHOSPERMUM JASMINOIDES.

HIS pretty little trailing greenhouse shrub, that certainly does not deserve to have such a cruelly long and almost unpronounceable name attached to it, is a native of eastern lands, being found in India, China, Japan and adjacent countries. It was introduced into England from Shanghai,

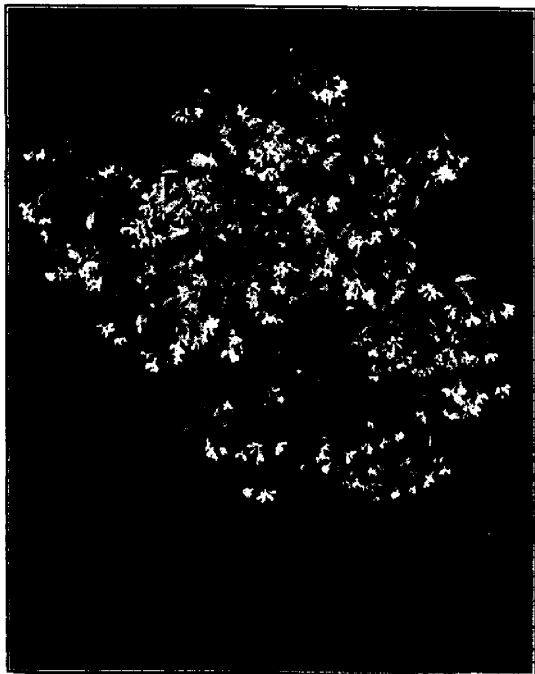


FIG. 1910. RHYNCHOSPERMUM JASMINOIDES.

China, about half a century ago. As a greenhouse plant it is easy to grow, requiring very little care and attention; but like most of the hardwood greenhouse plants it is slow growing. Repotting into fairly rich, light loamy potting soil, with perhaps a little leaf soil or peat mixed with it, is about

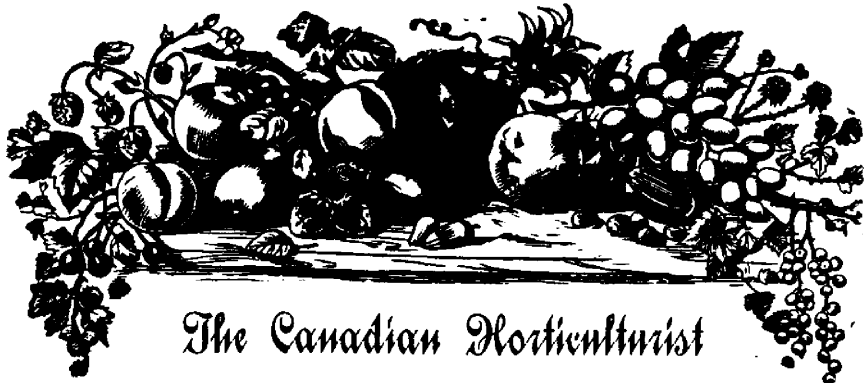
all the attention it requires besides watering. I find the best time to repot this plant is early in the Spring, as soon as it shows the first signs of bursting its buds, to produce flowering growth. Keep it in the greenhouse from early in September until after it has done flowering in June, when it can be stood on the north side of a fence or building on coal ashes all the summer. This will prevent worms getting into the pot. Perfect drainage is very essential in growing this plant successfully. It requires very little water during summer, but must not be allowed to dry out completely.

The deliciously soft but powerful jasmine fragrance of its ivory white star-like flowers that it produces in such profusion in early summer, will especially endear it to all flower lovers from the old land, and awaken fond memories of the old jasmine-covered rustic porches, that add so much to the quiet, peaceful beauty of cottage homes, especially in the south and west of England; and around which perhaps many of our readers have spent many happy hours of their childhood and youth. Even a small plant of this fragrant greenhouse shrub when in flower will perfume a large dwelling house completely.

The accompanying photo of a small plant about seven years old from a cutting, will give some idea of the appearance of this eastern shrub when in flower, a plant of which should be in every collection of greenhouse plants, its flower being very useful for button-hole bouquets, etc., in spring and early summer.

HORTUS.

Hamilton.



The Canadian Horticulturist

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

ERRATA, PAGE 345, "Our Watering," should read "Over Watering. Page 348, "Bench Roses" should read "Bunch Roses."

THE WONDERFULLY FINE PROSPECT for apples will be much lessened by dropping and worms. Western New York and Southern Ontario give excellent promise.

OUR FRUIT AT PARIS seems to have attracted considerable attention. Five first prizes have been awarded us. The fruit was shipped on steamer Parisian to Liverpool in cold storage.

THE TRIUMPH PEACH is promising to be very popular in Ontario. Growers in the Niagara district think its time of ripening, closely following Alexander, its yellow color, its free stone, all conspire to make it the

most popular peach of its season. Fault is found with it by others on account of its furry coat and its toughness of skin, while the tree they say is much subject to blight, especially after a season of a heavy crop.

MR. R. B. WHYTE, Director at Ottawa, seems to be one of the chief prize winners at the Horticultural show at Ottawa on the 17th of July, both for fruits and flowers, judging from the report in the Ottawa Citizen.

SEEDLING GOOSEBERRIES, from C. L. Stephens, Orillia, received 26th July, 1900, all from four year old plants. No. 1, Seedling of Industry, picked 20th July, much resembles its parent in color and form, but from branch received would appear to be much more productive. No. 2, also Seedling of Industry, green in color, quite soft

when received. No. 3, Chance Seedling, green, apparently of little value, though larger than Downing, its supposed parent. No. 6, Chance Seedling, possibly of pearl yellow, larger than Pearl of good quality.

MILLIONS OF BASKETS of Elberta peaches are being harvested in Georgia. Daily shipments over the Central R. R. of Georgia, fill about eighty cars per day, along the line of which road their are over 1,200,000 bearing peach trees.

THE SNEED PEACH ripened at Grimsby on the 24th of July. The whole crop was shipped by the 26th. It is an early variety indeed, but you can say little more in its favor. It is very soft, a cling, and has very little flavor.

AN EXTRA DOUBLE TUBEROUS BEGONIA comes from Mr. R. Cameron, of Niagara Falls. This flower is composed of many double flowers in one. It is also very shapely, like a ball, and the size of a baseball, and of a rich color and splendid substance.

THE LEADING ROSARIAN OF CANADA, Mr. Henry Dale, of Brampton, passed away July 15th. At twelve years of age Mr. Dale came from England to Brampton, becoming in 1870 a partner, and in 1881 starting business for himself, in marketing, gardening and rose-growing, a business which grew until he had 200,000 feet of glass and a national reputation. He was just building six new houses, two of them 840 feet long.

THE FARMER'S INSTITUTE of Ontario, Fruit Growers' and other Associations, have united in making a special gift to Dr. Mills in recognition of the magnificent work he has done for the country at the Ontario Agricultural College. This gift has enabled Dr. Mills to take a holiday in Europe, a rest

from his severe duties which he sadly needs in order to recuperate his worn out energies. The public presentation will be made on his return.

THE MIDSUMMER SHOW of the London Horticultural Society was held in the City Hall on the 7th and 8th August. Hours 1.30 to 10.30 each day. The exhibit consisted of flowers and decorative plants; there was no entrance fee. In another column there appears some account of this exhibition, which was a great success.

THE ENGLISH APPLE CROP for 1900 is of unusually fine quality and very abundant, according to the report given in the Gardeners' Chronicle. The pear crop is a good average, though considerably better than in 1899. It is evident, therefore, that we must ship only our finest fruit, graded to uniform size and color, if we would receive satisfactory returns. It is far better to leave small and gnarly samples on the tree to waste than to spend the time gathering them and sorting them. In the end they may be gathered for cider, after the best are disposed of. Germany will probably take a good many of our red apples, if we may judge from the following lines, written by Aug. Stier to The Fruitman's Guide London :

Hamburg, July 30.—With reference to our Hamburg market for American and Canadian apples, I beg to inform you that special red-colored fruit, Baldwins, Ben Davis, Kings, Seeks, etc., are very much liked, while green apples in larger quantities are not so much wanted—medium size apples are preferred to large ones.

We have a large crop of apples in our country, but consisting nearly fully of cooking apples, we can surely do with large quantities of good colored American fruit. Doubtless prices will not be high this reason on account of probable heavy arrivals.

Hamburg, Aug. 1.—Referring to my last of the 30th ult., you will no doubt be aware of the enormous crops of apples in the United States and Canada, and the probability of heavy exports to Europe. I repeat, we have a big crop in Germany, but ours are all cooking sorts. We have no table fruit at all, and there is every prospect of a strong demand for American and Canadian apples with us.

QUESTION DRAWER.

Sowing Seed of Ginseng.

1173. SIR.—Will any member of your Association tell me why my Ginseng seed does not grow. A year ago I planted fifty seeds in a box 2 feet 6 inches long by 1 foot wide, with 8 inches of good soil. I put 8 inches of good soil in it, put the box next the fence, banked earth around it and planted the seed about one inch deep. I covered the box with a fine wire screen to keep out the mice, and kept it moist last summer by sprinkling. This year I expected young plants but not one has appeared.

Clinton.

THOS. HOLLAWAY.

We have referred our inquirer to Mr. Harlan P. Kelsey, of Boston, Mass., who is the chief dealer in Ginseng in America, who has replied as follows :

I think your subscriber probably let the Ginseng dry out at some time, and he did not plant it properly in any case. There should have been at least 18 inches of good soil beneath the seeds, and the box should have been sunk to the level of the surrounding earth, instead of having banked up around it. Again, probably the seed was not good. This can be ascertained by cutting through the seed as one would cut through a cucumber or squash seed.

The best way is to put the seeds in layers as soon as collected, with sand or soil between in beds, and put in the open air. Plant out in large boxes sunk to the level in the soil with netting roller to keep it moist.

Again, the seed may have been a little too dry, and in this case they would not come up till next spring. But he can find out if they are good by testing as above.

Orchard Cultivation.

1074. SIR.—I was much interested in the able and lucid address given at the convention of the Fruit Growers' Association by Mr. Powell, of Ghent, especially that portion which treats of the ploughing under of clovers. He makes every point very clear, except one, which is not spoken of, and that is this: It is generally the custom to plough towards the trees in the autumn and away from them in the spring, or at any rate, to work the soil away in the spring with the disc harrow. I understand that he advocates ploughing, and in

the early spring, and doing the rest of the work with the cultivator. Now, my question is, "Is it not helpful to the trees to plough towards them before the winter. Is it not almost necessary in this latitude?" And, again, would he recommend ploughing towards and from the trees alternate years, or in your opinion, if the soil were thrown towards the trees every year, would cultivating and cross cultivating level the ground sufficiently? I am much interested in the clover question and should feel obliged if you would kindly answer in the next issue of your paper.

Yours truly

Woodside, Beamsville.

A. H. WANE.

In relation to cultivation of orchards, in all well drained land, it is better to keep the ground level. Cultivation sends the roots down, hence there is no danger in ploughing the soil away from them one year and towards them the next.

There is no need of deep ploughing near the trees, just enough to break up the soil and keep it stirred. Let the deeper ploughing be done outside, which keeps roots down deep, where they obtain more moisture and are safe from frost for that reason.

I believe in setting trees deeper and depend more on the lower roots; surface roots are more liable to injury from cultivation, from drouth, and from frost, hence deeper planting and getting the root system deeper in the soil will give us better trees and better results in every way.

This, with early and frequent cultivation, and then covering the land later with clover for winter protection and for improving the soil, has given me great satisfaction. For full bearing orchards this treatment gives fine quality and regular bearing.

For young growing trees this plan would have to be modified somewhat, but where small fruit culture is carried on between the trees for a few years, such as currants and raspberries, the plan will work with equally good results.

GEO. T. POWELL.

Briar Cliff Manor, N. Y.

Spraying For Thrip.

1175. SIR.—Can you inform me the best solution for spraying indoor grapes? Last year my grape vines were almost ruined by "thrip," and am afraid they will be so again. I have been spraying them with cold water in the evenings. I have a fine lot of the fruit, and it is on the new wood. You will very much oblige me.

Yours very truly,

Cobourg,

JOHN HAYDEN.

We have had good success spraying outdoor roses for thrip with Gillet's lye. We applied it with Mitchell's hand sprayer, a sort of atomizer, which throws an exceedingly fine vapor. We used a pound to five gallons of water, but found that this was injurious to the leaves. We would only use half a pound to ten gallons next time, and then spray in very fine mist. Most people use less coarse a spray. We would expect this same material useful in the case of greenhouse grape vines affected with thrip.

We would also suggest trying the application of dry insect powder, and leaving all doors and windows closed, or the house might be fumigated with dry insect powder, a thing that has been found effective in clearing out mosquitos from houses or tents.

Apples for Prince Edward Island.

1176. SIR.—Taking fruit and tree of Ben Davis as a standard of comparison for shipping to Great Britain in winter, in early bearing, hardiness, vigor, productiveness, freedom from spot or rust, color, etc., what would you say in favor of Ontario, Gano, Stark, York Imperial, Sutton Beauty Cranberry Pippin?

NOVICE.

Georgetown, Prince Edward Island.

As Dominion Superintendent of Horticulture at the World's Fair, Chicago, the writer had much experience with apples from all sections of the United States and Canada, and one conclusion was forced upon him, viz., the great variation in the same apple under different conditions. The Western Ben Davis was a magnificent apple, the best apple for the commercial orchard in certain States, the Baldwin of Western New York is proverbial, the Spy in On-

tario cannot be excelled by any other apple, nor the Newtown Pippin of the Alleghany mountains of Northern Pennsylvania. In certain parts of Ontario the Ontario apple is a magnificent success, far superior to the Ben Davis; in others, as for example in the Niagara District, the Cranberry Pippin is a finer selling apple than the Ben Davis, although not by any means so regularly productive. At Trenton the Stark is grown extensively and counted one of the best commercial apples. York Imperial and Gano are reported to be very successful in the Middle States, and Sutton Beauty in New York State. But so far as we know the various apples have never been fairly tried or reported upon in Prince Edward Island, and varieties which are very superior in other places to Ben Davis might prove a great failure in P. E. Island.

Apple Blight.

1177. I would like to ask if you can suggest any preventive for "apple blight," which has been very severely felt here this season and last. I put on a number of grafts last spring with the very best results, but they are nearly all killed. In common with other sufferers here I would be very glad to know the cause, and if there is any means of combatting it.

Ottawa.

A. H. TAYLOR.

No remedy is known for apple or pear blight. It is very injurious some seasons on certain varieties, and then again of quite rare occurrence. Some advise cutting off and burning all affected branches, but this is not always effective.

Pruning and Planting Evergreens.

1178. When is the right time to prune evergreens, especially Norway Spruce and Cedars? And can those trees be successfully planted after the season's growth is over, or in midsummer?

Brockville.

I. RICHARDS.

Evergreens may be pruned at any time of the year, as there is no time when they are leafless.

Transplanting of evergreens is best done when the trees are dormant, or just before or just after the summer growth. The

month of June is usually considered an excellent time, unless the transplanting is followed by very dry weather, which is more trying upon evergreens than on other trees.

The Malarial Mosquito.

1179. SIR,—There was an exceedingly interesting article recently in the Scientific American by Dr. H. O. Howard, of Washington, upon the distinctive features of the Malarial and Non-Malarial Mosquito (*Culex pungens*) and (*Anopheles quadrimaculatus*.) I don't suppose, however, "Anopheles Quad" are Canadian inhabitants.

A READER.

REPLY BY DR. FLETCHER.

The distinctive features of the Malaria Mosquito, as distinguished from the species of *Culex*, is the comparatively greater length of the palpi, the small processes which are found at the base of the proboscis. There is also a characteristic attitude when at rest. In the ordinary Mosquito *Culex* the legs are raised above the back, sweeping upwards, while in *Anopheles* they droop beneath the body. When at rest *Culex* holds its body parallel with the surface it is resting on, while *Anopheles* has the body at almost right angles, as if attached by the tip of the beak.

The Caprifig Insect.

1180. SIR,—I would like to know if any attempt has been made to cultivate the Fig in the Niagara District. I suppose, however, this can only be done under glass? Where can I find the

name of the insect imported from Southern Europe into California for the purpose of fertilizing the fig and increasing its size and production, and an account of it.

REPLY BY DR. FLETCHER, OTTAWA.

The insect imported from Europe into California for the purpose of fertilizing the fig and increasing its size is named *Blastophaga Grossorum*, or more generally the Caprifig insect.

North American Cricket.

1181. SIR,—Give some account of the North American Cricket, and if injurious to cereal crops in the same way as the Locust and Grasshopper?

REPLY BY DR. FLETCHER.

I do not know what species should be called distinctively the North American Cricket, for there are several kinds. Possibly *Gryllus Neglectus* is meant. This is a large black species which is commonly found under logs, but is also frequently seen hopping about in hot weather. I have never known it injurious to cereal crops although it consumes a considerable amount of vegetable matter. Its range of food is very varied, consisting about equally of animal and vegetable substances.

All of these questions could have been more suitably sent to an entomological or natural history publication, where they could have been answered more fully.

MR. E. L. GOODSSELL, of New York, has been abroad studying the apple market, and writes as follows in the New York Fruitman's Guide, on the apple market :

The apple crops of both Germany and England promise to be about the largest on record. But the quality is by no means commensurate with the quantity. Both countries have been sufferers from continued heat and drought, and as a result the apples, plentiful as they are, will be so small

and poor as to be unimportant factors in the market. As a result American apple shippers must bear in mind that they will win in the competition by force of sheer quality and quality alone, and accordingly they must be careful to send apples of only the best quality or size; otherwise they will get their fingers badly burned. It is believed that good apples will sell well in England and Germany, and will meet a large demand, especially in view of the country's recent favorable action in the matter of duties on American fruits.

Open Letters.

The Apple Crop of 1900.

Messrs. Simons, Shuttleworth & Co., of Liverpool, write as follows regarding the current season's apple crop:

SIR,—Following our usual custom at this time of the year, we now beg to put before shippers our estimate of this year's crop, as gathered by representatives, who have just finished their travels through the apple growing districts of America and Europe.

It appears unnecessary for us to put this information into an extended report. Taking America as a whole, the present indications are for a record crop of good quality, not excepting the phenomenal one of 1896. In saying this it must not be understood that there are no sections where apples are light and quality poor; there are spots where these conditions exist. The crop in Great Britain and on the Continent of Europe is also very large and of good quality. On both continents some varieties of fruit, where trees are heavily loaded, will be undersized, but otherwise clean and bright, particularly so where cultivation and spraying have been properly done.

The problem presenting itself for solution, therefore, is, "How can this large crop of apples be marketed to the best advantage?" The law of supply and demand ought to regulate prices every season, although as a matter of fact, from a shipper's standpoint, it rarely does. In view of this year's crop prices must necessarily rule correspondingly low.

While advising the utmost caution on the part of intending shippers, yet, owing to the superior quality of the American and Canadian product, we believe there will be times when large supplies of good, well-packed fruit will meet with an active demand, at fairly moderate prices.

The importance of a wide and rapid distribution into the hands of consumers will be apparent to everyone—growers as well as shippers—and in connection with this feature of the trade we may say that during the season of 1896 we handled over 650,000 barrels of Americans and Canadians alone, and this year we have made preparations for the handling of an almost unlimited number with the greatest possible dispatch, without unduly taxing our facilities. As soon as the fruit is sold we cable the net proceeds so that our shippers may have their money in hand within a very short time.

A Good Advertising Medium.

The circulation of the Canadian Horticulturist certainly covers the Dominion. I have had enquiries for cacti from British Columbia to Nova Scotia, and as far south as Connecticut, U. S., all as a direct result of my advt. in the Horticulturist. Substantial orders have resulted, and it is a surprise to me to find so many interested cacti collectors in Canada. Your columns surely succeed in reaching the flower lovers all over the country.

Woodstock.

J. H. CALLENDER.

Our Affiliated Societies.

LONDON—Three thousand people saw the flower show at the City Hall yesterday and last night. The crush was greatest in the evening. So many sightseers turned out to see the exhibition by gaslight that it became necessary to increase the available floor space by removing some of the foliage plants altogether.

The show has been a success beyond the dreams of the London Horticultural Society, the directors of which had evolved the idea of holding the mid-summer exhibit. Not alone was the attendance far beyond what had been anticipated, but the exhibition was declared to be the finest ever held in Ontario. There were upwards of fifteen hundred exhibits of the choicest blooms that are to be found in the gardens of the province. Sweet peas were the feature, but the display of other blooms was not far behind that delicate little flower, the pea, which has been developed until every amateur florist has his row of them.

Judge R. M. Meredith's exhibit of sweet peas made yesterday was the finest among the amateurs. His Lordship showed no less than fifty varieties of peas, and had there been space could have added to them.

The City Hall was found too small for the purposes of the exhibition. Many fine blooms were so crowded together their beauty was not done justice to. "Next year we will have the Drill Shed," President Balkwell and Director Hamilton said last night.

So marked has been the success of the exhibition that it is believed that a great impetus to amateur flower growing will result, and that succeeding shows will witness keen competitions. The Horticultural Society is to be congratulated upon the outcome of this undertaking.—Free Press.

PARIS SUMMER FLOWER SHOW—The Paris Horticultural Society is to be congratulated on the success of its first attempt at providing a flower show for the citizens of Paris on Thursday last, August 9th. A large marquee was erected on the lawn of the Congregational Church, and this was filled from end to end with flowers and plants of every description. To particularize would be a hard matter, but special mention may be made of the exhibits of Messrs. Baird, Wickson, McCormick and Miss Burshall. In the

evening the sight under the electric light was an exceedingly pretty one. The tent was crowded all evening, and not the least interesting feature was an address by Mr. William Bacon, of Orillia, who by his lecture last winter firmly established himself as a prime favorite with Paris horticulturists. Mr. Bacon, at considerable inconvenience to himself, came here to act as judge, and his decisions, backed up as they were by a thorough knowledge of his subject, gave universal satisfaction. Kay's orchestra provided pleasing music, and an ice cream stand helped to cool the temperature of the inner man on a night which was perhaps the warmest of an exceedingly hot week. We trust the society will not be weary in well doing, but will repeat its efforts at a future date. The prizes were all honorary.

Out Door Art.

Being one of the Vice-presidents of the American Art and Out Door Association, the writer regrets not having been in attendance at the recent meeting in Chicago on the 5th of June.

Dr. Howard Taylor, in behalf of Mayor Harrison, welcomed the visitors to Chicago. His remarks were seconded by Wallace Heckman, President of the Chicago Art Association, and by P. W. E. Wight, who, in place of Franklin MacVeagh, represented other local art interests. President Charles M. Loring, of Minneapolis, responded to the welcome extended to the delegates and delivered his annual address. He complimented the association upon the growth of the last year, and the great interest which is being manifested in the work. "It is a matter of congratulation," he said, "that the Municipal Art League and the American Institute of Architects have the same ideals in view that the American Park and Outdoor Art Association is striving for, and that they are working harmoniously along the same lines. Our association is represented in twenty-eight states and territories, and in Canada. The influence of the present gathering will be far-reaching, inasmuch as the movement is just beginning to show its strength, and has reached that point where it will culminate in a wave of enthusiasm for beautifying scenery and landscapes throughout the country."

In impromptu addresses from the floor, delegates E. J. Parker, of Quincy, Ill., president of the Quincy Park and Boulevard Association, and Sidney A. Foster, of Des Moines, Ia., strongly advocated the establishment of such a system.

"I am pleased," said Mr. Parker, "to see throughout the country the manner in which our universities and higher educational institutions are taking up the work of landscape gardening. What we need now is to make the grounds of every village school a park, and after it has been made beautiful to keep it open the year round and allow the children to play there. If the school grounds were made park playgrounds throughout the country, the children who are being educated in parochial schools would flock to that place, and gradually overcoming the prejudices of their parents, the Public schools would soon make friends with the Roman Catholic taxpayer."

"To accomplish this we should establish a system of prizes to be offered for the best results obtained, and insist that the school boards throughout the country, as well as in the large cities, make public parks of the school grounds. I would suggest the necessity of the co-operation of the women's clubs throughout the country as a means to accomplish this end."

In order that delegates might see Chicago parks to the best advantage, the park commissioners entertained them with drives through the park and boulevard properties. The commissioners of the South Side were hosts the afternoon of the first day. The historical World's Fair site in its new dress was viewed with much interest, and the local committee took great pleasure in pointing out the landmarks of the vanished White City. After a ramble through the Field Museum, the bugles were sounded and the guests were taken for a tally-ho ride down Midway Plaisance to Washington Park, where the landscape effects and the greenhouses with their wealth of tropical verdure and mass of bloom were inspected with delight.

At Washington Park the guests were invited into the refectory (which, by the way, is maintained by the park commissioners) and a dainty luncheon was served to the delegates. Choice fern fronds were artistically arranged before the plates as souvenirs of the occasion. After this event the drive was continued down Drexel Boulevard to Michigan avenue, past typical Chicago homes, back to the Auditorium.

At the evening session J. H. Patterson and E. L. Shuey, of Dayton, Ohio, led in a discussion of ways and means of improving the conditions and surroundings of factories and employees' homes. The discussion was illustrated by stereoptical views, and much of interest was told of what has been done in the past few years by the National Cash Register Co., of Dayton. The views showed the homes of the laboring people before and after systematic attempts at improvement had been made by artistic grouping of shrubs and flowers.

"We have found the moral effect of beautifying the homes of our people most gratifying," said Mr. Patterson. "We all know that everyone is influenced by his surroundings, and if they are made attractive and beautiful the influence cannot but be good. On the other hand it will follow that unsightly, hideous surroundings will lower the moral, spiritual and physical life of the people. If we cannot make labor a pleasure, we can make the surroundings and conditions more bearable."

"I believe that the employer of to-day will find that in this very thing he has a problem of the gravest importance to cope with. Conditions since the advent of the locomotive and quick transportation have changed immensely, and we must adapt ourselves to them. In the old days men had small shops and few employees, and they were directly interested in their moral and physical welfare. I hold that the man who employs three thousand men and women has just a so much greater responsibility, and if he can make life brighter for them by showing them how

they can make their homes and small yards things of beauty, it is his duty to do so."

W. M. R. French, director of the Art Institute, was the next speaker. Said he: "It may be roundly asserted that the beauty of a small town is wholly dependent upon its trees. Watch yourself as you declare this or that village to be a beautiful place, and you will find that you mean simply that it has many and fine trees. Its beauty may be promoted by wide and orderly streets and by neat and tasteful buildings, and especially by care of trees and grass, but if the trees are really fine, it can scarcely be kept from being beautiful. With regard to the relation of trees and buildings or other artificial structures the principles are precisely those of pictorial composition. The effect of large, fine trees in the neighborhood of a building is so great as to need no enforcement. Visiting New Orleans, I was struck with the dignified, scholastic air of Newcomb College, the women's department of Tulane University, built upon an old estate where the walks are arched with great Live Oaks, as compared with the main buildings of the university upon new ground where the trees are yet to grow. I wonder that house builders do

not more often make sure of good trees. I have myself bought a tree with some land about it and built my home under it."

The entire afternoon of Wednesday was taken up with a trip through the West Park system, where the delegates were the guests of the West Park Board. Several stops were made in the parks, and places of interest pointed out to the visitors.

The business of the convention was all transacted at the morning session on Thursday. The officers whose terms expired at this time were re-elected for the coming year, except President C. M. Loring, who declined a renomination on account of ill health. Mr. L. E. Holden, of Cleveland, Ohio, one of the first and strongest friends of the movement, was unanimously elected president. Messrs. J. C. Olmstead, of Brookline, Mass., and Mr. E. J. Parker, of Quincy, Ill., were elected vice-presidents; Mr. Warren H. Manning, Boston, secretary, and Mr. O. C. Simonds, of Chicago, treasurer. The next meeting will be held in Milwaukee in June, 1901. A number of steps were taken looking to a wider field of work and to extending the interest in the movement in different parts of the country.

OUR BOOK TABLE.

SPRAYING CALENDAR, issued by Messrs. Stone & Wellington, Toronto. Free on application.

CANADA'S GREAT EASTERN EXHIBITION, 16th Annual Fair, September 3rd to 8th, Sherbrooke, Que. M. M. Tomlinson, Secretary.

EXPERIMENTAL FARM REPORTS FOR 1899. Dr. Wm. Saunders, Director, Ottawa. An excellent report of over 400 pages, full of valuable information for the farmer and the fruit grower.

GINSENG CULTURE. Information about this great Chinese root, with cultural directions by Harlan P. Kelsey, Tremont Building, Boston, Mass. This is a well written pamphlet, which we commend to all persons interested in the culture of this plant.

CYCLOPEDIA OF AMERICAN HORTICULTURE, comprising suggestions for cultivation of horticultural plants, descriptions of the species of fruits, vegetables, flowers and ornamental plants sold in the United States and Canada, together with geographical and biographical sketches by L. H. Bailey, Professor of Horticulture in Cornell University, illustrated with over 2,000 original

engravings, in four volumes, at \$5.00 each. New York: The McMillan Pub. Co., 1900. Vol. 1.

The second volume of this excellent work has just come to hand, and certainly it continues to make the same impression for excellence of matter and execution which the first volume made upon us. Every department of horticulture, including floriculture, pomology, commercial nursery propagation, the botany of horticulture, is not only fully written up but also beautifully illustrated.

One of the important features of the work is its application to our country. That grand work by Nicolson is for Englishmen, and quite misleads one with regards to dates of planting, adaptation, hardiness, etc., but on all these points Prof. Bailey has taken care to enter into the minutest necessary detail. We do not hesitate to commend this work to all our readers, whether fruit growers, gardeners, gentlemen of leisure, or of whatever profession, for it contains such information as it would take scores of books to give, herein gathered together in one fine production, and which cannot fail to both interest and instruct every reader.

PLANT DISTRIBUTION FOR 1901

FRUIT.

A. CUMBERLAND RASPBERRY, TWO PLANTS.

Described by the Introducers as follows:

This new Raspberry originated nine years ago with Mr. David Miller, a life-long horticulturist and fruit grower, who thoroughly tested it under all conditions. It is offered with the assurance that it is *the most profitable and desirable market variety yet known*, because of its *immense size, firmness and great productiveness*, well entitling it to the designation of "*The Business Black-Cap*." It has undergone a temperature of 16 degrees below zero, unprotected, without injury—a temperature which badly crippled similarly situated plants of Gregg, Shaffer, Cuthbert, etc. It is of wonderful productiveness, producing regularly and uniformly very large crops. *In size, the fruit is simply enormous*, far surpassing any other variety. The berries run seven-eighths and fifteen-sixteenths of an inch in diameter. In quality it is similar and fully equal to Gregg. Although extremely large, it is unusually firm and is well adapted for long shipments. In ripening it follows Palmer and precedes Gregg a short time, making it a midseason variety. It is an unusually strong grower, throwing up stout, stocky canes, well adapted for supporting their loads of fruit.

It is thought to be a seedling from Gregg, with a dash of blackberry blood in it. The Cumberland is a true raspberry, but it may be of interest to state that several seedlings from the Cumberland have had true blackberry foliage.

J. W. Kerr, Denton, Md., a well known horticulturist says :

"There is no horticultural effervescence in me; otherwise, I would bubble over or burst when I look at the fruit on those three plants of Cumberland Raspberry. I have grown Mammoth Cluster and Gregg that were very fine, **but this Cumberland is really a marvel**. Fifteen-sixteenths of an inch diameter was the measure of as large a berry as I saw of it, but they were all large. I let all the plants carry all the fruit they set, and they were very full. If this season's behavior is a safe criterion to judge by, I pronounce it vastly superior to any Black-cap I know anything of. I never knew any of its type to be so long in form as it is."

FLOWER.

B. SPIRÆA JAPONICA BUMALDA, ANTHONY WATERER

The Rural New Yorker says of it:

The most satisfactory Spiræa in existence; a constant bloomer. The plant is of low growth; the umbels of a bright pink color, brighter than those of its close relative, Bumalda. A profuse bloomer. Introduced there a few years ago.

Mr. Wellington says of it :

"Am also sending bloom of Spiræa Waterer. Quite a sight in nursery row and they bloom till frost comes."

A WORD TO OUR SUBSCRIBERS.—We submit the list much earlier than usual because we want to get all our renewal orders for 1901 in before the end of 1900. We want to make the first year (1901) of the new century a **record breaker** for the membership of our Association, so we are offering each subscriber a choice between these two beautiful plants, both of which are **new** and **valuable**.

Any person sending in two names and two dollars, may have an extra plant in place of commission, and thus have for himself both the Spiræa and the Raspberry.

New Subscribers sending in one dollar for the year 1901, may have the balance of the year 1900 free, in addition to choice of plants.

No plants can be promised to those who do not make selection when paying the subscription.

Remember the old proverb, "First come, first served," so the sooner you send in your subscription and select your plant, the more sure you are that the stock will not be exhausted.

Horticultural Societies or Agents are allowed to select an extra plant in place of the commission allowed for each subscriber, in which case, of course the whole \$1.00 must be remitted us for each person on the list. In this way a society could, if desired, secure two different plants of trees from our list for each of its members, the value of which at retail would nearly equal the whole membership fee.