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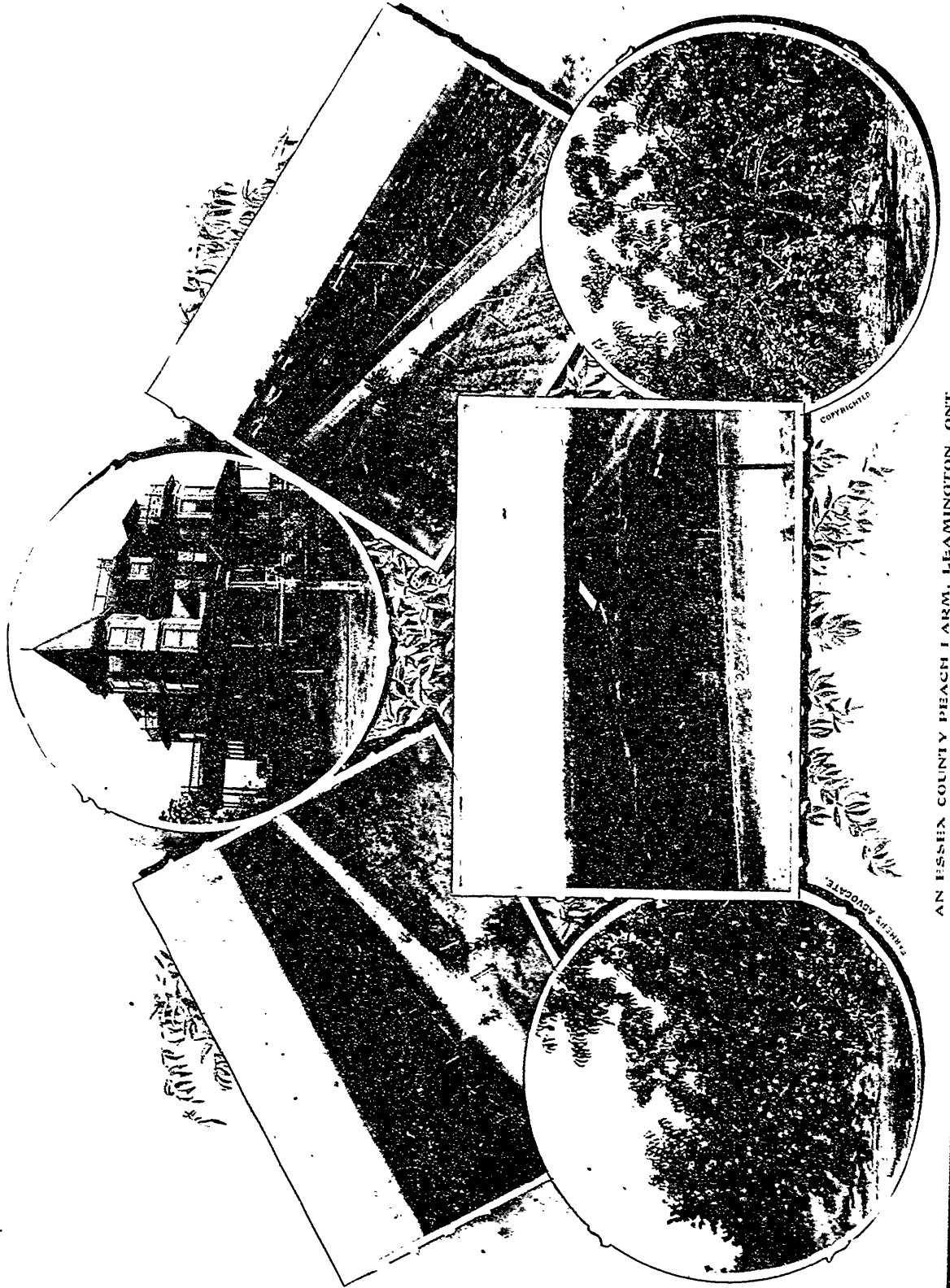
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FARMERS' ADVOCATE

AN ESSEX COUNTY PEACH FARM, LEAMINGTON, ONT.

THE CANADIAN HORTICULTURIST.

VOL. XXII.

1899.

No. 7



PEACH GROWING IN ONTARIO.



ONLY thirty or forty years ago it was thought almost foolish to plant the peach in Ontario. A few natural seedlings were growing about Grimsby, but no one seemed to think that an orchard of good varieties would ever live long enough to give paying returns. About the year 1860, Mr. A. M. Smith and Mr. C. E. Woolverton, then partners in the Grimsby nursery, planted the first peach orchard of any extent in the Niagara district, devoting about five acres of the farm now known as Maplehurst, to such varieties as Early Purple, Early Crawford, Late Crawford, Royal George, Morris White, Old Mixon and Smock.

Then was the time to make money out of peach growing, it being quite an ordinary thing to sell the fruit at \$3 and \$4 per bushel.

No wonder that orchards were planted on all sides at Grimsby, St. Catharines, Niagara and Winona, and the rage for planting did not cease until yellows came

upon the trees and glut in the market reduced the prices.

For some time it was thought that the Niagara district was the only favored one for peach growing until some enterprising fruit growers at Leamington and Kingsville found that the soil and climate of that region was also adapted for peach growing. Soon the planting fever seized that whole district, and thousands of acres of peaches were planted. In 1889, W. W. Hilborn, resigned his position as horticulturist at Ottawa and at Leamington with the view of engaging in peach culture. About this time Mr. Hilborn was engaged to act as experimenter in peaches, and over 150 varieties were placed in his care for trial. In 1892 Messrs. Morris, Stone and Wellington of Welland, Ontario, became interested in Essex as a peach section, and purchased nearly one hundred acres of land and planted the whole to peach trees, placing them under the general oversight of W. W. Hilborn.

Our frontispiece shows this farm as it

appeared in 1898, during fruiting season. In each of the lower corners, says the Farmers' Advocate, in which this cut first appeared, will be seen a single tree loaded with choice peaches; on the right hand is a Barnard tree; on the left, one of the Golden Drop variety. The latter was taken from a tree in a block containing 300 of this sort; they gave a yield of about 2,000 baskets, which sold at an average of forty-five cents per twelve-quart basket: nine hundred dollars for this their first crop. These trees have been planted six years. The lower central picture is a view down the center of the orchard; at the top are two views looking diagonally across either side of the farm. The upper central figure is the residence of Mr. Hilborn, located on the opposite side of the road and directly in front of the central or leading road through the farm. It is built on a triangular piece of land containing three acres.

The orchard contains over 12,000 trees, not half of which bore a crop of fruit this season; nearly all will be old enough to produce a crop next year. The yield, of course, is not so great on these young trees, the average being about two to three baskets per tree. The quantity produced by a peach tree increases rapidly with age. This season thirty baskets were gathered from a single tree nine years planted. It was a sight worth going many miles to see the Brigdens, Fitzgeralds, Barnards, Crosbys, Longhursts, Golden Drops, Smocks, and many other kinds laden with their choice fruit. The finest grades sold for sixty cents to one dollar per basket. Although less than half of the orchard produced a crop, the net returns after paying all expenses was, we understand, between \$2,000 and \$3,000.

The trees are planted fifteen by eighteen feet apart, in blocks containing

twenty four rows of twenty trees in a row. These blocks are located on either side of the central drive, which is thirty feet in width. Between each two blocks a crossroad is left twenty-five feet wide for convenience in gathering the fruit, etc. The trees are pruned every spring. The first two or three years after planting the trimming consists in thinning out the superfluous branches and shortening in the longest limbs. After the trees come into bearing, thinning out is all that is required in the way of pruning. Every spring cultivation begins quite early or when growth starts. The land between the trees is plowed to a depth of three or four inches. This is done with a regular farm plow, as near to the trees as possible. A side draft is attached, which permits plowing quite close to them. An implement called a "grape hoe" is used to turn the soil that cannot be reached with the common plow. Cultivation is continued at frequent intervals, say once a week, up to the middle or last of July, with harrow and cultivator. It is then discontinued in order that the wood and fruit buds will ripen up properly to withstand the cold of winter. When the trees are young, crimson clover or rye is sown among them at last time of cultivating. This is plowed under quite early the following spring. The fruit usually begins to ripen about July 15th to 25th. One variety continues to succeed another until about October 10th to 25th, thus give a continuous supply for three months. The fruit is carefully picked into baskets by men and boys. All of the fruit is not in condition to pick at once. The trees have usually to be gone over three or four times at intervals of two or three days, in order that all may be gathered at the proper degree of ripeness, each time taking only what is sufficiently ripe for market. As fast

THE KIEFFER PEAR.

as the fruit is picked it is carted to the packing-house; here it is turned out into trays containing canvas bottoms to prevent bruising. It is then sorted carefully into the different grades as required for market. Four and eight-quart baskets are used largely in which to pack the first early fruit; later, twelve-quart and bushel baskets are used as the fruit becomes more plentiful.

Unfortunately for Essex peach growers the three weeks of unusual severe weather in February 1899, without any snow to protect the roots, was fatal to the peach orchards in that county, and not only there but also did immense damage to peach orchards even in the Niagara district. Mr. Hilborn wrote

(see page 198) that one man in Essex had lost 2100 bearing trees, and the damage seemed universal except where the roots were protected by some cover crop. About Hamilton the peach growers are checkered with dead trees and from many quarters we hear a similar tale of evil.

Michigan peach orchards have suffered very severely, from which State large quantities of peaches are annually shipped into Canadian markets. It's an ill wind that blows naebody good," so perhaps those growers whose orchards have escaped injury will this year make up for the unprofitable seasons which they have recently passed through.

THE KIEFFER PEAR.

I HAVE been a close observer of the Kieffer and have had opportunity to test it from most of our Missouri soils, beside those of many other States and am free to say that I have never sampled one that could be called good that did not grow on such land as we call poor, or where the subsoil is red, such as is found in most of the Ozark's regions.

If the Kieffer pear is planted on such soil and the trees are not allowed to bear too full, but the fruit is properly thinned at the proper time, and picked when not quite ripe, and each specimen wrapped in paper and packed in barrels, or bushel boxes and stored in a cellar with a temperature of not more than 50 degrees, that will lower a little later to 40 degrees, and allowed to remain there until towards the holidays, and then submitted to a temperature of

about 60 degrees for a few days, they will be ripe, will colored, sweet and juicy, and almost as good as a Bartlett.

Now if these pears grown under favorable conditions are so much improved by this treatment, of course those grown under other conditions would be improved in proportion under like treatment, besides the advantage of going on to the market at a time when they are wanted, and would sell for a good price. Unless something of this kind is adopted, we may some day wish we had not planted so many Kieffer. On the other hand, if even a part of the growers adopt this or some similar plan, we will find our market supplied with luscious, juicy Kieffer pears in midwinter and selling at a profit to the grower. Will those who are growing this pear take the hint?—J. C. Evans, Mo.

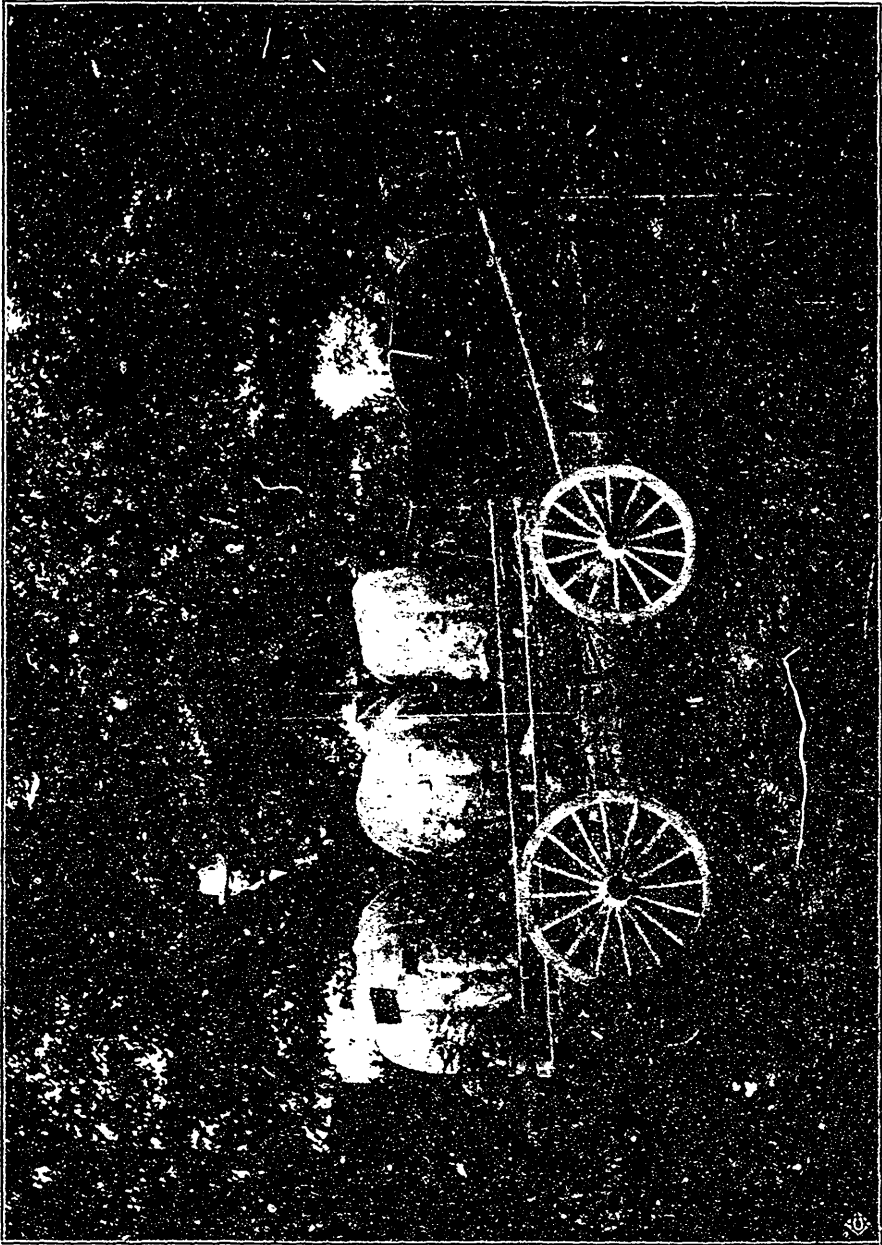


FIG. 1611.—MR. WM. WARNOCK, OF GODERICH, RETURNING FROM THE FAIR WITH HIS EXHIBIT OF SQUASH (1898.)

HOW TO GROW BIG SQUASHES.

SIR, I send you picture of three big squashes which grow in Goderich last year and exhibited at our fall show. This picture was taken when coming from the fair, with myself standing at the back; they weigh 388½, 355½, and 344 lbs. each. I thought it might be a suitable souvenir of the productiveness of our great province to be placed in your office where visitors could see it.

WM. WARNOCK.

Mr. Wm. Warnock of Goderich has certainly made himself famous by the marvellous sample of Rennie's Mammoth Squash, which he exhibited at the Columbian Exposition in 1893. It was the wonder of our visitors, whom we always took around to see the big squash that beat the world. California came nearly up to us but failed by a few inches of the size of our Ontario giant, which weighed 365 lbs.

We have often thought that some of our readers might be interested in monstrosities in the vegetable line and would gladly welcome the secret of Mr. Warnock's wonderful success, and since he freely sends us the following directions for growing big squashes, we willingly give them a prominent place.

"My land is made in good condition, being heavily manured every year, it is of gravelly formation with about sixteen inches of clay loam on top. A three hundred pound squash can be grown on any part of it by the following method of cultivation: For each hill I intend to plant, about the first of April I take two good wheelbarrow loads of hen manure, and mix with four barrows of good soil taken from some other part of the lot, this is mixed a second time the middle of April. The first of May I add four barrows of well-rotted manure and mix thoroughly, then about the eighteenth of May make hills and plant, dig out a space seven feet in diameter and fourteen inches deep, fill

in my compost mixing, and with it some of the best earth which was thrown out, and when finished, the hill will be about ten feet in diameter and six inches higher in the centre than the surrounding level. Then plant the seed. Hills want to be about twenty feet apart; work the ground well until the plants commence to run. When about three feet long I mulch the ground all over for twenty feet in diameter around each hill with horse manure three inches deep, and stake the vines down with sticks to keep the wind from rolling them about, so that they may root at every joint. It is of great advantage to keep the vine from fruiting as long as possible, by pruning all fruit bloom off until about the last week in July; this will give time enough to mature a three hundred pound squash by the first of October, for there must be a big vine to produce a big squash. I practice fertilizing a few of the first bloom that come, when I think the vine is strong enough to grow a good specimen, by cutting off some of the fresh false bloom, trim the corolla or flower leaf off, and rub the stamen in around the fresh fruit bloom. This is necessary when fruit bloom opens on a morning that is unfavorable for bees to do their work, and it assures the setting of the specimens just where you want them. It also gives extra vigor to the growth of fruit to be well pollenized. When the first perfect specimens have set well, say four or five inches in diameter, cut all other fruit and blossoms off, and nip the ends off the vines and all bloom that shows twice a week, so that the vine is not exhausted with the great quantity of false bloom that would naturally come. Now while the great growth of the squash is going on I use

THE CANADIAN HORTICULTURIST.

liquid manure twice a week along three or four of the principal vines of each hill, often six pails to the hill if it is in a dry time. Great care must be taken to give plenty of water; for instance, in 1893 when I grew the great specimen that was the largest on exhibition at the World's Fair, it was a dry time with us at Goderich, and having the advantage of the town water service, I sprayed each hill twice a week through August and the first two weeks in September,

drenching the ground each time.

I expect all have heard of feeding squash and pumpkin by injecting milk or other stuff. This is a ridiculous silly humbug. I have practiced several methods along this line when I was younger, but it only makes me ashamed to confess it, and I am now quite satisfied the only thing that will increase the size of the fruit comes out of the vine, and the vine must get its support from the natural roots."

THE EXPORT OF CANADIAN GRAPES.

THE overproduction of fruit in Ontario is most evident in fruits not exportable. For apples and pears of a No. 1 quality there seems to be an unlimited demand in Europe, and we are confident that if our best varieties of grapes could be landed in first-class condition, and once introduced among the middle classes, they too would find an unlimited sale. As it now is, our own markets are glutted with them, and unless the Northwest opens up a large trade in them, we shall soon have to dig out one half our vineyards.

Realizing this condition of affairs, the Dominion Minister of Agriculture has tried for two years experimental shipments of grapes, without success; for it has been found that the English people will not take our Concords, and no more of that class will be sent forward. We are however hopeful that our Rogers' grapes may meet with more favor, and our Executive Committee has submitted the following resolution to the various local societies for en-

dorsation, so that the Minister of Agriculture may be assured of the support of the public in his further efforts to open up English markets to our tender fruits.

To the Honorable Minister of Agriculture:

Whereas, the grape is one of the most important fruit products in Canada, and very large acreages are devoted to its production, and

Whereas, of late years the yield has been so abundant that our home markets are glutted, and the price too low to leave any profit to the grower, and


Whereas, certain varieties of Canadian grapes have superior flavor and excellent carrying qualities, as, for example, the Rogers' Hybrids, and

Whereas we are persuaded that English consumers need only to become acquainted with the excellence of such grapes to become fond of them,

Therefore, Resolved, that we humbly pray that you will export in large quantities our best Rogers' grapes to the best English markets; that they be put up in neat and attractive packages, and sent out in costermonger carts in such a city as Manchester, until the trade reaches a firm basis.

Already we are receiving official notices from the various local societies, saying that they fully endorse the above resolution.

EXPORT OF TENDER APPLES.

 ON the 26th of May Prof. Robertson and Mr. Grindley met the shippers at Grimsby to consider plans for farther experiment in shipping tender fruits. Peaches, tomatoes and grapes have been so unsatisfactory thus far that it was not proposed to receive any of them from shippers on guarantee, but the Government might buy some of these fruits for purposes of experiment.

The Dairy Commissioner said the Government would push the export of pears and early apples in particular during the coming season, because there seemed to be good ground for expecting that Canada would be able to take a first place with these fruits in the British market. There would therefore be a large quantity of these sent forward, providing the crop was of fine quality. There would seem to be a good opening for fine, high colored Astracan, Duchess, Alexander and Gravenstein apples, among the summer and fall apples, if forwarded in small packages in cold storage.

It was advised that apple growers in each province make specialties of a few of the kinds of apples that succeed and not to have too many varieties. Thus Nova Scotia has made a name for her Gravensteins.

Among the winter varieties he mentioned such kinds as the King, Greening, Cranberry, Pippin, Golden Russet, and Spy, as varieties which were becoming known as Ontario apples, and were in demand abroad.

Prof. Robertson proposed trying some shipments of Ontario winter apples in the Ontario barrel, which is about $28\frac{1}{2}$ inches from croe to croe, $17\frac{1}{2}$ inch head, and 65 inches around the bilge, and some in the Nova Scotia apple bar-

rel which has straight staves, and is smaller, but which appears to reach Great Britain with fewer slacks. He thinks the bilge tends to flatten in the Ontario barrels when piled three or four tiers high and thus render the apples loose in the interior. He had looked over many account sales for the purpose of comparison and had found in the Nova sales not more than 10 per cent slacks reported, while in Ontario sales a much larger proportion was not unusual. Of 14,000 barrels of Ontario apples for example, that were reported, only 5,000 were tight. He thought possibly the explanation was in the difference of the shape of the barrels. Of course it might possibly be due to difference in temperature of storage; but if so, that would henceforth be remedied, for in response to the resolutions sent in by our Association, the Minister of Agriculture has made provision for better storage of fruit in trans-atlantic steamers, and agents of the Government would be sent to port towns to insist upon better conditions.

The Committee discussed with Prof. Robertson the importance of persevering with the experimental shipment of grapes. So far, it is true, these have been a failure, but the shipments have been on too small a scale. Besides, they have been of too many varieties. Concords, Wordens and Niagara are worthless for export and large quantities of these varieties were previously forwarded to the disgust of the English consumers, with both their condition and their flavor.

We would advise shipping only the Roger's grapes, such as 4, 9, 15, 22 and 44; grapes of the highest quality, of fine appearance and excellent carrying qualities. These should

be packed in fancy packages and sent over in large quantities. Let them be peddled on the streets of the great cities by the costermongers, and thus intro-

duced among the middle classes, until a demand has been created; then there will be no trouble in finding agents who will gladly receive them from us.



FIG. 1612.—A SEEDLING PLUM.

A SEEDLING PLUM.

A blue plum in my garden here is remarkable for its hardiness and productiveness. It most closely resembles the variety "Prince Englebert." The tree is said to have been planted about 25 years ago, and to be the only one of a number purchased at the same time which has lived. The trunk divides in three parts almost at the ground, where it has a diameter of about 15 inches. It is absolutely hardy, and yields enormously about every second year. In

1898, I gathered from it 440 pounds of fruit. At least 60 pounds more fell owing to the wind, or with branches which could not be propped. The size of the fruit is medium to large, and the quality good. The variety seems a desirable one to propagate, especially in the East; and I shall be glad to give scions for budding, at the proper time, to all who may desire them. Fig. 1612 shows a terminal cluster of the fruit.

F. R. L.

Ottawa.

LAYERING THE GRAPE;

LAYERING is the simplest, surest and easiest method of increasing the grape, and is the best way to grow them where but few vines are wanted. There are two kinds of layers, called spring and summer layers, from the season at which they are made.

Summer layers are made in the summer, generally the last of July, from a branch of the same season's growth. They are likely to be weak for several years, and do not make as good plants as the spring layers. In making them, the wood should be slit for an inch or so near the buds that are covered. Bury about one foot of the cane four inches deep in the ground and it will be rooted by late autumn, when it should be separated and be treated as a young vine; and it is generally best to get them well started in a garden or nursery before planting in the vineyard permanently.

Spring layers may be made by laying down any cane early in the spring. It will root in one season. By fall it will have made a good growth of roots, when it may be cut from the main cane, and if strong it may be divided into two plants. This form of layer is illustrated



FIG. 1613.—A ROOTED LAYER. FIG. 1614.—THE ROOTED LAYER SEPARATED, MAKING TWO PLANTS.

in Fig. 1613 and 1614. By a little different treatment of the spring layer a

vine may be grown from each bud on the layered cane. For this purpose some thrifty cane should be selected in autumn, pruned of its laterals, and buried. In the spring it should be uncovered and only one shoot permitted to grow from each joint. After the new growth has started about six inches from each bud the whole cane should be layered about four inches deep, handling it carefully so as not to break the new growth.

Fig. 1615 shows such a layer after it has rooted. It is a good plan to cover it not more than three inches at first, and to fill up the trench as the shoots grow. If covered four inches deep at once the young growth will sometimes rot, though this seldom happens, and some skilful growers fill the trench full at once. In the autumn, roots will be found growing from each joint, and these

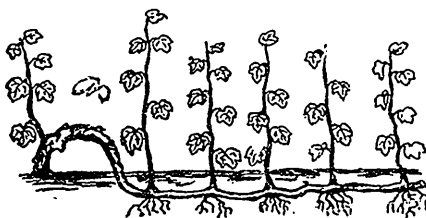


FIG. 1615.—A ROOTED LAYER, EACH BUD MAKING A NEW PLANT.

may be cut apart and treated as recommended for weak vines grown from cuttings. If this method of propagation is to be used to some considerable extent vines should be grown especially for the purpose. It is not a good plan to use fruiting vines for layering to any great extent, though it may be safely done in a small way.—S. B. Green.

STANDARD SIZES OF FRUIT PACKAGES.

A BILL introduced by Mr. Penny to define the sizes of small-fruit packages was given its first reading in the House of Commons on April 13th. The object is to arrive at a standard measure of quart, pint and half-pint baskets, used in buying and selling strawberries, raspberries, blackberries, currants, and other small fruits. The bill demands that the standard quart when even full shall contain sixty-seven cubic inches. The standard quart basket shall be $5\frac{1}{4}$ inches on each side at the top, and $4\frac{3}{8}$ inches on each side at the bottom, and $2\frac{7}{8}$ inches deep. The standard pint basket shall be oblong, and the inside measurement at the top shall be $5\frac{1}{4}$ inches by $3\frac{3}{8}$ inches, and at the bottom $4\frac{3}{4}$ inches by $2\frac{1}{2}$ inches, and it shall be $2\frac{1}{2}$ inches deep. The dimensions of half-pint baskets are also defined as $3\frac{3}{8}$ inches on each side at the top, and $2\frac{3}{4}$ inches on each side at the bottom, by $1\frac{3}{4}$ inches deep, all inside measurements. The Bill also enacts that makers of baskets of less size or capacity, shall mark the word "short" on the outside in letters not less than one-half inch in height. The penalty for selling "short" baskets of fruit not so marked will, upon summary conviction, be a fine of not less than five dollars and not more than twenty-five dollars. The Act is not to come into force until May 1st, 1900.

In order to arrive at the probable effect of such an Act, we interviewed a number of fruit dealers who claim that such a provision, if it can be properly carried out, will do away with much dissatisfaction to both dealers and consumers, as many of the so-called twelve-quart baskets contain not more than from ten to eleven quarts, and smaller packages in the same proportion. While the dealers interviewed could see considerable difficulty in having such a regulation carried out, they were of opinion that it is just what is needed, especially with Canadian fruit. The greatest difficulty, however, was observed in the way such regulations would effect foreign fruit, such as strawberries, of which we get great quantities during the early season, as the cases from the various States differ widely in form if not size. It is claimed that there is little to complain of in the matter of shortage in the American cases—in fact, far less than in Canadian—but as the Bill demands cases of certain dimensions, an effort to compel the use of a regular form of box in place of those of a different form now in use for the shipment of fruit from foreign countries, and which are already large enough, would be to little purpose and well-nigh impossible of enforcement without seriously interfering with the trade.—*Farmers' Advocate.*

ORIGIN OF THE CATAWBA—It is a fact that the Catawba grape was found wild in the woods of Buncombe county, N.C., about ten miles southeast of Asheville. In 1807 Senator Davey, who lived on the Catawba river, transplanted some of the vines to his farm, and some time between that year and 1816 brought cuttings of his vines to Wash-

ington and gave them to some friends in Maryland. The Scholl vine undoubtedly came from these cuttings. American horticulturists are agreed in the opinion that the Catawba is purely a native grape, without the slightest admixture from European kinds.—N. Y. Trade Bul.

PICKING AND MARKETING PEARS.

I THINK I may safely say that the ripening of pears by growers has received but little attention until very recently, the purchaser invariably attending to that whenever they were sold in market for eating. In the past, I have annually supplied market men with hundreds of boxes at a shipment, that they might ripen for that purpose. They would store them away in some convenient place, and frequently cull them over, taking out the ripe ones, until they were all disposed of.

Very often such purchases did not prove very profitable, though sold at a much higher price, from the simple fact that the place in which they were stored was not at all suitable for the purpose; the principal loss, which was by decay, being very great.

Many years back, finding my crops greatly increasing and the price declining, particularly for green stock, caused me to give the subject of ripening the fruit before shipping my most serious attention. That season, I selected fruit from all the varieties that I was growing (some fifteen or more), and put them in various place in my house (which is of brick) from cellar to garret and also on a shady porch, and carefully noted the results.

The following spring, I erected houses especially for the purpose. (Described house here. Size, platform, how used, etc.)

The fruit to be ripened is carefully picked and brought to the ripening room, where it is at once assorted; all inferior, ripe, specked and bruised are carefully culled out, the others being

placed in baskets (7-8 peach baskets) and piled as high as a man can reach and kept there until they begin to ripen which will be from 10 to 15 days, if the fruit is properly picked from the trees. By that time, any variety that you are at work on should be gathered and put in the house. It is during this period of picking that the market is generally overstocked and prices low. As soon as they begin to ripen, commence on the first you put in, to cull them over, taking out the ripe ones to ship, putting back the green ones for a future culling, until finally they are all ripe and disposed of.

You can work, say, on the Howell and Duchess for at least three weeks after you finish picking, before they are all ripe enough to ship. Before you have gotten through with these varieties, the Kiefer is ready to begin on, and when you have finished these, the Lawrence will follow, and it generally takes until about the first or fifth of December to close out our pear crop.

As to varieties to ripen in house, I will say, that all varieties are not adapted to this system; in fact many varieties cannot be handled in this way, as they will ripen much better on the tree, and can be held, if desirable, much longer in that way. This is particularly true of the Bartlett; when housed, the Bartletts all ripen nearly at the same time, but fortunately, it is a variety, and one of the leading and most largely grown, that sells well to canners and shippers when green, and they prefer them in that way.—Report Md. H. Soc.

THINNING FRUIT.

THIS is another part of the New Fruit Culture which is absolutely essential to success in plums, apples, pears and peaches.

The absurd method of allowing each tree to overload itself each alternate year in its natural effort to produce as many seeds as possible, regardless of the size of the fruit must come to a stop, and the fruit grower who means to succeed must aim at size of fruit and not at the number of seeds. Even for evaporating, buyers will not take apples, for example, less than 2 inches in diameter, and for export it is proposed that we make the minimum for No. 1 grade $2\frac{1}{4}$ inches. Van Deman writes very sensibly on this subject in Green's Fruit Grower, he says:—

There are several reasons why thinning pays. The most important one is, that it causes the fruit to be large and well flavored instead of small and poorly flavored. It is scarcely worth while arguing about the difference in value between large and small fruits of the same variety, either for market or home use; and I would not do so if there were not so many who continue to grow so much of the latter kind. One big Baldwin, Jonathan or any kind of apple is worth more than twice as much as two of half the size. In actual net profit it is worth fully four times as much whether eaten or sold. The same is true of pears, peaches, plums and all other fruits. When there is a glut in the markets it often occurs that small and inferior fruits will not sell for enough to repay the cost of gathering and transportation.

Now if the trees that bore these small half or less than half-developed fruits had been stripped of half or three-quarters of them when they were about the size

of marbles the remaining ones would have grown to weigh nearly as much as all of them and would have been worth much more.

There have been several experiments made to obtain positive evidence as to the profit or loss of thinning fruit and what proportion should be removed. The first extensive experiments of this kind, of which I have knowledge, were made in California some fifteen years ago by Mr. A. T. Hatch, and were made principally upon peaches and pears. I heard him state that he tried leaving the fruits different distances apart; some being just as nature had placed them, some three, four, five and six inches apart and so on up to a foot. He said that he had finally decided that for these two fruits about six inches gave the best results. The open hand of the workman was given them as a measure by which to space them. In New York, Connecticut, Michigan and Georgia there have been several such tests with apples, peaches, pears and plums. Only a few persons have tried the plan upon grapes, except in house culture. In every case it has paid. A few have thinned big trees of Baldwin, Esopus and other apples, carefully charging all expense of labor and crediting the trees with the fruit sold. This having been done in comparison with adjoining trees that were not thinned, and of which records were kept of fruit sold, it was found that there was a very decided balance in favor of thinning. If this will pay on a few trees it will pay on many. It is purely a matter of business judgment as whether it should be done or left undone; just as a farmer thins his corn to two or three stalks to the hill and has big ears, or lets five or six stalks stand to make fod-

FRUIT INTERESTS IN PRINCE EDWARD ISLAND,

der and nubbins. A few of the most progressive fruit growers have passed the experimental stage of the business and practice thinning their growing fruit with as much certainty of profitable return as they do tillage or any other part of the business.

One large peach grower in New York showed me an orchard in which he had expended about \$80 in thinning in 1897, with an increase of over \$2,000. This

he knew from comparing it with another orchard which was not thinned. Another of the leading fruit growers of New York has repeatedly stated in my hearing and written me that he has been experimenting for many years with some large trees of Esopus and since he began thinning and spraying he has not failed once to have a fair crop, and the apples have always been extra large, well colored and richly flavored.—

FRUIT INTERESTS IN PRINCE EDWARD ISLAND.

In *Hansard* of April 26th, we read the following :

Mr. Martin asked :

Does the Government propose to initiate, as advocated by Professor Robertson, any scheme for experimental spraying of fruit trees?

If so, to what extent is it proposed to extend it this coming summer?

What sections are to be chosen for these experiments?

Is it proposed to extend them to all the provinces?

Is it intended that these experiments are to be made without any charge to orchardists?

If not, what charge is to be made?

The Minister of Agriculture (Mr. Fisher). Professor Robertson has not advocated any scheme for spraying fruit trees; but it is proposed to co-operate with the provincial government of Prince Edward Island and the Prince Edward Island Fruit Growers' Association in preparing for some trial shipments of fruit by the spraying of fruit trees, and in the packing and shipping of apples in the season of 1899.

Mr. Martin is a member of parliament for Queens (East) Prince Edward Island, where recently, thanks to a well organized Fruit Growers' Association, the production of apples especially has received a wonderful impetus. Everybody now feels compelled to walk in the ways of the Association and hence the keen interest of the politician who scents the necessity of co-operation, in a matter of vital importance to his province, afar.

When Hon. Senator Ferguson resigned the presidency of the F. G. A. of P. E. I., owing to enforced absence from home at a season of the year when the president of such a live organization would need to be engaged in active work, he advised, in view of a resolution passed at the general meeting of the Association to inaugurate a service on top-grafting for the province, the placing of this whole matter of orchard advancement into the hands of Professor Robertson, Dairy Commissioner for Canada, of whose judgment and superior intelligence on all matters pertaining to Agriculture, nobody, at this late day, has the slightest doubt. Down in the island province Professor Robertson had taught them how to make cheese—had actually built the first cheese factory but a few years ago and now that fair province is, according to Governor Howlan's happy expression, "A million acre dairy farm." The whole island is dotted over with cheese and butter factories, and their numbers will go on increasing, for all the conditions for making the best possible cheese at the least possible expense obtain there. The people there admire Professor Robertson and trust in him implicitly. It was

not wonderful therefore, that at Senator Ferguson's suggestion the Fruit Growers' Association, backed by the local Government, asked the Minister of Agriculture to place on the Professor's already well burdened shoulders, the development of fruit culture in the "Garden Province." Luckily the kindly feelings which Islanders entertain for Professor Robertson are reciprocated to the full, and hence he took to the new work with that earnestness and industry—which are characteristic of the man and can only enter where such occupations are a labor of love. "Prince Edward Island can grow excellent fruit," said Professor Robertson; "we must only fit up the old orchards, plant out judiciously the new, teach the people to graft, spray, and prune the trees they have and pack and ship properly the fruit, and, as with the cheese factories, so with the orcharding, this interest will go ahead with leaps and bounds."

The Minister of Agriculture convinced that the Federal Government ought to do something for Prince Edward Island on the lines suggested by Professor Robertson and backed by all her representatives in the House and Senate, began to cast about for an ef-

ficient orchardist. There was little time to waste as grafting time was on, so luckily a well recommended Nova Scotian, named George Kinsman, was secured to take charge of this important work. Mr. Kinsman was summoned to Ottawa for instructions, and the most improved outfit left the Capital on the 10th of May and is now hard at work in Prince Edward Island, where the Fruit Growers' Association had already a programme of operations cut and dried. He will have several young men with him, it is to be hoped, and as the Island province is small, compromising only three counties, he will be able to get a goodly number of old orchards top-grafted, and give valuable instruction in spraying at once. The value of spraying will be demonstrated on the lines followed in Ontario and everything done to initiate the keen Islanders into scientific methods of orcharding without delay. The work will be invaluable and Prince Edward Island has already great reason to thank heaven for a live Fruit Growers' Association.

P. E. BURKE,

Alberton, P.E.I.

TOMATO PULP WANTED IN ENGLAND.

ENQUIRIES have been received in Canada from a house in England for large quantities of tomato pulp.

The pulp must be put up in sealed tins, and must be free from acids or preservatives of any kind.

Any information sent to this office will be forwarded to destination.

This may open up new possibilities for the tomato industry. To what extent can only be ascertained by actual experiment. It is to be hoped that persons will be found sufficiently enter-

prising to interest themselves in a practical way in the matter.

Mr. J. S. Larke, the Canadian Trade Commissioner in Australia, in his last report to the Department of Trade and Commerce, pointed out that there was a maker of sauce in Australia who wanted tomato pulp, for which he was willing to pay \$50 per ton. "At that figure," says Mr. Larke, "British Columbia ought to be able to supply the article, though the freight might make it impossible to bring it from Ontario." —The Canadian Grocer.

AFRICAN APPLES VERSUS CANADIAN.

THE Cape of Good Hope bids fair to be a strong competitor with Canada in the English fruit market.

The *Fruit Grower*, London, Eng., of May 4th, says :

The arrival of new apples from the Cape has produced a perfect sensation in the fruit trade. The samples are very pretty and fine and are sure to create an immediate demand. In the early months of the year the public has to depend principally upon apples from California, Canada, and the Eastern States of America, and these fruits after January, through having been kept in cold storage, lose their freshness and aroma, and are thus in no way comparable to the new, fresh fruit. It seems then, if developed, that future Cape apple shipments will completely revolutionise the trade, for with the exception of the Australasian samples, there are no new apples obtainable at

this time of the year, which have not been rendered insipid through months of cold storage. It is believed that the opening up of new markets, and the successional arrival of new apples from various outside centres, will, in time, render cold storage unnecessary, compelling apple growers at least to market their stocks when the fruits are new, or, at least, fairly fresh. By this development the public will undoubtedly be the gainers, for all fruit is at its best when marketed in fresh condition. We learn that if the present shipments prove a success the Cape fruit shippers will send over a plentiful supply next year. The fruit will be put up in a very artistic manner, on the lines adopted by the Paris packers of choice new fruits. The retail fruiterers, particularly those at the West End, will welcome these fruits, as they will come in at a time when fresh apples are much appreciated.

GRADING AND INSPECTION OF APPLES.

THE Executive Committee of the Ontario Fruit Growers' Association has prepared a resolution asking for some provisions of the grading and inspection of apples, and has submitted the same to the local affiliated societies in Ontario, and also to the various provincial societies, for their support. The following is the resolution :

To the Honorable Minister of Agriculture :

Whereas it is well known that fraudulent packing of apples for export is a very prevalent evil which is yearly bringing discredit upon the name of our Dominion, and ruining the English market for our Canadian apples, and

Whereas, as a matter of fact, Canadian apples are the finest in the world, and will bring the very highest prices in the English markets if confidence in the packing can be sustained.

Therefore, Resolved, that this Society do humbly pray that you will provide some remedy for the same.

We would suggest that certain marks or numbers be adopted to indicate certain grades and sizes of apples, and that it be made a misdemeanor for any one to stamp these marks or numbers upon the outside of his packages unless the contents of the packages are in accordance therewith ; that the name and address of the owner and shipper be always required on the inside or outside of closed packages intended for export ; and that an inspector be appointed with power to open packages, and, if found fraudulent to have the grade marks removed and to expose the offender ; and we further suggest that the terms used for grading be " No. 1 " and " A. No. 1," " No. 1 " to include sound apples reasonably free from worm holes, scabs or other blemishes, and to be not less than 2½ inches in diameter, and the grade " A. No. 1 " the same with apples not less than 2¾ inches in diameter.

PYRAMID PEAR TREES.

THE Pyramid or cone form of training pear trees, where they stand alone or in a small garden, is a very ornamental one and at the same time calculated to secure a good crop. A strong pyramid, well pruned, symmetrical and thriving, is certainly a handsome object. Like the dwarf or fan form the pyramid requires more or less annual pruning. One must of course begin with a young tree that has branches to the ground. Do not expect too vigorous a growth; from five to seven main branches a year are all that should be allowed. When laying out the branches for the next year's growth, it is as well to prune close to the bud which is to continue the growth, leaving a small spur attached to tie the



FIG. 1616.—PYRAMIDAL PRUNING.

growing shoot to in order that it may grow in the proper direction. Or it might do to cut the branches three or four inches above the bud, removing all buds on it, and tie the growing shoots to this spur, which may afterwards be taken off. It is a mistake to prune strong-growing varieties too much, and it is equally wrong to allow the lateral branches to grow too long. Therefore it will be best in pruning to use a judicious moderation and keep the tree properly balanced. A well proportioned pyramid should have a diameter about two-thirds of its height. If a tree of the proper age fails to bear, it may, if well proportioned, be left unpruned for two or three years. A circular incision of the bark about one-half inch wide at the base and kept open may be tried, or even root-pruning resorted to, to bring it into bearing. The illustrations give a good general idea of a pyramid pear tree after winter pruning, also one in fruit—*Farm and Home*.

EDWARD A. ROGERS.—The introduction of Rogers' hybrid grapes marked a new era in American grape culture. The death of the originator, Mr. Edward A. Rogers, of Salem, Mass., has just been announced. This occurred at Peabody, Mass., on the 30th March. It is remarkable, considering the grand results of Mr. Rogers' experiments, that more work in the same line has not been

attempted. All he did was to plant under a hot-bed frame a vine of the European race, and one of the American Fox grapes. They then hybridized, naturally, as one might say, as the results proved. If the path marked out by Mr. Rogers had been followed further, valuable results might have rewarded the explorer.—*Mechans' Monthly*.



THE FOREST TENT CATERPILLAR.

SIR,—Our last year's visitors, the caterpillars, are on the rampage again, more plenty than even last year. I am in hopes that this may be their last year with us. They have nearly cleaned the Poplar of the fresh young leaves already. So far I have kept my orchard clean by persistent spraying every few days; but when they get big and begin to travel round, will keep them back by band of tarred cotton round the tree trunk. Paris green is after they get big,—at least I have not found it of any use. I have observed that the bud worm is here this spring; this is the first time it has made its appearance to be noticed. We are a little behind you good people in old Ontario, but are getting educated whether we will or no, and this kind of compulsory education we'll have to get, and I hope may profit by what you older people have already learned.

CHAS. YOUNG,
Richard's Landing, Algoma.

Mr. W. M. Munson, of the Maine Experiment Station, writes :

The Forest tent caterpillar is defoliating many orchards in Maine the present season. The eggs are laid upon the twigs in the same way as those of the common tent caterpillar, but the insects, instead of spinning a web for a resting place, gather in great masses upon the sides of the trees at moulting time, and they often migrate for considerable distances. In many cases during the past year, they swept over entire orchards in spite of everything that could be done. Spraying in the manner already indicated, if begun when the insect first appears, will usually prove effective, but if delayed till the caterpillars are half grown, it is of no avail. Many large orchardists have been approximately successful in holding the pests in check when they appeared in force, by putting on rubber gloves and crushing as many as possible of the insects. Many of those not killed would spin a web, and drop to the ground when disturbed, and a band of paper, smeared with equal parts of lard and sulphur, tacked about the trunk, prevents their return to the tree. The Forest caterpillar is at present doing much injury to the shade trees in the cities and towns of Maine, as well as to the orchards.

We have received numerous letters from subscribers living in northern parts of Ontario complaining of the ravages of caterpillars, saying they were so abundant as to become a great plague, sometimes collecting so thickly on the track as to be the means of stopping the trains; and in the orchards they were so

numerous as to threaten their wholesale destruction. Some complain that even Paris green is ineffective. It is quite evident that reference is made to the Forest and not the Apple tree Tent Caterpillar. The latter is comparatively easy of control by spraying, but the former increases so enormously at times in the forests that immense swarms often travel across roads or along fences in search of food, and woe to the garden or orchard which comes in their way. The foliage may be well poisoned with Paris green, but what if the first thousand or two perish, the endless hosts following will soon take their places, and continue their ravages until July, when they usually go into cocoons and wait for another season's attack. When we were on St. Joseph's Island last July we noticed the evergreen trees white with loads of the whitish yellow cocoons like crops of some peculiar fruit; even the fences were dotted with them and every other convenient lodging place.

We are not surprised to hear they have now appeared in enormous numbers, and that all usual remedies fail against such an army. Mr. Young's band of tarred cotton around the trunks of the trees is a fine plan, because one can easily control those worms hatching out from eggs deposited on the apple trees, provided fresh worms from the forest do not crawl up the trees to take their places. Dr. Saunders says on this subject: "During the day they are so constantly on the move, that a young tree thoroughly cleansed from them in the morning may be crowded again before evening. To avoid the necessity of constant watchfulness, strips of cotton batting, three or four inches wide, should be tied around the tree about half way up the trunk. These bands

should be tied tightly in the middle. Each caterpillar is furnished with four pairs of fleshy prolegs, which are fringed with small horny hooks, and on its trying to pass over the cotton these hooks get so entangled in the fibres, that its further progress becomes very difficult and is seldom persisted in."

Fortunately, Dame Nature has the best remedy, and when an insect becomes very abundant, she usually provides a parasite to keep it in check ; she has several ready for this tent caterpillar, so that in a year or two we may expect to see them cleared out without our assistance.

THE SCALE ACT.

A VERY important meeting of fruit growers was held at Grimsby on June 16th, under the auspices of the Ontario Fruit Growers' Association, to consider the present delay on the part of the Department of Agriculture carrying out the provisions of the San Jose Scale Act, which was passed at the request of our Ontario Fruit Growers two years ago.

It seems that there are only three or four sections in the province, and those near the border, in which the scale has been found. The whole of the infested sections put together would not exceed twenty miles square, and the Act if vigorously enforced will soon clear out the whole thing. Two delegations from the sections have called on the Minister of Agriculture and asked that the Act be suspended so as to save their orchards, and in response the Department has temporarily suspended the Act and appointed a Commission to look into the whole question, consisting of Dr. Mills, of the O. A. C., Guelph ; John Dearness, of London, and W. H. Bunting, of St. Catharines.

Mr. Geo. E. Fisher, of Burlington, the Inspector, was present at the meeting on invitation and gave much valuable information, in answer to questions. He had become convinced that the pest was a much more serious enemy than he had first supposed, but since it was so far

confined in Ontario to two or three small sections of two or three square miles each, it could still be easily routed. The young lice began to leave the mother scale about the end of June, and hence the importance of prompt action. He had found no scale at Leamington, and at Kingsville one square mile would cover the infested territory. He had found no forest trees affected. As to fumigation as a means of destroying the pest, he believed it was impracticable, because the canvas tents were not gas proof, and it was not possible to apply them to trees over ten or twelve feet high.

Mr. D. J. McKinnon, Grimsby, said he was greatly surprised that the Government should delay action in a matter so important to the farmers of Ontario, at such a critical moment ; when delay might mean their ruin. The Commission might decide whether the Act should continue in force for another year, but in the meantime it should be pushed forward with all vigor, in accordance with the wish of the people expressed two years ago.

Mr. A. H. Pettit said he was much pleased when the Hon. John Dryden had the Scale Act passed, and he much regretted the present hesitation in carrying out its provisions. After considerable discussion a committee consisting of M. Pettit, Winona, D. J. McKinnon

KEEPING GRAPES.

and A. H. Pettit, Grimsby, brought in the following resolution, which was unanimously carried.

To the Honorable Minister of Agriculture for Ontario.—

Whereas, the minute San Jose scale is the most serious enemy that has ever threatened the fruit grower,

Whereas, the Government has passed an Act which is calculated to save the fruit orchards of Ontario from being infested with this scale,

Whereas, certain persons, whose orchards were found affected and who were ordered to have them destroyed in their own and the public interest, have waited upon the Minister of Agriculture asking that the law be not enforced,

Therefore, Resolved, that we consider the

Act to be all important in the interests of the farmers and fruit growers of Ontario, because it is the only sure way of saving our orchards from ultimate destruction by this terrible pest, and that we consider the interests of the many of much greater importance than the interests of the few,

We, therefore, express our deep regret that the operation of the law has been suspended at this season of the year when the scale is beginning to spread and when a fortnight's delay may cause irreparable damage, and we earnestly beseech you to enforce the law vigorously and without delay, allowing the findings of the Commission, lately appointed by you, to govern your action with regard to future years.

And we further pray that you consider the interests of those growers whose orchards have had to be destroyed, by so increasing the amount of compensation that they will have no just reason for complaint.

KEEPING GRAPES.

DRYNESS is essential to the successful preservation of grapes. Moisture causes the growth of mould, which at once ruins the fruit. With the present moist storage rooms some good absorbent such as sawdust must protect the fruit. Better success with grapes would be attained in a room cooled by dry, cold air currents than by the present systems of refrigeration. Such storage rooms are already being planned in some warehouses. Grapes do not require a low temperature, 38° to 40° being as low as necessary, provided the temperature is steady and the proper conditions regarding dryness are preserved.

As may be observed from the records, the grapes held up in good condition from six to eight weeks. The results of other seasons agree in fixing this as the limit for grapes grown in our section.

The length of time varies considerably with the different varieties. Delaware, Agawam, Brighton, Duchess, Centennial, Concord, Worden and Hays, ranking in the order named, have kept the best. It is noticeable that the red grapes head the list, the first three being red. The fourth and fifth of the list are white, while the black grapes, represented by Concord and Worden, rank in the sixth and seventh places. The varieties that kept best are those that rank as early grapes. However, no extremely late varieties were tried. Had they been tried the results might be different. The climate in which the grapes grow modifies their keeping qualities. A grape maturing slowly in a climate of moderately cool, regular temperature, will keep longer than one whose ripening is hastened by excessive heat.—Kansas, Bul. 84.

ORCHARD TILLAGE.

WE have frequently pointed out in these pages the necessity of thorough cultivation of the orchard.

The notion was prevalent twenty years ago that an apple or a pear orchard would thrive in grass, and many growers planted large orchards on their hardest land, thinking thus to reap harvests without the tough labor of ploughing and digging. It has taken all these years to prove conclusively the mistake of such a notion; each year of barren trees or of scarcity of fruit was thought exceptional until at last the hateful truth has dawned upon the planter that his ground and his trees were both wasting his time and his money, and that no high grade fruit would ever be produced without the same hard work and thorough cultivation that was necessary for garden crop.

Added to the crop failure is the change in markets. Twenty years ago apples of almost any grade would sell at \$2.50 per barrel, but now only A 1 apples will bring such a price, and second grades are not salable unless to the evaporator or the cider mill. Evidently then we must most completely change our methods to suit the changed conditions, and tillage is the first and most important consideration. Bailey arranges the benefits of tillage under three heads thus:

1. Tillage improves the physical condition of the land, (a) by fining the soil, (b) by increasing the depth of the soil, (c) by warming and drying the soil in the spring, (d) by reducing the extreme of temperature and moisture.

2. Tillage may save moisture, (e) by increasing the water-holding capacity of the soil, (f) by checking evaporation.

3. Tillage may augment chemical activities, (g) by aiding in setting free

plant food, (h) by promoting nitrification, (i) hastening the decomposition of animal matter, (j) by extending these agencies (g h i) to greater depths of soil.

Bulletin 40, Kansas Experiment Station, is so much in point that we quote it at length as follows:

There is no longer any question as to whether the orchards should be cultivated. Experience everywhere shows that cultivated orchards live longer, bear better and are more profitable than uncultivated orchards. Many of the experiment stations of the best fruit producing states have tried uncultivated orchards beside those that were cultivated and have collected opinions of the most observant fruitgrowers of their sections, and the considerate verdict in almost every case is that cultivation is necessary for healthy trees and first-class fruit. The principal orchardists of the state have expressed themselves on orchard cultivation. Out of 272 reports made to the Secretary of the State Horticultural Society, 130 advocate thorough cultivation till bearing time, and 130 urge continuous cultivation as long as it is possible to enter between the rows with horse and implement. Most of those advocating cultivation till bearing time only, live in the lower Kansas river district where the soil is very rich, deep and moist, and will produce fine crops of clover. The general practice in this district is to cultivate well till the trees are in full bearing and then seed to clover. West of Manhattan, clover does not succeed. Even if it should succeed it would not be profitable to sow it from the fact that all the moisture that falls in this region is required by the fruit trees, and any crop whatsoever simply robs them of the moisture they should have. For this

ORCHARD TILLAGE.

region, then, clean and steady cultivation ought to be the rule for at least that part of the year including the dry season.

However, bare soil soon loses its humus and becomes infertile. This must be prevented. Here is one way of preventing it. Plow the orchard in the spring, cultivate both ways and keep all weeds down till September 1, at which time the soil will be in fine condition for a seed bed. Sow rye at the rate of two bushels per acre. This will cover the ground well before winter, and therefore protect the ground from blowing or hard freezing during the winter. Let the rye stand till knee high in the spring, then turn under and proceed with clean cultivation through the summer.

Deep cultivation is not essential nor advisable, but the cultivation should be frequent. Go over the ground after every rain, if possible, with the disk or the harrow to break the crust. This will give a mulch of loose earth two inches deep, which will greatly retard evaporation and therefore conserve the moisture for the use of the trees. This system of management has the following advantages :

1. It provides the soil with a good supply of organic matter (humus) which will keep it in good physical condition as well as prevent washing and blowing.
2. It provides a cover for the ground during winter, thus preventing the soil from blowing; it catches the snow, thereby moderating the temperature of the soil.
3. It provides for clean cultivation during the summer, the time when all the moisture that falls should be conserved for the use of the trees.
4. By ceasing cultivation and introducing a crop September 1, the trees

are helped to ripen off their wood and prepare for winter.

These advantages are worthy of the consideration of the orchardist. The plan has worked well in the orchards of this department, and it will without doubt operate as successfully in many other regions of the state.

It is a matter of grave doubt as to whether there is anything gained in the long run by cropping the land that has been planted to fruit trees. Of course it pays while the crops are being gathered, but does it pay to have the orchard come into bearing on soil reduced in fertility? Will not the orchard during its bearing period have need of all the food elements that the soil contained at the start? Will not the productiveness of the orchard be reduced in the same proportion as the elements of fertility have been removed by previous crops? This will certainly be the case unless the removed elements are restored by means of fertilizers. Ground that supports an apple orchard for thirty successive years has no food to spare for corn crops. Either cling to the orchard and forego the corn crop or else depend upon the corn and abandon the orchard.

It is now the latter part of May. The soil is moist, and good growing conditions prevail all over the state. It is nip and tuck between crop and weeds on every side. With the farmer in the garden or the cornfield, the weeds grow apace in the orchard and often predominate. Once in control they soon fully possess the situation; and, as dry weather prevails later on, they will consume the water in the soil and leave none for the trees, which thereby starve for the time being. The only remedy is prevention. Do not allow the weeds to grow

THE LATE SEVERE WINTER.

I HAVE observed the tale of woe that has come from fruit growers from all the peach districts over the destruction of trees from the severe frosts of the past winter. I can readily lend my voice to that same sad tale. The past winter has been the most severe and destructive in this section of the county experienced for twenty-seven years. And it is only now that the extent of the damage done is showing itself. Many trees that came out in leaf in the spring are now dying away. All my Burbank plum trees succumbed; the Imperial gage, Munro and Abundance will not pull through this season. Two Dempsey pears and one Marguarite are quite killed while, strange to say, Bartletts are showing no signs of having suffered. I would have supposed that the Dempsey, being of Canadian origin, would have stood a lower temperature than the Bartlett or Duchess.

But it is with my roses that I have suffered the greatest loss. I am inviting nobody to see them this year; or rather see where they used to be. Out of 130 varieties I will have, maybe, 50 that will bloom this year. Quite a few varieties were totally killed, among them

Margaret Dickson, Mad. Gabriel Luizet, Ulrich Brunner, La France, Victor Verdier and Meteor. Many others are starting again from the roots, but will not bloom this year, and indeed will never bloom again with me as I intend to reduce my collection to at least sixty varieties this season. One very peculiar thing this season is that not one of the moss varieties are blooming except the crested, though they are all vigorous in growth. All my roses were well covered with leaves, though there was very little snow over them at the time of the cold snap when the thermometer went down as low as 35 degrees below zero, a thing never known before here.

Among the small fruits the Hilborn black and Loudon red raspberries came through all right. The Gregg black and Schaffer purple were badly killed; the Cuthbert red and Golden Green were too much injured to give more than half a crop. Let us hope that such winters as the one we have just passed through and suffered from may be few, with many years between.

T. H. RACE

Mitchell. June 20th.

SUMMER CARE OF HOUSE PLANTS.—A very satisfactory shelter for house plants may be made by setting up four posts in a square, to which strips of lath or boards can be nailed about an inch apart. Make a roof of the same material, and put on in the same way as the strips on the sides, which should be

in a sort of lattice. Such a shelter will admit all the air that is stirring and all the sunshine that the plants will need, and not prevent any one of them from getting the benefit of dews and showers, while it will break the force of strong winds.—*Ladies' Home Journal.*



Flower Garden and Lawn. ❀

A "SPORT" GLADIOLUS.



THE gladiolus shewn in Fig. 1617 produced on the same stalk single, semi double and double blooms.

The bulb was bought of Vilmorin, whose growers are the Souchet establishment at Fontainebleau, where the Gandavensis strain first reached its present excellence. The double blooms were produced at the base of the spike, the semi-double near the centre, and the single towards the end.

The variety, *Tamerlan*, was introduced in 1883. As it is slow to multiply, and of great merit, it has maintained a comparatively high price. The stalk is strong, and set with well arranged flowers of medium size. The upper divisions are dark red, framed with slate on the edges; the lower, deep reddish carmine, and creamy yellow. It is a superb variety, even when it does not sport in the direction of doubling. *Zampa* and *Multipliant* are varieties which frequently have double blooms, but *Tamerlan* has not been previously known by its originators to sport in this way. I may add, to avoid possible confusion, that there is a different *Tamerlan*, of the Nanceianus strain.

F. R. LATCHFORD.

FIG. 1617.—"SPORT GLADIOLUS."

Ottawa.

AN OFFICE WINDOW.



FIG. 1618.—VIEW OF OFFICE WINDOW.

THE above two photos are the office window of Mr. Walter T. Ross, Secy. Picton Horticultural Society, of Picton, Ont. One is taken from the outside, and the other from the inside. The fruit is the Pomela or Grape Fruit; there are five on the tree, but only three show in the picture; it is like an orange, but not so sweet. They are now about the size of a Spy apple, and are not ripe yet. The plant in the tub is a pineapple, about one year and a half old, and should soon fruit. The bloom in top center is a *Melia floribunda* (China tree) and is very odd looking, no leaves or branches except at the top, and looks like a stick with large bunches of fragrant flowers at the top end. Several orchids are hanging at the side

of the window. With this result of the garden in the Summer, and an office window in the Winter, is Canada appropriately called "Our Lady of the Snows."



FIG. 1619.—A WINDOW BOX

SOMETHING ABOUT THE CYCLAMEN.

THE genus cyclamen, in Europe commonly called Sow-bread, from the fact that the acrid stems are greedily eaten by swine, is a near relative of the primrose. Beside the beautiful favorite flower of the window garden and greenhouse, the Persian species, through which it is, perhaps, known more widely than any other, the genus contains a quite lengthy list of hardy kinds not so widely disseminated. By English growers of fine Alpine plants these are much prized, and well they may be, for there is, as a whole, no more attractive group in the whole range than that comprised in this.



FIG. 1620.—CYCLAMEN HEDERIFOLIUM.

The necessities for success in open air culture are protection from dry, cutting winds, a rich, friable soil, good drainage, covering in the winter; still bearing in mind that because some species are hardy is no reason why they should thrive in exposed situations.

For planting in rockwork, not too high, in warm, shady borders, they are of much value, and a choice collection in full bloom is a sight not easily forgotten. The most luxuriant growth in their native haunts is noticeable among broken rocks, under the shade and friendly protection of low bushes and the hill corpses. While, in general, with high culture plants are improved in point of blooming and habit of growth



FIG. 1621.—CYCLAMEN NEAPOLITANUM.

from the original type, the conditions of growth are essentially the same as in the old form, and to this the cyclamen is no exception.

There are two general classes or divisions made, regulated as to time of flowering, viz.: the fall-blooming section, of which *C. Africanum*, *C. hederifolium* (ivy leaved cyclamen,) *C. Neapolitanum* and *C. Pyrenaicum* are good representatives, and the spring flowering class, prominent among which are *C. Atkinsii*, *C. Coum*, *C. repandum* and *C. vernalum*.

Though the growing of cyclamen in the open air may not be so desirable or practicable in this country as in the old world, we can expect them, nevertheless, to stand as much frost as the English



FIG.—1622.—CYCLAMEN VERNUM.

Primrose; hence will survive with the same amount of winter protection.

With out door cultivation undesirable,



FIG. 1623 —(CYCLAMEN COMM.)

pot culture may be resorted to with success, providing the same period of rest be given as would be had if growing in open ground. High culture and careful selection have brought the Persian cyclamen to a near state of perfection, nearly all the shades and colors known in the different species at the present day are to be found in the numerous varieties, as well as improved size of floret. Their culture is not difficult, the most impor-

tant points being a light rich soil, plenty of sunlight and moisture during the growing season, and a cool place before starting into growth. Many plant in open ground in May, lift and pot in September for the winter.

Tolerably true reproduction from seeds can be counted upon if the plants are kept from cross fertilization when in flower, while to secure a good percentage in germinating sow as soon after gathering as possible.

Contributors to flower-shows should do all in their power to promote the cyclamen to a more prominent place than it now occupies. For were its true merits more widely known, our windows during the fall, winter and early spring months would be more frequently seen enlivened by its presence. — *Vick's Magazine.*

PANSIES AND FERNS.

THIS generally favorite flower does best in a cool and somewhat shady spot. I have grown them in a large bed with a border of hardy ferns with great success. One can pick them up beside the way almost anywhere, and a good long bed of them on the east or west side of the house admits of many varieties, and water in a "dry-spell" is an aid to both sorts. The florist's fern, planted to grow shaded by larger ones, does finely, and the Maiden-hair is charming anywhere. I have transplanted them at all seasons, with good results. A bushel of black

earth from the woods strewn over the bed is of great value, and all the leaves you can rake up in the fall tucked under and about them and held down by chip or stone is useful.

Often there is a shady corner of the veranda, that is greatly improved with an ivy, and ferns. We can utilize all space for the embellishment of our surroundings, if it be only a tumble-down sort of a place of small area. A good place to plunge pot ferns is such a spot.

M. A. HOSKINS.

Newport, Vermont.



PRIMULA STELLATA.

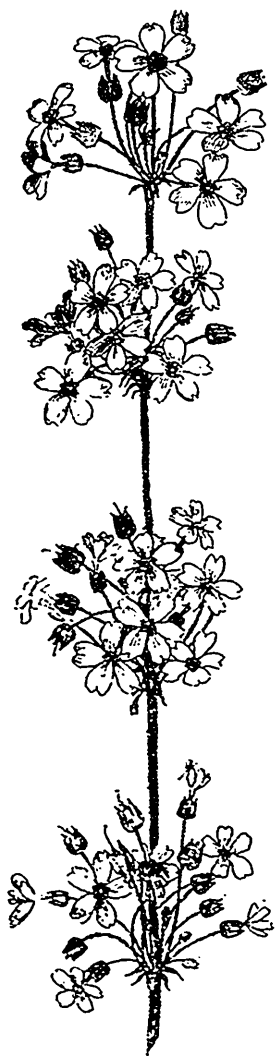


FIG. 1624.—INFLORESCENCE OF *P. STELLATA*.

P *PRIMULA STELLATA* is another addition to our collection of primroses. It grows somewhat in the style of the Baby primrose, but the flowers are about three-quarters of an inch in diameter, and flower stalks are about twenty inches high, very full of bloom. The flowers are white, pink and purple.

Fraser says of it in *American Gardening*: "The culture is the same as for the Chinese primrose: Sow the seeds in March and when up keep near the light as they are liable to draw and be spindly, as the leaf stalks are not so strong as in the regular Chinese sorts. A six inch pot, well drained, is large enough to flower in; or, what is better, a six-inch fern pan. I have grown all my primulas in these pans of late years and find them much better than pots, as when the plants are full grown the leaves hide the sides altogether, making them nice for room decoration.

Plow deep!
Sow not thy precious seeds
Among the scarce uprooted weeds,
Or thou shalt weep
To find thy crops all choked and dead,
And nought but thorns and tares instead.
Then plow down deep,
The promise ringing in thy ears
That those who sow their seeds in tears
In joy shall reap.

—A. G. Evans.

STRIKING CUTTINGS.

We are too apt to select short cuttings for the best success. I have found those of sufficient length to bury two buds or even more, allowing about three to remain above the soil is best. The decay of the leaves that absorb moisture may be prevented by stirring, or by a

porous soil. I failed in every attempt to root carnations and roses, until I tried this experiment, advised by some gardener along in the seventies. The water process does not give the satisfaction of this method. For geraniums almost any method works. They grow as easily as cabbages.

M. A. H.

AMATEUR FLORAL DECORATIONS.



FIG. 1625.—AMATEUR MANTEL DECORATION.

The professional florist has material and skill for decorations of a superior order, but because amateurs cannot equal professionals is no reason why we should not encourage the former. Indeed it is the general cultivation of taste in these matters which we most aim to develop, and we welcome every contribution in photography a writing which helps toward this end. The engraving shows one of three mantels decorated for a wedding by some young lady friends of a bridal pair at a recent wedding. The projecting canopy was of dwarf evergreen box, fastened on a wire frame above the mantel, and was interwoven with apple blossoms. The other trimmings are largely made up of double white cherry blossoms, apple bloom, white roses and white carnations. The Double White cherry is one of the prettiest ornamental trees of its season, every blossom as full as a rose and pure white.

THE ROCK GARDEN.

THE rock garden should never be near walls: never very near house; never, if possible, within view of formal surroundings of any kind. It should generally be in an open situation. No efforts should be spared to make all the surroundings, and every point visible from the rockwork, as graceful and natural as they can be made. The part of the gardens around the rock work should be picturesque, and, in any case, display a careless wildness resulting from the naturalization of beautiful hardy herbaceous plants, and the absence of formal walks, beds, etc.

No tree should occur in or very near the rock garden; hence a site should not be selected where it would be necessary to remove valuable or favorite specimens. The roots of trees would be almost sure to find their way into the masses of good soil provided for the choicer alpinists, and thoroughly exhaust them. Besides, as the choicest alpine flowers are usually found on treeless and even bushless wastes, it is certainly wrong to place them under trees or in shaded positions.—*Gardening Illustrated.*

THE GERMAN IRISES.



FIG. 1626.—IRIS SIBERICA (left) IRIS GERMANICA (right).

THE German Irises, *Iris Germanica*, or *Fleur de Lis*, furnish us with some very useful and very hardy garden plants.

They will cover a period of three weeks with their showy flowers. The earliest varieties were showing open flowers May 25th and at present writing (June 7th) it certainly appears as if there will be quantities of good flowers yet to be cut June 15th. There are a host of named Germanica varieties, we suppose on account of them being easily handled from seed. Some of the varieties are certainly grand enough for any collection of hardy plants, but the seedlings show a great percent of poor flowers and unattractive colors. The collection at our nurseries numbers twenty varieties and comprises a great variety of colors and shows quite a lapse between the earliest and latest varieties. *Spectabilis*, a pure deep purple, and *Alba Odorata* pure white, are two of the earliest bloomers and the largest flowers. The former is the most striking garden plant in flower at the time. *Queen of the May* is a delicate

reddish heliotrope shade, also one of the largest. *Bleu Parfeur*, white lightly edged and beautifully netted with dark blue. *Hortense* a clear yellow. *Old Gold*, the standard or upright petals are true old gold, falls marked white and purple. *Leopold* is after the same style, standards dark old gold, falls veined with brown. *Tubiflora* reminds one of a greatly improved common blue flag, the spikes are very long, sometimes bearing seven open flowers on a stem, the color is a delightful shade of blue and the fragrance is like that of orange blossoms. *Mme. Chereau* still holds first place as the best fancy variety, a clear white ground with a deep and delicately feathered edge of sky blue, makes it at once the most admired flower in the bunch. The roots may be planted with equal safety in either spring or fall, however, if you are anxious to transplant them during the summer do not hesitate to do so, for you run no risk, just shorten the foliage slightly and water well after planting; if planted in mid summer, you will



FIG. 1627.—IRISES AT WERSTERS'.

have the roots nicely established by autumn and gain several months. Among dwarf Irises the Siberian species *Si-*

berica Alba and *Siberica Coerulea* are conspicuous, the latter sort is several days later, more dwarf and a particularly fine deep purple color. *Pumila* is a very dwarf species with light purple flowers, in appearance it is a

dwarf counterpart of the *Germanica* varieties. There is a pure white variety, of this species which we are adding to the collection.

WEBSTER BROS.

Hamilton.

THE ASPHODEL.

THERE is no lovelier flower for the cemetery than this overshadowing canopy of twinkling blossoms, fit type of the soul's resurrection; covered with its dead flowers, its blossoms and buds, typical of the past, the present and the future. Up the mountains where the Greek buried their dead, they desired to think the sleepers would wake in fields Elysian. The fair meadows where the ever blooming Asphodel, or wrongly termed Daffodil, forever bloomed. Let us plant our churchyards with some at least of this hallowed flower, and keep the corruption of the name out of them, it no doubt being derived from *Fleur d'Asphodel*.

The world is slowly beginning to comprehend that the death of this natural body is the quick gate-way into eternal freedom, and cessation from life's hostilities and strife. And we look forward to the day when the places we establish to commemorate our affliction will become a living picture, known and read by all mankind. When Cremation aids us to thoroughly purify the earth, Cemeteries will be called Memorial Parks, and be no longer breeding places of disease and melancholy. The flowers and shrubs we plant now are our salvation from pestilence, particularly in cities.

M. A. HOSKIN.

PREPARING VIOLETS FOR WINTER BLOOMING.

To grow violets for winter blooming it is by far best to plant them where they are to remain. The frames may be placed about them later. Pick off every bud that forms, and remove the runners, and do not force them by giving fertilizers. The ground in which they are planted should be light and mellow and only ordinarily rich. What is wanted is a sturdy, healthy growth rather than a luxuriant one. Shower the plants frequently to keep down the red spider, unless they are where they will get the benefit of the dews and rains. Put the frames about them in October, but do not cover the plants

until cold weather comes. At that time it may be well to fertilize the soil somewhat. Bank up well about the frames, and provide a sash to cover them that fits snugly. On every pleasant day after the weather becomes cold lift the sash a little to admit air. If it is intended to grow them in the greenhouse, where there are no beds to plant them out in, keep them in seven-inch pots. Clip the runners off frequently, and do not allow them to bloom until winter comes. Violets are not satisfactory for culture in the window of the living-room.—*Ladies' Home Journal*.

AZALEA.

SIR,—I should be pleased if you would kindly furnish me with some information regarding the care and culture of the Azalea. I have three varieties, and as the blooming season is over, I wish to know how to care for them during their resting period. Should they still be supplied with water during this time? I have been told that in renewing the earth in the pots it will be necessary to purchase from a florist, that they will not live in ordinary garden or flower pot soil. Is this correct?

The Crimson Rambler rose received from you last spring is growing nicely and full of buds. The Yellow Rambler received this spring has also made a good start. The *Lilium Rubrum* distributed two years ago, has developed and multiplied into a nice clump.

MRS. W. R. VANDERVOORT,
Sidney Crossing, Ont.

The Azaleas referred to in the above questions, are, I presume, varieties of the Chinese or Indian Azalea, and are generally catalogued by florists as *Azalea Indica* (greenhouse varieties), and are not the Ghent or American Azalea, the last named being sometimes forced and sold when in flower, and require quite different treatment from *Azalea Indica*. Some of the Ghent varieties are quite hardy in some localities in Ontario, and are of a deciduous nature, requiring a period of rest, which they get naturally during the winter season when planted out of doors as shrubs. The *Azalea Indica* requires no very decided period of rest; that is, so far as the withholding of water is concerned; they must never be allowed to become quite dry at the roots at any time, being of an evergreen nature.

Immediately after the flowering season is over the plants should be repotted, if necessary, which can be ascertained by knocking the plant out of the pot and examining the roots; if the plant has fairly well filled the pot with roots, and is in a healthy condition, repot into a larger pot; one size larger will be sufficient, as overpotting must be care-

fully guarded against. In repotting remove all the old drainage, and a little of the old soil from the top edges of the ball of roots, then place in a clean pot of the size required. First put in some broken pots or coarse gravel about an inch deep, covered with a thin layer of sphagnum or common moss; place the plant in the pot, so that the top roots are about half an inch from the top of the pot; fill in with a compost of one half peat, the other half being equal quantities of fibrous loam and sand, all well mixed together. Take care not to fill in too much of the compost at once, as each layer of compost must be packed firm around the plant with a potting stick; a broken shingle or thin piece of lath will answer very well for that purpose. Continue filling in the compost and packing until nearly level with the soil around the stem of the plant, so that when finished, the soil near the stem is slightly higher than near the edge of the pot; this is very essential to the well being of the plant, as the Azalea dislikes its roots to be buried deep beneath the soil. The packing process prevents the water from draining too quickly from the roots. After potting, water once thoroughly, but do not over water at the roots, until the plants are well established and root action well commenced, when water may be more freely given; syringe daily with tepid water, and keep the plants growing in a temperature of 60° or 70° until growth is completed, which generally takes about two months, after which the plants can be stood out of doors, say about the end of June, to harden the new growth. Stand the plants or plunge the pot into a bed of coal ashes, where the plants can have plenty of air and sunshine; I have found that too much of the latter

THE CANADIAN HORTICULTURIST.

has proved injurious to the young tender growth, especially when first taken from the greenhouse. It is sometimes necessary to shade rather closely for a few days until the new growth has hardened a little. Afterwards a few slats of wood or lath about an inch apart, is all that is required to shade the plants, providing the plants are properly attended to in the matter of syringing daily, and the roots kept fairly moist, without allowing the roots to become quite dry; neither must they be kept sodden with water at this stage.

The Azalea is sometimes planted out in specially prepared beds, but this is only done where large numbers are grown. If after flowering, the plants do not look healthy or the roots vigorous, repot into the same sized pot, and take a little more of the old soil from the

plant than before recommended, as bad drainage produces sour soil sometimes, which no plant, especially the Azalea, will thrive in. Syringing with diluted tobacco water once a week, or oftener if necessary, prevents and keeps down thrip and red spider, the two most destructive enemies of the Azalea grower. The tobacco water can be made by placing a handful of tobacco leaf or stems in a pailful of hot water, allow the liquid to cool, add a teacupful of the liquid to two gallons of water, and syringe with as required. The peat required for potting had better be purchased, as it requires to be specially prepared before using; it can be obtained at most seed stores, and is not expensive.

W. HUNT.

63 Aberdeen Ave., Hamilton.

APHIDS OF PLUM, CHERRY, AND APPLE.

(*Aphis prunicola*, *Myzus cerasi*, *Aphis mali*.)

DURING the spring and early summer, few days pass without bringing some inquiry as to the method of getting rid of the lice on one of these trees. As these three species of lice all yield to the same treatment, it seems expedient to discuss them together.

The apple-louse passes the winter in the form of an egg. These oval eggs are very characteristic; they are black in color after they have been laid for some time, and are usually crowded together in large numbers. These are very difficult to destroy, and thus far nothing has been found which will do any good without killing the tree as well. As soon as the buds burst in the spring, the young lice crowd on to them and commence to suck. They remain on the leaves for some time, but usually

disappear in the early summer to reappear again in the fall at the time of depositing eggs.

The plum and cherry aphids differ in some respects, but the life-history in general is similar. They may be easily killed by a spray of kerosene-emulsion (Hubbard formula), diluting the emulsion ten times, or by a spray of whale-oil soap, using one pound of the soap to six gallons of water. In the case of the cherry aphid it is best to apply it a little stronger, as this louse is able to stand more than the others. Tobacco tea, made strong, is used by many with success, but whatever is used must be applied thoroughly, for each louse must be hit to be killed. — Mich. Exper. Station.

APPROACH TO A RESIDENCE.

THE approach to a residence is one of the most important considerations that confront the landscape gardener, as first impressions will naturally have effect on later ones.

Some tastes will lead persons to construct massive gateways, which in themselves may by truly magnificent, but which in relation to landscape effect will appear out of place unless the artist can so arrange trees and plants nearby to bring all into harmony.

In the case of a large estate, nothing should appear cramped, hence the entrance will be broad and the corners well-rounded. On the lawn, these corners afford opportunity for massing shrubbery; and a little further in from these may be an open group of well selected trees. The choice of these trees and the future of the shrubbery, are matters of considerable importance. To the writer's eye, the absence of strict formality is desired, and the trees should therefore be graceful, like the elm, Wier's Maple, Cut leaved Birch, Yellow Locust, etc.,; and the shrubs not continually sheared and rounded.

Evergreens in careful assortment take the place of the shrubs very acceptably, and make the entrance attractive sum-



FIG. 1626.—THE APPROACH.

mer and winter; and large ones may also be used in place of the deciduous trees—pines are perhaps most fitting.

Vines on walls and gate-posts are always pretty; but especially desirable are the loose-clambering ones like the Virginian Creeper. Let the latter be mingled with English Ivy for a background and winter effect.

Flower boxes for stone posts filled with summer plants and vines can be easily and tastily arranged and are admired by every one. In winter, they may be replaced by evergreens of dwarf nature or small specimens of larger ones, like Himalayan Pine, Lawson's Cypress and Scotch Pine.

The main idea should be to construct the entrance as a whole bringing in pretty features to enliven it and connect all with the estate in harmony.—Meehan's Monthly.





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✦ Notes and Comments. ✦

POISONOUS TOADSTOOLS.—Prof. Halsted says there are three very poisonous toadstools, all belonging to the genus *Amanita*, viz., The Fly Amanita, the Death Cup and the Vernal Amanita. Only last October, three persons in Trenton, N.J., died from eating the Death Cup, and leave a warning to us against ignorantly using fungi, Dr. Peek warns against fungi. (1) in button state or decayed (2) with swollen base and white gills, (3) with milky juice, (4) with cap or pileus thin in proportion to the gills; (5) tube bearing fungi, of which flesh changes color when cut; (6) fungi with spider-web ring about the upper part of the stalk.

EXTREME COLD does not seem fatal to the vitality of seeds we judge by an experiment of Tripler's with liquid air. Seeds of pea, wheat, oat, barley, squash

and cucumber were kept at the unimaginably low temperature of 312 degrees below zero for 110 hours, and then gradually thawed for fifty hours. The seeds were then planted, and they germinated and grew, none the worse for their exposure.

STANDARD SIZES FOR FRUIT PACKAGES.—We notice that Mr. Penny's bill, regulating the sizes of fruit packages is creating considerable discussion, and that some growers and dealers are not very favorable to its provisions.

The objections urged are that the standard is neither imperial nor wine measure; and that its adoption would necessitate an entirely different size of crate, and a different size wagon box for carrying to advantage.

We think that bill is a move in the right direction and we hope something will be

NOTES AND COMMENTS.

done to create uniformity of packages, and thus prevent fraud. But to confine growers to use certain fixed sizes for their fruits might not always prove a wise regulation.

Perhaps a simpler method would be to make net weight the standard of sale. The weight of the package being known, it would be quite easy to stamp or write in pencil, on the outside of a crate, the number of pounds net of the fruit contents. This is commonly done now with grapes, and the same habit could easily be extended to other fruits.

BETTER SERVICE FOR FRUIT GROWERS.—A special express fruit train for the rapid delivery of fruit from the Niagara, Hamilton, Burlington and Oakville districts was put on the C. P. R. on the 19th June by the Dominion Express Co. Seventeen new ventilated fruit cars, models of construction, clean and bright, have been put at the service of the fruit men. To feed this line of cars fruit will be collected by the H. G. & B. electric road, and by steamers which call at Jordan, Port Dalhousie, Niagara and Queenston, and carry the fruit across to Toronto in time for this new fruit train. We understand that the Grand Trunk proposes a similar service.

THE SAN JOSE SCALE inspection cannot be carried on without hurting somebody, and the great question is how to protect the interests of the public generally and at the same time do justice to the individual. For example, Mr. Angus Wigle, of Kingsville, has a peach orchard of about 1200 trees, which has largely escaped winter killing. In this orchard the inspector has found eighty trees badly affected with San Jose scale, from which the pest will quickly

spread throughout the whole orchard; and no doubt many of the others are slightly infested. Consequently the inspector has ordered the whole orchard destroyed. Mr. Wigle would not object to the badly infested trees being destroyed at once, if the balance could be left until after he has gathered the fruit.

We hope the Department will find some way of satisfying Mr. Wigle's claims, and at the same time clearing out an orchard such as his, which threatens to be a breeding ground for the whole country.

Obviously a peach tree with a load of peaches on it in a year of scarcity is to be valued higher than a tree with little or no fruit and in a year of plenty.

MINNESOTA STATE HORTICULTURAL SOCIETY.—Twenty-sixth Annual Report; a fine volume, bound in black cloth, illustrated and with much profitable reading.

PEACHES IN ESSEX.—Our frontispiece shows a magnificent peach orchard of over 12,000 trees that were loaded with blossom and fruit this spring; but alas, the exceptional winter has done fatal work with the roots, and Mr Wellington writes that the whole orchard is now dead, except about 200 trees. He estimates they would this year have paid 10 per cent. net profit on a valuation of \$60,000.

KANSAS.—The R. N. Y. quotes Mr. Wellhouse as saying that this year's apple crop will be the largest in the history of the State. He estimates that his 1,600 acres of apple trees will yield 100,000 bushels. The hard Winter injured only the tender varieties, and these are scarce in that State.

❖ Question Drawer. ❖

Heating a Small Conservatory.

1097. SIR,—I am desirous of putting up a small green house about 8 x 10 feet. Not being in a position to put in a hot water heater, can you or any of your readers tell me how best to heat it to say 50° when the cold outside is 20° to 25° below zero. Any pointers gratefully accepted.

Ottawa.

To heat a small conservatory like that described, a large oil stove would answer in ordinary weather, but when the mercury drops below zero two would be required. If the stoves are well made and properly cared for there will be little trouble from smoke, but it would be safest to provide a small pipe to carry off the gases to the outside of the house. It will be much more satisfactory if a hot water system could be used, and the oil stoves could be used for supplying the heat while a galvanized iron tank with a capacity of five gallons could be used as a heater. A coil of one-inch pipe containing as many linear feet as there are square feet of exposed glass, plus one-fifth of the woodwork, would distribute the heat around the walls of the conservatory.

L. R. TAFT, *Agri. Coll., Mich.*

Raspberries Affected With Rose Scale.

1098. SIR,—I send you samples of diseased raspberry canes, can you explain and give remedy.

A SUBSCRIBER.

Reply by Dr. Fletcher, Ottawa.

On the 1st inst., I received from you a card together with some samples of a scale insect on the raspberry. These have been examined and prove to be the Rose Scale (*Diaspis rosae*). The scale resembles the Scurfy Bark Louse somewhat in appearance, but is rather

larger, nearly circular and is pure white in colour, forming a striking contrast to the green or reddish shoots of the plant upon which it occurs. It sometimes appears in large numbers and thus is easily observed. It is by no means a common insect in Canada but occasionally occurs on blackberries and raspberries, and rather more frequently on roses, particularly on such bushes as have not free ventilation or are fastened to walls or trellises. As a remedy for this insect Dr. J. B. Smith recommends whale oil soap, one pound dissolved in four gallons of water; to this add one ounce of carbolic acid and spray the bushes thoroughly. Badly infested bushes should be cut back severely in autumn and the cuttings burnt and all the canes left for crop treated a second time in spring before the leaves burst, if there is any sign of life in the scales.

Worms in Garden Soil.

1099. SIR,—I send you to-day a small box containing worms, such as have been infesting my garden for the last two years. In fact they have become so troublesome that I have been unable to grow, with any sort of satisfaction, sweet peas, edible peas, corn and many other crops. These worms cluster about the seed as soon as it starts to germinate, and attack it, causing it to soon rot, and of course the crop is destroyed. If you, or any of your subscribers, can suggest any means of getting rid of the pest, I should feel very thankful.

Last summer was the first time my garden was troubled with these worms. They are much numerous this season, in fact my kitchen garden is almost ruined by them. I will be glad to hear from you at your earliest convenience.

T. H. PARKER.

The creatures sent with your letter from Mr. Parker of Woodstock are Julidæ or millipedes. These are occasionally complained of in gardens. A light application of nitrate of soda is

QUESTION DRAWER.

sometimes useful in not only stimulating the plants but also, it is claimed, in destroying the millipedes. 150 lbs. to the acre is recommended.

JAS. FLETCHER.

Ottawa.

A Choice List of Roses Wanted.

1100. SIR,—I have been looking anxiously for that gilt edged list of really hardy Hybrid Perpetual Roses that Mr. T. H. Race of Mitchell promised in the *Magazine* for December. Please jog to his memory as I hope to add to my few roses in the fall, and according to the catalogues they are all perfect. I have Gen. Jacqueminot, Mrs. John Laing, Anne de Diesbach, and Margaret Dickson; also a white one, and Crimson Rambler. I have room only for a few more, so I want extra choice varieties, and they *must have perfume*. Mrs. John Sharman Crawford is exquisite, but is it hardy? and I could not detect much perfume. Alfred Colomb is a lovely rose, and very sweet; can you tell me its faults?

M. E. B.

Toronto.

Would our rose fanciers give their views in answer. At Maplehurst Alfred Colomb is a special favorite with its large fragrant carmine-crimson flowers. A good hardy and fragrant rose is Baron Provost. It is rose color, and a free bloomer. Some other special favorites with us are Gabriel Luizet, a beautiful pink rose, of excellent form, a free bloomer, and very fragrant; Paul Verdier, carmine red; and Paul Neyron, deep rose, and somewhat fragrant, the largest variety known.

Mrs. Doctor Hoskins of Newport, Vermont, who writes so lovingly of her floral treasures, sends us a note on roses, which may well be published as a partial answer to our Toronto correspondent. She says:

Where one has room for a bed of hardy roses and knows little of the properties of them, a suggestion may be useful. A few like Marshal P. Wilder, Capt. Christy, Mrs. John Laing, Mabel Morrison, Gen. Jacqueminot, La France and Vick's Caprice, make a fine selection. Then a border of the half hardy and quite hardy Polyantha, which are constant bloomers and can be protected by leaves and a little light manure after freezing, are well worth the care. The Dinsmore is an acquisition in northern latitudes, and a profuse bloomer; also Ulrich Brunner. The La France rose is sometimes a better gift to a boy or girl than even a book. I knew one boy that was hard to manage, and whose aunt made him the present of this rose, and for love of them he became one of the model boys of the neighborhood. The hybrid tea roses are half hardy but, given a banking up of soil and old manure well mixed, they will stand almost any northern winter. In teas, a good choice is the three Souperets, which are said to be hardy with slight protection. Marion Dingee, Sunset, Maria Lambert, Inconstant, Princess Bonner, Etoile de Lyn and Perle des Jardins, are my favorites.

Do without some unnecessary thing you are accustomed to, and plant a bed of these roses, and see if you have not made a grand exchange.

M. A. HOSKINS.

Newport, Vt.



ONTARIO FRUIT CROP.

As reported by Ontario Fruit Growers.

Simcoe County: For a few weeks the weather has been very wet, and strawberries in low lands have been completely drowned out; they mostly came well through the winter, and spring frosts have hurt them but little; in high lands they will be a full crop. Red and white currants and gooseberries promise a full crop, and to mature a week or ten days earlier than usual. Black currants "fair to middling." Plums none, except of the Japan and native varieties. Cherries not much grown, and birds will get most of them. Pears not much grown. Apples of all kinds promise well, and with proper spraying and thinning a profitable crop is assured. But few currant worms have yet shown up, and they cannot now do any damage to this year's crop; but late broods, if not destroyed, may affect next year's crop.

C. L. STEPHENS, *Orillia.*

The last bulletin from the Bureau of Industries, Toronto, gives the following report of fruit:

Colchester, Essex: Peach trees have been killed by hundreds and thousands. One neighbor who has twenty-five acres told me yesterday that he will have to pull up the whole field; and many smaller lots have suffered as badly.

Gosfield South, Essex: All peach trees are dead by frost, and many other kinds.

Mersea, Essex: At least 50 per cent. of peach trees killed and some plums.

Stamford Welland: Vegetation will probably rush along now, as during the past two or three days we have had summer heat. I never knew the buds to come out so fast. The leaves came out on some trees within a few hours; they seem to almost grow while looking at them.

Nottawasaga, Simcoe: Nearly a car load of young fruit trees were shipped into Creemore

the other day. Farmers around here are taking considerable interest in planting out orchards. In a few years to come this neighborhood is going to play an important part in fruit production.

Grantham, Lincoln: In some orchards part of the peach trees are killed by the excessively cold weather, freezing and injuring the trees under the bark. The buds of all fruit trees were very backward during the winter, and even well into March there was scarcely sunshine enough to cause them to swell noticeably, so they were not in this section killed, as many who stay all winter in the house reported. Some varieties of strawberries, especially the Clyde, not covered by litter during the winter, are killed, and tender varieties of raspberries are more or less killed in canes which should bear fruit this year. Grapes are about as usual. Spraying fruit is becoming a necessity for successful growing, as each fruit has its insect enemies and fungus diseases.

Trafalgar, Halton: Caterpillars are already making their appearance on apple trees in large numbers. It is to be hoped that farmers will make more efforts to destroy these than many did a year ago. Many orchards, especially in the north end of the township, were entirely stripped of foliage.

Mr. A. E. Sherrington, Walkerton, writes:

The raspberry crop will be lighter than last year, as so many varieties suffered by the winter snow and frost. Some of them will not fruit at all. Hilborn is about the only black cap that came through all right; it will give a full crop. The Hale and Wickson plums were nearly killed out-right, and a few trees of other varieties. The Abundance and Burbank plums are loaded with fruit.

TREATMENT OF BULBS.—It is a well-known fact that bulbs, forced in our country, are comparatively useless for flowers the season following. This is really owing to the fact that the leaves have not been permitted to mature properly. A bulb is composed of the bases of leaves which have become thickened and succulent. To make good, strong bulbs, therefore, it is necessary that they should have had good, strong leaves for their parents. Our

bulb growers commence to dry them off almost at once after flowering, instead of allowing them to grow as long as possible. Even then, they will not flower as freely as newly imported bulbs, because they are only allowed to flower until the bulb has reached a size desired by the grower. Bulbs generally have the flowers plucked out, until they have reached the size desired.—*Mechans' Monthly.*

ONTARIO FRUIT CROP REPORT.

Prepared by the Ontario Fruit Growers' Association, June, 1899.

	Apples.	Apricot's.	Bilberries.	Cherries.	Currants.	Grapes.	Pears.	Peaches.	Plum.	Gooseberries	Raspberries	Remarks.
Trenton—	fair to											
W. H. Dempsey.	poor.											Orchards suffered much from worms and other in- sects.
Georgian Bay District—												
J. G. Mitchell, Clarksburg.	good.		very good	good.	good		fair.		poor			
Ontario Co.—									fair to			
R. J. Huggard, Whitby.	poor		very good	good to	good	good.	very good	none.	good.	fair.	good.	
Middlesex and Perth—												
I. H. Kace, Mitchell.	good.			fair.	good.	none	fair.	none.	good.	good.	fair.	Raspberries winter killed.
Victoria and Peterborough—												
Thos. Peall, Lindsay.	very poor					very good	poor.		none.	very good	very good	
Burlington District—												
A. W. Peart, Freeman.	fair.		very poor	fair.	poor	fair.	fair.	poor.	good.		fair.	
St. Joseph's Island—												
Chas. Young, Richard's Landing	good.				very poor		poor.		poor		poor	
Frontenac and Addington—												
Geo. Nicol, Cataragui.	fair.			fair.	fair.	good.	poor.		very poor		fair.	
Greenville and Dundas—												
W. A. Whitney, Iroquois.	very good		very good		very good	very good	poor.		no bloom.		very good	Tent cater- pillar very destructive.
Lincoln—												
A. M. Smith, St. Catharines.	poor			fair.	fair.	fair.	poor.	fair.	good.		poor.	
Simcoe—												
G. C. Caslon, Craighurst.	fair to			very good	very good		poor.		poor.	good.		
Durham—												
E. C. Beman, Newcastle	poor.		fair.	fair.	fair.		fair to		poor.		poor.	
Grey—												
J. I. Graham, Vandeleur.	good			good.		good.	good.			good.	good.	Tent cater- pillar and es- tructive.
Greenville—												
H. Jones, Matiland.	very poor						fair.		none.		good.	
Ottawa District—												
R. B. Whyte, Ottawa	poor to				very good	very good			poor.	good.	very good	
Oxford—												
J. S. Searf, Woodstock.	fair.		poor	good.	very good	good.	fair.		very good.		fair.	Blackberries winter killed

Scale—very good—good—fair—poor—very poor.

* Open Letters. *

Caterpillars.

SIR,—I find my orchard is badly infested with caterpillars. They are as yet very small but working industriously and I see have done a good deal of damage to leaves and blossoms which are pretty for adornment. Have sprayed all my trees *twice* thoroughly so far, first spray with blue stone, second blue stone, Paris green and lime. What an effect it has on other things it does not appear to bother the caterpillar. We had them last year but scraped them off and killed them on the trunks and big branches and burnt the ones higher up with coal oil torch. We had a good deal of work doing it but got rid of them in that way. This year however, they are apparently going to be even worse than last, at least their ravages are showing up worse than so far last year. Is there nothing can stop them? Was thinking of kerosene but am afraid it will hurt the leaves and blossoms. If I knew the formula of mixing it I would try it. If we cannot get rid of them in some way they will ruin our orchards up here anyway.

W. B. STEPHENS, *Owen Sound.*

EDITOR: See article on this subject, page 120 We would advise a thorough spraying with Paris green water, 4 ounces to 40 gallons of water, separate from the Bordeaux mixture.

That Fumigation Business.

SIR,—In the April number you publish the recent amendment of the San Jose Scale Act.

Clauses 3 and 4 prohibit the removal or sale of any plant from any nursery without fumigation in a manner prescribed. The last clause prohibits the removal of any plants from any nursery where the inspector finds scale, "until the inspector reports to the minister that it is safe in the public interest to permit the said nursery stock to be removed after fumigation." How is this? Why restrict the nursery business to those able to furnish fumigating plants, if it is inefficient? I am also curious to know how the possibly scaley stock of the last clause is rendered harmless if fumigation won't do it.

ADAM RUSSELL, *Mahara, Ont.*

A Seedling Apple.

SIR,—I sent you last week by mail a seedling apple of our own production to see what you thought of it; I believe it will turn out to be fine winter apple.

It is a good keeper. I had about six last fall and I just put them on a plate in the cellar and they kept fine. I tried one or two at different times through the winter and I find they are not fit to use till toward spring.

I had about a peck the fall of '97; the tree bears early and is a very rapid grower, and to all appearances is going to be a good bearer.

JOHN STEWART,

Per G. Stewart,
Benmiller.

Apple Inspection.

SIR:—I have followed with very much interest your articles in the May and June numbers of the "HORTICULTURIST," with regard to dishonest apple packing in which you certainly are on the right track in advocating that the apples be subject to inspection, and also to confiscation when not up to grade. That this evil has grown to such enormous dimensions as to require legislative interference is evident, but why limit the inspection to apples for export only? Is the Canadian consumer of no account?

I bought a barrel of exceeding fine looking Northern Spy apples from a dealer in Montreal about the beginning of April last, paying him \$4.75 for them. The top two or three layers were as fine Spys as you could wish to see; below that the barrel was simply filled with rubbish. I kept the head of the barrel which I send you by prepaid express tonight along with the paper cover over the apples, and four of the apples which I have managed to keep from decaying. You will see by the packer's name and address being upon the head and thus certifying the apples to be "choice Canadian apples" "Gilt Edge" and "X X X," that the intention was well calculated to deceive. The apples in this barrel were not worth over \$1.00 to any one who would have bought them at all.

I assure you in all seriousness that if the Ontario apple growers do not speedily devise some means to remedy such contemptible thieving, that their pockets will very soon suffer. I, for one, intend to boycott all Ontario apples in future unless some reasonable system of inspection is devised to protect the Canadian as well as the British consumer; do you think I will be the only one to do so?

Now, I am not a fruit grower, but it seems to me that a thoroughly efficient system of inspection could be instituted which would render such detestable work practically impossible, but I think the scheme should first be formulated by the apple growers and packers themselves rather than wait for the Government to do so.

What would you think of forming an "Ontario Apple Growers' and Packers' Association," to be incorporated with extensive powers? The character of such association to be granted to say 10 or 20 of your best growers and packers, whose reputation is unquestioned. Admission to the Association to be secured by filling up a form of application, agreeing to abide by the rules and regu-

OPEN LETTERS.

lations, by-laws, etc., of the Association : such application to be accompanied by a recommendation signed by at least two reliable persons. The by-laws should of course set up the standard required for "Hilt Edge" or "X X X" apples etc. : each member specially agreeing that all fruit not passing inspection be confiscated, as well as to have that fact published in the "HORTICULTURIST" and other papers.

One of the main advantages to the shipping members would be the adoption of a uniform and elaborately engraved and copyrighted design, printed upon special waterproof paper of circular shape, just right to cover the outside head of each barrel. These should each be indelibly numbered, and should be under the control of the Secretary-Treasurer of the Association, who upon application would issue them as required, first inserting upon *each* label the applicant's name and address with stencil, together with his own signature and date in the blanks left for that purpose (leaving one blank for the name of the variety of the apple). A careful account of the number issued to each applicant should be kept, and should it be found advisable, any applicant might be required to report to the Secretary what he had done with his labels. All unused labels to be returned at the end of the shipping season to the Secretary and new ones issued the next season : the year to be in *very large* (but light, open work) figures across the center of the label, which should also bear the words : "This label is only valid for use over apples grown in the year. . . . and its use is specially forbidden by the rules of this Association any year after that time." This would prevent any unworthy member from fraudulently using old labels after having been expelled from the Association.

If the standard of quality required by the Association was a high one and rigidly insisted upon by efficient inspection, and all offenders promptly expelled, and their fruit confiscated, it seems to me the demand for apples bearing this design would very soon exceed the supply. Not more than 5 bbls in a 100 would probably need to be examined after the first year.

If you think this too crude an idea, please give us a better one ; but for the sake of the future of the apple trade of Canada (of which I understand Ontario furnishes by far the largest share) something practical should at once be devised to prevent the trade from further falling into public disgrace and disrepute.

Danville, P. Q.

GEO. O. GOODHUE.

The Plant Distribution.

We have the most diverse opinions regarding the Plant Distribution. Some say discontinue and put the \$600 it costs into the JOURNAL ; others say it is most important, do not give it up. The following letter from Mr. C. B. Jackes, Toronto, takes a very moderate view of the whole matter :

SIR,—In your last issue you ask an expression of opinion as to the discontinuance of the bonus distribution of plants, etc. So far as I am concerned, I do not see how you can afford to distribute these plants and give the splendid value you do for the subscription price, and if the discontinuance of the bonus would enable you to increase the value of your periodical, by all means put the value of the plants there.

The plant sent me was an *Elæagnus longipes*. It came apparently in perfect order, carefully wrapped and covered. I at once puddled the roots and planted it same day. It never showed a sign of life until the 1st June, and I was a dozen times on the point of throwing it away. However, on scratching the bark near the ground there appeared to be some sap in it, so I allowed it to remain. On 1st June I observed signs of sprouting, and now there are half a dozen healthy sprouts making up for lost time.

Of course, it is nice to get the plants which you send out, but I think the same object would be accomplished if you would occasionally, say in the September and February numbers, publish a list of desirable ornamental shrubs, hardy in the climate, for Fall or Spring planting, giving the common name as well as the scientific, and stating the prices at which they may be obtained, and finally, but most important, give the name and address of a reliable nurseryman from whom they can be obtained. The course now pursued by myself and many others is to order such plants through one of the seed firms in the city, knowing full well that we pay their prices for the article, but preferring to do so if we get a good article, rather than order through plausible agents.



HINTS ON THE EASTER LILY.

BULBS potted in August may be expected to bloom at Christmas time. Planting of bulbs late in October or early in November allows plenty of time for slow growth and for flowering by Easter time. Pots should remain in the dark at least six weeks so that roots may grow plentifully from the base of the bulbs.

The Easter or Harris lily throws out a secondary group of roots a little above the bulb, soon after stem growth is properly begun. For this reason, more soil should be heaped above the bulb from time to time till the pot is full. The first planting should be deep in the pot to allow room for the additional soil added later.

Six months will be required for the complete development of the plant from the time of planting. When first brought from the cellar a group of tips will be seen protruding from the earth. Water moderately, and gradually expose to the light. When tips turn green, increase the light but not the temperature. Slow growth, in an atmosphere moist and having a temperature ranging from fifty-five to sixty-five degrees Fahrenheit, is advised. A dry, hot atmosphere is fatal to success.

To hasten the time of bloom bring into a warmer room, increase the sunlight, and keep the air moist by allowing

water to evaporate more or less constantly from a dish on the stove or register. To retard growth, when development appears too rapid and bloom probable before the desired time, set pot in cool dark room and water moderately.

If the soil is rich a profuse watering every third day will help the roots to abstract the nourishment it needs. If lacking nourishment, as may appear by weak growth, a half-pint of liquid manure should be given the plant each week or half-pint of water having in it ten drops of liquid ammonia. So large a bulb as the Easter lily is a gross feeder, and appreciates any extra care. After the plant has bloomed, it should be moderately watered till the foliage turns yellow. This indicates that the bulb is ripe and ready for a period of rest. Withhold water altogether, and set pot away in some cool cellar till the following October. It is then planted out of doors and treated as other lilies. Having bloomed once in the house, it is not fit for a second forcing, but out of doors it will renew itself so as to bloom in a year or two. In the open ground it is desirable that this lily should have some protection for winter, such as is afforded by two or three inches of coarse stable litter, or a thick covering of leaves.—
J. F. B., Vick's Floral Guide.

CHRYSANTHEMUMS.

THE chrysanthemum plants which have been wintered in the cellar should now be brought to the light and given plenty of air and water; and in a short time the light-colored shoots will take on a green

healthy appearance. After they have become well established they should be separated from the parent plant, each containing a portion of the fibrous roots which are supporting it, and potted into a small pot, where if

CHRYSANTHEMUMS.

given proper care it will continue to grow as if nothing had happened. If it is desirable to grow them in the garden during the summer, they should be hardened to the outdoor conditions by placing them in the open air during the warmer part of the day and protecting them during the night, till the ground has become sufficiently warm for them to be placed in the open garden.

They usually give large blooms, and plants are more easy to handle, if they are grown in pots during the entire summer. When this is done, it will be best to repot them as they need it, till they have been placed into six or seven-inch pots. The pots should be kept plunged into some material, as coal cinders, which will assist in holding the moisture. They can be placed in some protected corner of the garden and plunged into the soil if coal cinders cannot be obtained; or they are put into a frame and covered with lath screens during the heat of the day; but they must receive plenty of air and water if good healthy plants are expected. The plants should never be repotted after the buds have begun to develop. An application of liquid manure should be made twice a week till the buds begin to open, then it should be discontinued. A dressing of well rotted

barnyard manure is often placed on the surface of the soil.

The plants should be trained from the time they are about six inches high. If the bush form is desired, the top should be nipped off about six inches from the ground and the side buds be allowed to develop; if only from three to five buds are allowed to remain, the buds will produce large flowers on long stems. If the tree form should be desired, the central stem should be allowed to grow about two feet high; then the tip should be nipped out, and the lower branches trimmed to the height where it is desired to form the head, and above this the branches should be pinched back whenever the top needs to be made thicker. When the buds are formed, the weak ones should be taken off to encourage the growth of large flowers.

The plants which have been grown in the garden through the summer should be taken up before the buds begin to form and placed in pots or well drained buckets. The objection to the garden grown plants is that the roots have such a wide range that many of the best feeding roots are lost in the operation of taking up the plants, and thus the plants are reduced in size.

W. H. MOORE.

Kansas Agricultural College.

Yellowish Rose Leaves.

SIR,—I duly received your letter of the 20th ult, containing one from Mr. R Cunningham, of Guelph with rose-tree leaves that had turned yellow. Though there was no insect on the leaves, there were under the leaves webs of the minute red spider, which is no doubt the cause of the trouble. Kerosene emulsion sprayed on the plants affected, well under the leaves has been found effectual, also water containing finely powdered sulphur. A treatment which has given good results in California, even on trees, has been fine dry powdered sul-

phur distributed on the foliage in the morning while the leaves were damp. The rose bushes should at the same time be fertilized so as to invigorate them and help them to withstand the attack.

Without sample of the leaves of the dying pine trees, it is impossible to speak positively as to a cause. It certainly cannot be the mulching with barnyard manure, but it might be winter killing, as has been the case in other places in Ontario.

J. FLETCHER. *Ottawa.*

* Our Book Table. *

Among the subjects treated in Maynard's "Landscape Gardening," are: "Landscape Gardening and Home Decoration," "Ornamenting New Homes," "Preparation of Land Trees and Herbaceous Plants," "Walks and Drives," "Improving Established Homes," "Roads and Roadside Improvements," "Public Squares," "Parks," "Cemeteries and School Yards," "Description of Trees and Shrubs," "Evergreen Trees," "Ornamental Shrubs," "Hardy Herbaceous Plants," "Aquatic Plants," "Hardy Ferns and Ornamented Grasses," "Insect and Fungi Injurious to Ornamentals."

HARDINESS OF JAPAN PLUMS.—We are inclined to think that this plum will endure more frost than is usually supposed. Mr. Hale says they will stand 25° below zero; and perhaps he is not far wrong, for at Day's Mills, North Algoma, where the thermometer often goes lower than that, we found both Abundance and Burbank in good condition after two years planting.

PLANT LICE OR APHIDS.

If there is any group of insects that requires the constant attention of nurserymen, green-house owners, orchardists and farmers, it is the family of plant lice or aphids. The season of 1898 has been unusually favorable for these vermin, as is always the case when the spring opens moist and cloudy, with very little hot weather early in the season. Such widespread and well-known pests require very little description; their small, pear-shaped bodies, rarely exceeding one-quarter of an inch in size, with the slender legs and feelers, are known to everyone. The life-histories of these plant lice are, however, not so well known, and in many cases they are as yet a mystery. Many species pass the winter in the egg stage, although a large number of species are not yet known to produce eggs. "The 'winter eggs,' hatching in the spring, produce wingless females, which bring forth living youth without the intervention of the male. In some cases these young produce in turn winged females, in other cases wingless females (but these, whether winged or wingless, have the same power of producing young without pairing), and in the great majority of cases, if not

3 REASONS

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Aphids are sucking insects, taking their food through a slender tube which is thrust deep into the tissue of the plant. For this reason any arsenical poison that may be deposited on the surface of the plant will do them no harm; they will thrust their beaks clear through the poison into the plant and will suck the sap from beneath the surface. To kill these little robbers it is necessary to use contact poisons, such as kerosene emulsion, whale-oil soap, tobacco-water, Pyrethrum, or some application which kills by closing up the pores or by irritation, or else to use some vapor, smoke or gas, such as tobacco smoke or carbon bisulphid. In all, this method of reproduction is carried on until fall. Then in some cases males and females are produced, which, after pairing, give rise to one or more eggs, which serve to keep the species over winter. In many instances, as with the black peach-aphis and the grain aphis, the aphids themselves live over winter. In some cases, as in the case of the hop-aphis (*Aphis humuli*), the winter eggs are laid on one plant (in this case on the plum, while the young migrate to some other plant in the spring. The hop-aphis migrate from the plum to hop-vines and passes the summer there.