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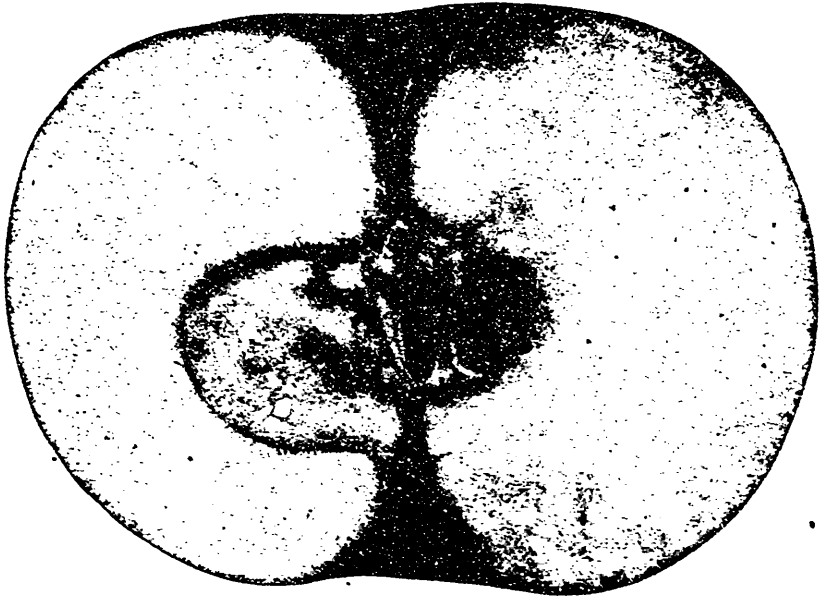
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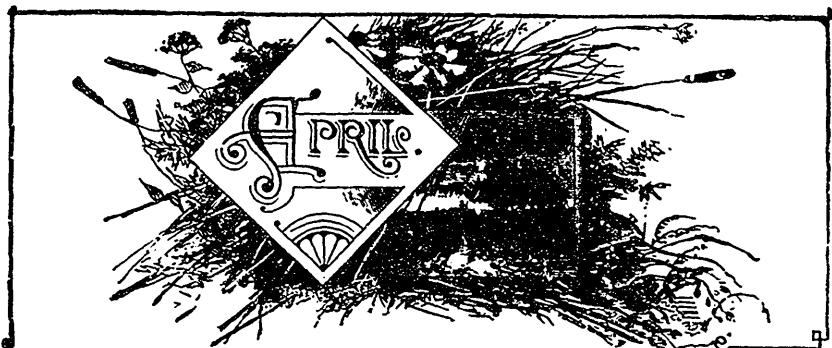
THE WOLF RIVER APPLE.

# THE CANADIAN HORTICULTURIST.

Vol. XXII.

1899.

No. 4



## THE WOLF RIVER APPLE.

**W**E agree with the President of the Michigan Horticultural Society, who stated at the recent meeting that apple culture had reached a new era, in which better methods and a choicer selection of varieties are essential to success. The man who will not spray, or manure, or cultivate his apple orchard; who will not trap codling moth, top graft best varieties, grade and market his fruit in the most up-to-date fashion, must go to the wall; but the intelligent, enterprising apple grower can make as great a success of the industry as any previous time, barring, of course, years of over production like 1896.

No doubt special trade will soon arise in special fancy dessert apples, and the man who can cater to the demands of the public will make money out of the business. At Ann Arbor the writer gave the following as three profitable varieties to grow for export, viz. :—

Blenheim, Cranberry and Ontario. These are varieties intended to cover the winter season from December to March, but for earlier shipments one might name Astracan, Duchess and Alexander. It has been the custom to condemn these varieties, because our home markets were overstocked, and they would not carry farther, but now that our steamship lines are being fitted up with cold storage plants, we can export them in good condition, as was proved by our experiments last August, when these very varieties commanded top prices in Great Britain. Of course they had to be graded for size, as well as quality; all wrapped in tissue paper and packed in bushel or half bushel cases, and then stand inspection by a government official before shipment.

Our frontispiece represents another apple that might be included in a list for export, viz., The Wolf River. A little later in season than Alexander, if anything larger and more showy in appearance, and better in quality, it

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promises well for one of our fancy varieties for export. It is said not to be an early bearer, and to be productive each alternate year.

The apple is a seedling of the Alexander, and originated in Wisconsin on the bank of Wolf River.

The tree is very hardy, vigorous and fairly productive.

The fruit is very large, 3 inches by 4½ inches, oblate, or roundish oblate,

usually regular in size; skin light yellow, shaded with dark red or crimson in sun, with a few yellowish dots; stalk three quarters of an inch long, set in a narrow deep basin, of a green or russeted color; calyx open in a narrow, deep, green wrinkled basin. The flesh is yellowish white, moderately firm in texture, not fine grained, juicy, with a pleasant, sub-acid, spicy flavor. Season October and November.

### THE TRANSPORTATION OF OUR FRUIT.



FIG. 1561.—LOADING FRUIT AT E. D. SMITH'S, WINONA.

HERE is no question that it is more vital to the interests of the fruit growers of Canada than the carrying of their fruits.

Numerous have been the complaints in the past, both with regard to the carriage and the rates. Ocean transportation of fruit has been extremely unsatisfactory; for even winter apples, which had been packed firm and hard in our orchards and graded with the utmost care; fruit which would keep in our own cellars for six months in good condition, after two weeks on shipboard, closed in hot, unventilated holds, have arrived in Great Britain as "slacks and wet and waxy." As a result,

Canadian fruit growers were being given a bad name for packing, which they do not deserve; and the English commission merchants are blamed for false reports, because shippers cannot understand why fruit, which leaves them in first-class condition, should be ruined in so short a time.

As a remedy for this evil, cold storage has been provided on many steamers, which of course will carry apples in perfect condition. To quote from Prof. Robertson's address at our St. Catharines meeting:

"By means of cold storage even the very earliest ripening sorts can be landed in Great Britain in first-rate condition. If these are put in barrels at even 60° Fahr. and headed

## THE TRANSPORTATION OF OUR FRUIT.

up close, they will get up to 70° in the centre of the barrel in a short time. If put in the hold of the ship, the whole place soon goes above 70°, and the apples will all arrive in "slacks" and "wets." In 1897 a lot of over 500 barrels was sent over, and the half that went in cold storage sold for 13/ a bbl., and the half that went not in cold storage sold for 8/ a bbl. at the same time. I think I am safe in saying that 60% of the apples that go to Great Britain fetch less than two-thirds they would fetch if they were properly graded, properly packed and safely carried, across the sea. I think if the Fruit Growers' Association of Ontario does not take hold of this transportation problem and bring about better methods and facilities, they may as well go out of the business. The growing of fruit has been very well attended to, but there has been so much loss and dissatisfaction from the spoiling of fruit on the way to the markets, both home and foreign, that the matter must be taken hold of and corrected."

Considerable discussion followed both on the subject of ocean and railway transportation, resulting in the appointment of two committees to take up these matters in earnest, appealing to the other provincial societies for co-operation; and if necessary, to appeal to the Dominion Minister of Agriculture. The Committees on Transportation were as follows: *Ocean*, L. Woolverton, W. M. Orr, and A. H. Pettit. *Railway*, W. E. Wellington, W. M. Orr, Alex. McNeill, M. Pettit, E. D. Smith, T. Carpenter, R. W. Gregory and W. H. Bunting.

These committees met jointly at the Walker House, Toronto on the 3rd of March, and after a full discussion, prepared the following resolution on *Ocean Transportation of Fruit*:

Whereas, the accommodation on Atlantic steamships has hitherto been unsuitable to the carriage of our fruits, even such hard fruits as apples being ruined in transit and arriving in the British market in an unsalable condition, although in perfectly sound condition when packed and shipped; and

Whereas, the lack of ventilation, and the great heat in the holds of the vessels, added

to the heat arising from the fruit itself, contributes to this evil, which has resulted in immense losses to the fruit growers in every province of our Dominion;

Therefore, *Resolved*,—That we memorialize the Department of Agriculture at Ottawa to take steps to remedy this serious condition of affairs, and thus give encouragement to one of the most important of our exports; that ventilation of the holds in which apples are carried be strictly required of steamship companies in order that the temperature be kept similar to that of the outside air; and that a government agent be employed at each of the important ports, as Montreal, St. Johns and Halifax, whose duty it shall be to see that such ventilation is attended to, and, further, to insist upon proper care in handling, loading and storage of our fruits on shipboard;

Further, that, when cold storage for fruit is provided on shipboard, the steamship companies shall be required to guarantee that the temperature will be kept within certain limits, and that the same be verified by a self-registering thermometer placed under government seal.

and the Secretary was ordered to send copies to local fruit growers associations and to the provincial societies most interested in export, as for example: Nova Scotia, Quebec, and Prince Edward Island, suggesting that they pass similar resolutions, which could all be forwarded by our Secretary to the Dominion Minister of Agriculture.

The next question dealt with was the better *classification of freight rates* on fruit; better ventilation of box cars for long hauls; and greater speed in transit. The following gentlemen were made a sub committee to carefully revise the freight classification, and to interview the Freight Classification Committee at Toronto, place fairly before them our grievances and seek for the requisite concessions, viz.: Messrs. E. D. Smith, T. H. P. Carpenter, Alex. McNeill and W. H. Bunting.

We anxiously await the result.



## OUR RURAL SCHOOL GROUNDS.

**M**ANY of our affiliated horticultural societies are endeavoring to interest the children of the public schools in floriculture. They give bulbs or flower seeds to them and offer prizes for the best results. One teacher we knew who encouraged his pupils to bring pot plants to the school, and taught them how to care for them and above all to love them for their beauty and their fragrance.

But as a rule our rural schools are an object lesson teaching neglect and distaste for ornamental horticulture. The school building itself is unsightly, and often shabby for want of paint. The school yard is enclosed by an ugly snake or stump fence, or by a board fence, half down, and gates and posts that stand awry. The extent of the grounds may be large enough to meet legal requirements but they are bare of tree, shrub, and sometimes even grass. Arbor Day is a move in the right direction, and we are pleased to credit our authorities with this enactment, which however is too often taken as an ordinary holiday, and the school grounds are no better after than before it.

Prof. Bailey, of Cornell University, Ithaca, U. S., has devoted Bulletin 160

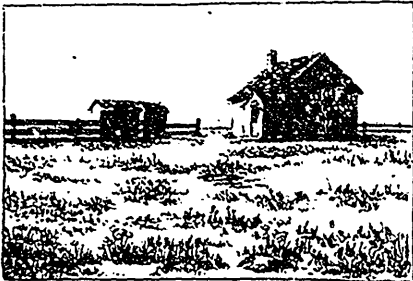


FIG. 1562.—Where Children are taught.  
An actual example.

to Hints on Rural School Grounds, and is thereby aiming to cultivate the taste of the public for better things, so that they will demand a different state of things and make the grants to schools conditional on such improvements.

Quoting a report he says: "If children are daily surrounded by those influences that elevate them, that make them clean and well-ordered, that make



FIG. 1663.—A suggestion in planting.

them love flowers, and pictures, and proper decorations, they at last reach that degree of culture where nothing else will please them. When they grow up and have homes of their own, they must have them clean, neat, bright with pictures, and fringed with shade trees and flowers, for they have been brought up to be happy in no other environment."

Regarding the school building Prof. Bailey says:

"The school building is generally little more than a large box. It has not even the charm of proper proportions. A different shape, with the same cost, might have made an attractive building. Even a little attention to design might make a great difference in the looks of a schoolhouse; and the mere looks of a schoolhouse has a wonderful influence

OUR RURAL SCHOOL GROUNDS.

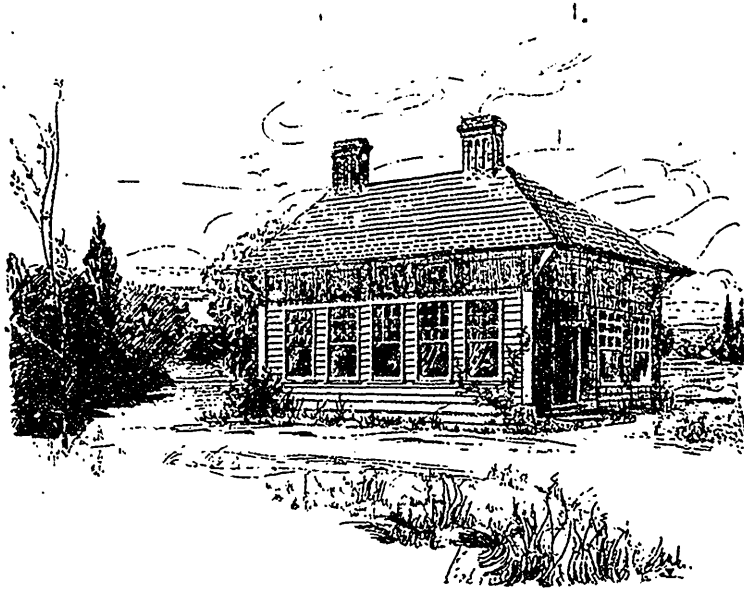


FIG. 1564.—A suggestion for a simple school house.

on the child. The railroad corporation likes to build good-looking station-houses, although they have no greater capacity than homely ones. I asked an architect for a simple plan of a cheap schoolhouse. He gave me Fig. 1564.

The first thing to do after the school building itself is completed, is to prepare a plan of the grounds. For this it might be well to consult a landscape architect, who would give an outline ground plan, showing where trees, shrubs and plants may be planted after the correct principles of landscape art. Or if any one in the neighborhood has enough taste to do so, let him draw a rough plan first, before the first planting is attempted. A good model for a small school yard (Fig. 1565) situated at four corners, is given by Prof. Bailey, in which these principles are observed, as for example (1) an open lawn through the centre; (2) the grouping of trees and shrubs about the borders, and to hide objectionable features; (3) Laying

out walks or drives by gentle curves between fixed points, etc.”

We close this article with a few further extracts.

*Making the sod.*—The only outlay of money required for the entire improvement is for grass seed. The best lawn grass for New York is June-grass or blue-grass. Seedsmen know it as *Poa*

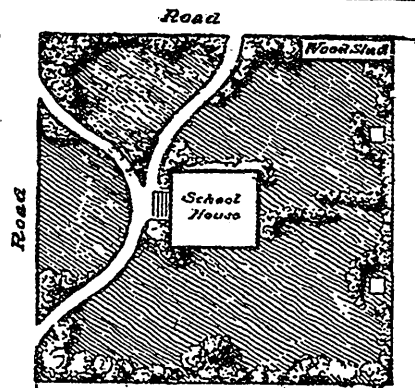


FIG. 1565.—Suggestions for the planting of a school yard on four corners.

## THE CANADIAN HORTICULTURIST.

pratensis. It weighs but 14 pounds to the bushel. Not less than three bushels should be sown to the acre. We want many very small items of grass, not a few large ones; for we are making a lawn, not a meadow.

Do not sow grain with the grass seed. The June-grass grows slowly at first, however, and therefore it is a good plan to sow timothy with it, at the rate of two or three quarts to the acre. The timothy comes up quickly and makes a green; and the June-grass will crowd it out in a year or two. If the land is hard and inclined to be too dry, some of the clover will greatly assist the June-grass. Red clover is too large and coarse for the lawn. Crimson clover is excellent, for it is an annual, and it does not become unsightly in the lawn. White clover is perhaps the best, since it not only helps the grass but looks well in the sod. One or two pounds of seed is generally sufficient for an acre.

*How to make the border planting.*—The borders should be planted thick. Plow up the strip. Never plant these trees and bushes in holes cut in the sod. Scatter the bushes and trees promiscuously in the narrow border. In home grounds, it is easy to run through these borders occasionally with a cultivator, for the first year or two.

Make the edges of this border irregular. Plant the lowest bushes on the inner edge.

For all such things as lilacs, mock oranges, Japan quinces, and bushes that are found along the road sides, two or three feet apart is about right. Some will die anyway. Cut them back one-half when they are planted. They will look thin and stiff for two or three years; but after that they will crowd the spaces full, lots over on the sod, and make a billow of green.

*Kind of Plants.*—The main planting should be for foliage effects. That is, think first of giving the place a heavy border mass. Flowers are mere decorations.

Select those trees and shrubs which are the commonest, because they are the cheapest, hardiest and most likely to grow. There is no district so poor and bare that enough plants cannot be secured, without money, for the school yard. You will find them in the woods, in old yards, along the fences. It is little matter if no one knows their names. What is handsomer than a tangled fence row?

Scatter in a few trees along the fence and about the buildings. Maples, basswood, elms, ashes, buttonwood, pepperidge, oaks, beeches, birches, hickories, poplars, a few trees of pine or spruce, or hemlock,—any of these are excellent. If the country is bleak, a rather heavy planting of evergreens about the border, in the place of so much shrubbery, is excellent.

For shrubs, use the common things to be found in the wood and swales, together with roots which can be had in every old yard. Willows, osiers, witch hazel, dogwood, wild roses, thorn apples, haws, elders, sumac, wild honeysuckles,—these and others can be found in every school district. From the farm yards can be secured snowballs, spireas, lilacs, forsythias, mock oranges, roses, snowberries, barberries, flowering currants, honeysuckles and the like.

Vines can be used to excellent purpose on the outbuildings or on the school-house itself. The common wild Virginia creeper (shown on the right in Fig. 1566) is the most serviceable. On brick or stone school houses the Boston ivy or Japanese ampelopsis may be used, unless the location is very bleak. Honeysuckles, clematis and bitter-sweet



## CULTIVATION AND CARE OF THE BLACKBERRY.



FIG. 1566.—A clump of weeds in the corner by the house—motherwort and Virginia creeper. How pretty they are!

are also attractive. Bowers are always interesting to children; and actinidia

(to be had at nurseries) is best for this purpose.

*Plants for decoration.*—Against these heavy borders and in the angles about the building, many kinds of flowering plants can be grown. The flowers are much more easily cared for in such positions than they are in the middle of the lawn, and they also show off better. They have a background. Even a clump of weeds looks well when it is in the right place.

While the main planting should be made up of common trees and shrubs, a rare or strange plant may be introduced now and then from the nurseries, if there is any money with which to buy such things. Plant it in a conspicuous point just in front of the border, where it will show off well, be out of the way, and have some relation to the rest of the planting. Two or three purple-leaved or variegated-leaved bushes will add much spirit and nerve to the place; but many of them make the place look fussy and overdone.

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## CULTIVATION AND CARE OF THE BLACKBERRY.

**I**N starting to grow this favorite berry we must first consider its location, as most varieties are too tender to stand much exposure to either severe frost or keen cold winds; and consequently a windbreak of some kind is desirable toward the success of the bushes, carrying them through the winter without freezing down. This windbreak should be on the west side. As it will not only shield them from the cold frosty air in winter, but will also protect the bushes from the high winds when they are heavily laden with fruit.

Another important point towards its success is the soil, as some soils would not be suitable, such as hard clay, or

wet ground. The Blackberry likes a warm sandy soil. They grow splendidly on a deep rich sandy loam, and will stand the dry weather better than on a light sandy soil, and perhaps grow rather larger berries.

But if it was possible to irrigate, I would choose the light sand as it is warmer, and getting plenty of moisture they would grow to perfection.

Now as to fertilizers for the soil. There is nothing better in my opinion than plenty of good unleached hardwood ashes, stable manure well rotted, and nitrate of soda. In first setting the roots, and management of them after, I differ from most growers, setting

*THE CANADIAN HORTICULTURIST.*

them much closer in the rows for the purpose of making a thick shade over their roots during the dry spells when the berries are growing and ripening, and helping to retain the moisture as long as possible. The rows should not be less than eight feet apart, and set two feet apart in the row, and afterwards allow them to thicken in the row as

tion of the fruit spurs or stems that grow out in the spring for the fruit to form on. Some cut out the old wood as soon as the crop is off, but I do not do so until the next spring, as I think it assists to protect the young canes and to hold the snow and leaves to cover the roots and keep the frost from doing them injury. There is a great difference in the



FIG. 1567.—EARLY HARVEST BLACKBERRIES.

close as convenient to hoe. After the young canes get to a height of two or three feet, they should be pinched back so as to give them a stocky growth, form a fine bushy top and harden the the wood, so that it will stand our severe winters without injury. When spring comes do not cut them back a second time as it will seriously injure the forma-

hardiness of the different varieties ; I have tried several kinds, but the Agawam is only one that would stand our cold winters without injury ; it has more good qualities than any other variety of which I have any knowledge. There is one point in their ripening which is very important, as it has to do with their size and sweetness. Some think they are

## PRUNING THE GOOSEBERRY.

ripe as soon as they turn black ; but that is a mistake, as it takes them two or three days to get ripe and sweet after turning black, and if they are left on the bushes until they are sweet, they are seedy and are more luscious to the taste. Never allow any grass or weeds to grow, but keep perfectly clean. If you cannot do that do not try to grow them as you will surely fail, for they will not grow in sod.

When the bushes get their load of green and ripening berries, the weight is too great for the canes to sustain and

hold them up, and they must be assisted. It is a very easy matter to place a few posts through the centre of each row, bore a hole two inches from the top, split out the piece from the auger hole to the top, then draw a wire through on each side of the bushes, fasten both ends to the end posts, raise the wire and drop it in the slot at the top of the posts. In this way one row of posts carries both wires and the cost is light.

I think this is all the information necessary to grow and care for the Blackberry.—(Name of writer not given.)

## PRUNING THE GOOSEBERRY.

**T**HERE are one or two important points about the gooseberry which deserve consideration. It is fairly hardy, but thrives best when sheltered. Then, though good supplies of moisture are essential to its welfare, the soil in which it is planted must be well drained, if the best results are to be relied upon. Further, though it must be kept in check by pruning, to clip it all over, making it form a dense spurred-in hedge is an error that cannot be too strongly condemned, and this brings us to the all-important question of pruning. Whilst some advise one system and some another, the best and safest plan will be found to be as follows:— Instead of shortening the shoots, except where they are too rampant, or work downwards into or towards the soil, remove the weak shoots wherever they are seen, and take care they are not chopped off, but removed as close to the old wood as possible. Generally speak-

ing, the usual method of ensuring a well-shaped and evenly-developed head will produce good results, but if better fruit is desired then cut out and train the bush in the shape of a cup ; by this plan you reduce the quantity, but the fruits will be much finer from having free supplies of air and sunlight let into the head of the bush. It will be found much better to thin out rather than to clip all round the head. Let the branches grow outwards, and remove all branches which cross, rub against, or entangle such as should be encouraged to grow out freely. In planting, do not set the bushes too closely together. If set in rows, let them be five or six-feet apart, and the bushes should be five feet from one to the other in the rows. Nothing is gained by over-crowding, either with bush or hardy fruits, as plenty of air and sunlight are essential to successful cultivation and development.—*Bush Fruit Culture.*

## THE SAN JOSE SCALE



FIG. 1568.—THE DELEGATION WHO DISCUSSED SAN JOSE SCALE.

AS has already been stated, this country has narrowly escaped the general introduction of this terrible insect from American nurseries. Before we were aware of the danger several large lots of trees were imported and distributed, that were affected by this tiny insect. In 1896 an orchard near the border, belonging to a member of our Association, Mr. Chas. Thonger, was found to be infested, and immediately our executive called upon both the Provincial and the Dominion Ministers of Agriculture to send competent men to examine and report.

A large number of fruit growers, accompanied by Dr. Fletcher, of Ottawa, and Prof. Panton, of Guelph, proceeded to Mr. Thonger's farm, and found the report only too true, and that a large number of his pear and peach trees were

infested. Our illustration shows the delegation, met under a grand old oak, to discuss the situation. Mr. Thonger is the prominent figure, while on his right are Prof. Panton and Dr. Fletcher; at his feet, Mr. D. J. McKinnon, of Grimsby, and at his left, Mr. W. M. Orr, E. D. Smith, Mr. Armstrong, the writer and others. Strong resolutions were made, and sent to the Ministers of Agriculture, and as a result, every tree imported from the United States during the last five years is being carefully located and examined and if there be any trace of scale, utterly destroyed.

The superintendent of this work is Mr. George E. Fisher, of Burlington, a man who never allows difficulties to hinder him, and who is sparing no labor or expense, to make it sure that Ontario is clean of the ugly insect. The San

## EARLY VEGETABLES.

Jose Scale Act, of 1898<sup>o</sup> is well-known, and this is still being amended by the addition of the following sub section :

(a) If, in the case of an orchard or collection of plants, the inspector finds scale on plants located in several different parts of the orchard or collection, and decides that it is advisable in the public interest to destroy all the plants in such orchard or in any part or parts thereof and so, reports to the Minister, the Minister may direct that an examination or inspection shall be made by an additional inspector, and upon their advice in writing he may direct that all the plants in such orchard or such collection of plants or in such part or parts thereof shall be destroyed without requiring that every plant in the said orchard or collection shall be first examined.


3. The owner or proprietor of any nursery shall not send out or permit any plant to be removed from his nursery without the same being first fumigated by hydrocyanic acid gas in accordance with regulations prescribed by order of the Lieutenant-Governor-in Council.

4. No person shall sell or dispose of or offer for sale any plant obtained, taken, or sent out from a nursery unless the said plant has previously been fumigated in accordance with these regulations.

5. In case the inspector finds scale in any nursery and so reports to the Minister, the Minister may thereupon inform, by writing, the owner or proprietor or manager of said nursery of the existence of scale in his nursery, and the owner or proprietor or manager of said nursery shall not thereafter permit any plant or tree to be removed from the said nursery 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.

This measure is extreme, but coupled with the Dominion Act, totally excluding all American nursery stock, is calculated to save our country from an invasion of this insect and make it perfectly safe for our readers to purchase freely Canadian stock from our Canadian nurseries. It costs a large sum of money to trace out all these importations and examine each tree microscopically, but it is well-worth the expenditure, if we are thereby saved from the threatened evil.

## EARLY VEGETABLES.

 CAULIFLOWER should be in as general use as is cabbage. Its good qualities merit its general use. Would you be without cabbage from year to year? Then why be without cauliflower?

Do you grow and use salsify, the oyster plant? Try it. If you have good success, and are as fond of it as some are, you will not let a spring pass without planting it.

If you like celery, try to grow it. Splendid celery can be grown but it requires thoughtful work.

For raising early vegetables, now is the time to begin to work. Make a hot bed, and have good sized hardy plants ready for the open ground as soon as the weather will admit of their being put out. Place several loads of horse manure in a flat-topped pile, and give it

a good wetting. After several days it will be steaming vigorously, and should be forked over into a similar pile and wet again. After this process has been repeated two or three times, make the manure into a solid bed two feet deep, place a frame on the bed, and fill in with four inches of good soil well pulverized. Sow your seeds, cover lightly, and keep the soil moist. Cover the frames during nights and cold days with glass sashes if you have them, but, if not use the best covering you have, such as old carpet or wagon sheet. With this little care, you may have early vegetables. They grow better during early summer before it gets hot and dry, and tomatoes will continue to bear till frost, if irrigated, or if the drouth is not severe.

C. P. HARTLEY, *Kansas.*

## SUCSESSES AND FAILURES IN FRUIT GROWING.

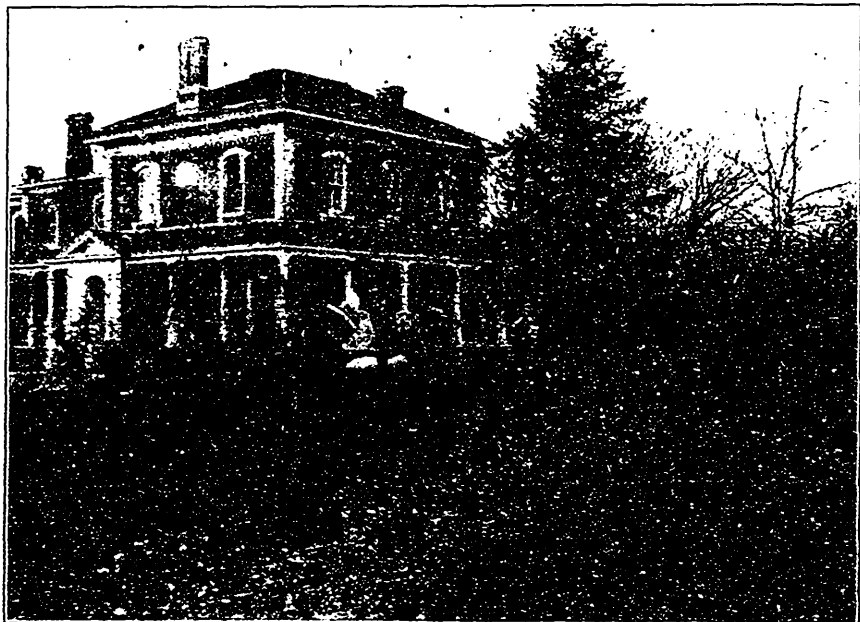


FIG. 1569.—MR. MCKNIGHT'S RESIDENCE.

SOME time ago we gave our readers a sketch of Mr. R. McKnight, of Owen Sound, and recently we received the accompanying photographs of his grounds, that of the house showing a short cut to the town, the hedge on the right being privet and that on the left, cedar (the native arbor vitae). Behind the hedge to the right is the small fruit plantation, and behind the house the orchard. The carriage drive, which is not shown, enters on the west side of the lawn, and is flanked on one side by a row of Austrian pines, and on the other by one of spruce, now nineteen years planted.

The other picture, Fig. 1570, shows a sauntering place along the east of the orchard, and on the brow of the hill;

any part of which commands a fine view of the town, harbor and lake.

The row of evergreens on the left is a spruce wind break and joins the eastern boundary of the orchard, along which you will notice a privet hedge, which has outlived both its usefulness and its beauty. The trees now partly overshadowing it, the maples on the right, are second growth volunteers, and stretch along the immediate brow of the hill. The trees in the distance are a part of about  $\frac{1}{2}$  an acre of the original bush; they make a good background to the place, and shelter the orchard from the north wind. This is the only piece of original bush within the limits of the residential part of the town.

Mr. McKnight writes as follows:—  
“I have cultivated about all the kinds of

*SUCSESSES AND FAILURES IN FRUIT GROWING.*

fruit grown in this neighborhood, large and small, with the average degree of success. My apple orchard contains about 40 trees 25 years old, half dwarfs, all of them branching within 4 to 5 feet off the ground. I was once told by a prominent fruit grower of the Niagara peninsula, that the Gravenstein was too tender a tree to succeed as far north as Owen Sound. My experience of them leads me to differ with him in this view. I regard it as amongst the hardiest. I have 4 of them in my collection, the rest being make up of Spys, Baldwins, Spitzenbergs, Greenings, Canada Red, Maiden's Blush, Taiman Sweets, Snows and Astracans. My Gravensteins are the largest, finest and most symmetrically formed of any trees in the orchard. Perfectly hardy, not a twig of them has ever shown the effect of frost, while I have had Greenings killed outright by it.

I went out this morning and meas-

ured the relative sizes of the trunks of several kinds of trees, the measurement was made in all cases 2 feet from the ground: here is the average result:

Gravensteins,	52	in.	in	circumference
Spys,	43	"	"	"
Talmans,	36	"	"	"
Spitzenbergs,	41	"	"	"
Greenings,	47	"	"	"
Maiden's B.,	42	"	"	"
Astracan,	42	"	"	"
Canada Reds,	44	"	"	"
Baldwins,	47	"	"	"

The Gravensteins more than hold their own in the size and symmetry of branches and head, the fruit is unsurpassed in size, form and flavor, by any fall apple grown. By the way, the Ontario I got from the Fruit Growers' Association some 12 or 14 years ago has not proved\*thrifty with me. It fruits well and the apples are clean skinned and uniform in size. But the tree itself



FIG. 1570. VIEW ON THE GROUNDS OF MR. MCKNIGHT.

is not vigorous. It does not make sufficient growth in a year to enable one to get a decent scion from it. It is not favorably situated, however. My neighbor got one at the same time, and it is

a much better and larger tree than mine." Mr. McKnight is Registrar for the County of North Gray, and First Vice-President Owen Sound Horticultural Society.

## THE APPLE CANKER.

From a paper read at the last meeting of the W. N. Y. Horticultural Society.

**T**HE DISEASE FOUND.—At last year's meeting of the Western New York Horticultural Society, the committee on botany and plant diseases reported the prevalence of apple canker in the orchards in Western New York, and a note on the subject from M. B. Waite, Washington, D. C., was read. Last Spring a request was received at the Geneva Experiment Station from Chapin Brothers, East Bloomfield, N.Y., that the dying of trees in their orchards be investigated. The visit revealed the fact that of 80 acres of once fine orchard belonging to one of the brothers, 30 has been taken out, and one-half the remainder were not worth a shilling. Of the 45 acres originally in the other orchard, only about 20 are left that are of any value. It is evident that this wholesale destruction is largely due to the canker. The disease has been noticed for the past six or eight years, but it has increased rapidly in the past three or four years. Twenty-Ounce is most susceptible, Baldwin, Wagener, Greening and King next. Talman Sweet seems practically free; trees on lowland and on ground at all wet, suffer worst. Trees in outside rows are freer from canker than those in less exposed situations. The orchard is 40 years old, but the trees that are free from disease are thrifty and in their prime. The orchard has been cultivated far more in-

telligently than the average orchard. No crops have been taken, trees have been pruned regularly, and the orchard was thinned 15 years ago. It has been sprayed from the first with insecticides but not with fungicides.

*What It Is.*—Inquiries concerning the disease have been received from various sections of the State and its prevalence is reported in widely separated localities. It seems to be common in most parts of the State, and in a number of instances, is doing serious damage. It is also prevalent in the Southern States, on the Pacific coast, in Michigan and Indiana. The swollen appearance of the limbs, the rough, blackened bark, and in many instances bare wood, black and decaying, are characteristics of this disease. The cankers are much more prevalent on mature than on young trees, the latter being evidently exempt from the attack.

Old age and neglect seems to favor the disease, though thrifty trees may be ruined by its attacks.

*Its Life History.*—Investigations of the nature and life history of the disease were at once begun. A series of cultures were made from the diseased bark, and various forms of fungi were obtained. Two forms constantly appeared in the cultures, and led to their being separated and being grown in a pure state in test tubes. One form proved to be a toad-stool that is very common on dead bark



## THE APPLE CANKER.

and wood in the orchard, and the other was unknown. Inoculations were made with both forms, and in a few days there was an area of discolored bark around the place of inoculation in each case where the unknown fungus had been inserted. Further inoculations were followed by the same results. By the close of the season, several of the seedlings were nearly girdled with wounds three or four inches in length, while on the trees, a portion of the wood was laid bare and the dead areas of bark, characteristic of the disease, were produced. Further experiments seemed to prove that the apple canker is caused by the fungus that produces the black rot of the apple, pear and quince. Some blighted apple twigs were examined, and it was afterward found that mature spores of the black-rot-fungus were abundant on them. Some pear trees, also, which were found to be in a dying condition, were attacked by the same fungus. The spread of the disease was from the top downward. Fruit of the same fungus has also been found on twigs of some quince trees that grew by the side the of pear trees, although the injury was slight. The canker has also been found on a quince tree in the Experiment Station orchards, the appearance and effect being much the same as on the apple trees. The disease was also found to be abundant and doing serious damage in the large orchard of Maxwell Brothers, near Geneva. A series of experiments was undertaken to prove that this

fungus occurring on these different species of trees is the same and identical with the common black rot of the fruit.

*What Can be Done?*—Strong evidence seems to be produced that a well-known fruit disease will also attack and do serious damage to the trees themselves. Black rot of the fruit of apple, pear and quince can be held in check with Bordeaux mixture, and there is no reason to think that this standard fungicide will fail in this case. Orchards that have been well sprayed with Bordeaux mixture for several years past, are much freer from the disease than those not sprayed with fungicides. The disease seems to prefer mature trees, and it lives best in the rough bark, till it gains an entrance to the cambium. By removing or preventing the formation of this bark by spraying the limbs with Bordeaux mixture, one favorite breeding place of this and possibly other plant diseases is removed. By keeping the limbs protected with Bordeaux mixture, all spores that chance to fall on them will be destroyed. Canker spots once formed cannot be cured, but such limbs should be removed wherever practicable. The rational way to combat apple canker is to spray the limbs with Bordeaux mixture as a preventive. This may be done when the trees are sprayed for apple scab, and an earlier spraying when the growth first starts, would do no harm.—W. PADDOCK, of Geneva, before W. N. Y. H. Society.



## FERTILIZING ORCHARDS.

SIR,— It is becoming a matter of the greatest importance to our fruit growers to understand not only what substances may be useful as manures but also how to apply them in the best manner so far as they can be made profitable.

There are numerous commercial fertilizers now on the market advertised for special crops with guaranteed analysis, etc., but in many cases with a little care and judgment and some knowledge of what the land and trees require, many dollars may be saved in collecting and preparing the crude matter always found about our homes or near by.

It may be necessary for market gardeners, near our towns and cities to purchase these fertilizers to force a quick and succulent growth in early vegetables, but the orchardist has not to consider the forcing of an early growth so much as he has the placing of his land in a good state of cultivation with sufficient quantities of humus to keep up an active state of nitrification in his soil and also a liberal supply of potash and phosphoric acid combined with nitrogen, forming the three elements so necessary to producing the full grown perfect fruit that our best markets now demand; for our soil becomes more rapidly exhausted of these three elements than any other of the ash and volatile parts of plants and trees.

To those who have sufficient stable manure, I might say, that excellent results can be obtained from the annual application of 5 or 6 tons per acre spread during the winter or early spring, over the entire surface of the ground, and after the first ploughing, which should be done in the spring, just so soon as the ground can be worked, a dressing of 20 or 25 bushels of wood

ashes followed by frequent cultivating, up to August 1st to 15th at which time the working of the soil should cease so as to check succulent growth and give the new wood time to ripen up before winter.

Where swamp muck can be obtained a good manure can be made by the following method: Draw your muck to a convenient place and to every load mix one bushel of fresh, unslacked lime; spread out your muck in a thin layer and spread on the lime, then a layer of muck and lime alternately, just dampening the whole with animal urine or barnyard drainage if it can be obtained, or water will do, putting it as the layers are built up.

After it has stood a few days it should be turned and intimately mixed by commencing at one side of the pile and cutting down from top to bottom with a spade and throwing up into a conical heap. Now, just before you apply this to the land take one barrel of dissolved bone and ashes (how to dissolve the bone will be described presently) to every five loads of muck and lime mixing it by putting up in alternate layers of muck and bone and then cut down to the full depth of the side of the pile when shoveling into the wagon, by which means it becomes well mixed. Spread over the entire ground of the orchard in April or May, at the rate of eight or ten loads to the acre, and thoroughly incorporate it with the soil by cultivation.

This will be found an excellent manure for bearing orchards, besides the humus added to the soil the lime acts upon and corrects the acid present in the muck and allows the ferments of nitrification to proceed, liberating the nitrogen, potash and phosphoric acid

## FERTILIZING ORCHARDS.

which is found in muck in varying quantities; and by the addition of the dissolved bone and ashes you add an ingredient very rich in phosphoric acid and potash beside some nitrogen, all of which is mostly available as plant food as soon as applied to the soil.

Every farmer and fruit grower should have a bone barrel or box where all bones should be put, and one will be surprised at the quantity they will collect in a short time. When a bushel or two have been collected and you have a spare hour or two for one of the boys, have him break them up in small pieces, which is very easily done by holding them over an old anvil or heavy piece of iron, and breaking them with a two pound hammer. Now take a sugar or flour barrel and put in a layer of fresh dry ashes (those made from elm wood are preferable), put a thin layer of broken bone on top of the ashes, filling the spaces between the bone with ashes shaken in, then bone and ashes, finishing off with a thick layer of ashes. When your barrel is full pour on water enough to dampen the whole, being careful not to leach any off, and in a short time the mixture will begin to heat and in a few weeks you can put a spade through the mixture, the bone having all become as soft as cheese. Now by packing the bones as fast as collected, one is able to keep a stock of dissolved bone on hand for use when required.

Now to those who have not got the necessary material at hand to prepare their own compost heap, and have to depend upon commercial fertilizers, it is not necessary to go to the expense of buying so-called complete fertilizers, but rather buy your phosphoric acid and potash, and grow clover to supply nitrogen.

Three or four hundred pounds of Thomas' Phosphate powder, 100 hun-

dred pounds muriate of potash, and 20 pounds crimson clover per acre, or 200 pounds pure ground bone, 100 pounds muriate potash, and 20 pounds clover sown about the 1st of August, the ground being kept in a perfect state of cultivation to that date, and cultivation commencing again early in the spring, and repeating annually gives the necessary potash and phosphoric acid and the clover the nitrogen and humus.

Now that we have supplied the elements to the soil necessary for the growth of our trees, we must not consider our work complete, for we have still the carbon to consider. About one half dry weight of vegetable matter consists of carbon, and it is almost wholly obtained from the carbonic acid that is in the air, only a small portion possibly in the form of carbon dioxide present in the condition of humus, being at the disposition of the tree as plant food from the soil; thus the principal source of carbon comes from the atmosphere and is obtained by the tree through the leaf pores, breathing pores, or stomata with which the mature leaf is provided in vast numbers. By means of these the inter-cellular spaces in the interior of the leaf are brought into direct communication with the outer atmosphere where the mineral matters, nitrates, etc., brought from the soil by the action of the sap, combine with the carbon from the air, and, after the chemical combination of the elements has taken place in the leaf, it passes back through the tree, building up the cell tissue and forming new wood, buds, bark, and leaves.

In the air there is somewhat less than one part by volume of carbonic acid gas to 3,000 parts of air (oxygen and nitrogen) so it is very necessary to the healthy development of a tree that it has an abundance of foliage, and that the same is kept in a healthy condition with

## THE CANADIAN HORTICULTURIST.

its numberless stomata or breathing pores in active work.

When the foliage is spotted with fungi or bitten by insects, the leaf loses its functions either wholly or in part, and, when a leaf becomes covered with fungi, cell tissue is disorganized and it is as useless as though it were off the tree. Thus we see that no amount of fertilizing through the soil will give satisfactory results unless the foliage be kept clean and healthy and in the best possible condition to absorb the carbon from the atmosphere, and to do this we must spray and spray thoroughly, both with fungicides and insecticides.

Practical illustrations in spraying and the materials used have been made in almost every corner of the province, thanks to the energy and interest taken in our fruit growers by the Minister of Agriculture for Ontario, Mr. John Dryden and his energetic helpers, and there

is very little, if any excuse now for not knowing when and how, and what to use in spraying your orchards.

### SUMMARY.

Cultivate the soil thoroughly and frequently to retain the moisture necessary for the sap flow that holds the elements of plant growth in solution. Supply humus to keep up active nitrification. Supply those elements of plant food of which the soil is most rapidly exhausted.

Spray your trees thoroughly and at the proper time to check fungi and insect depredations, and the result will be rapid and healthy growth, abundance of dark green foliage, fruit buds fully developed, and a crop of full grown perfect fruit with pleasure and profit to the grower.

HAROLD JONES.

*Maitland,  
Mar. 8th, 1899.*

## EXPORTING TENDER FRUITS.

IN our Report for 1898 our readers will find a very interesting address by Prof. Robertson on this subject, which is of the greatest moment to the more enterprising of Canadian fruit growers. From the experience of the cold storage shipments of 1898 it would appear that the possibility of success is within reach. As Mr. Robertson says:

"I have learned by two years' experience, that the British consumer and importer does not care a snap of his fingers for the fancy names of highly esteemed kinds of fruit. Soundness is his first consideration, second, their keeping qualities, then nice appearance in regard to color, size and shape, and lastly, he looks for as nice flavor as you can give him.

"The California pears that go to England are sold particularly well because the receivers there say they can keep them for two weeks after they get them. Anybody in Canada knows that a Bartlett is a joy to eat compared with a tough old tasteless pear from California, still the pears from California would fetch nine shillings a case whereas our

best would fetch only six shillings, because the California ones would keep."

Tomatoes, peaches and grapes made unsatisfactory returns, but one case of Centennial peaches, sent by the writer, which variety is a clingstone and worthless so far as quality is concerned but is firm of flesh, and of fine appearance, actually sold for 13/ or nearly \$3 25. The case contained about 60 peaches.

We believe there is hope of splendid success in all these fruits, providing we can once decide upon the variety which will carry. Even in grapes we do not despair, for some cases of Lindsay and Wilder sold well, and would, no doubt, soon create a fine demand.

We believe it is the intention to have these experimental shipments continued one more season, after which, no doubt, they may be safely left to the ordinary course of trade for development.

## NUMBER AND YIELD OF APPLE TREES IN OUR PROVINCE.

IN the last Report of the Bureau of Industries we have a step in advance for the benefit of the fruit grower, in a table showing the number and yield of apple trees in Ontario in 1896 and 1897. We are often asked by outside correspondents for this information in previous years, and need these statistics, not only of apples, but of other fruits also.

a decrease in the number of apple trees under fifteen years old, and the number reported is now only 3,435,018, or 113,040 less than in 1896. The average yield per tree was small, being but 2.19 bushels per bearing tree (fifteen years old) compared with 9.45 bushels in the previous year, and the total yield amounted to only 13,343,720 bushels, as against 55,895,755 bushels in 1896.

Districts.	Apple Trees.				Yield of apples in 1897.		Yield of apples in 1896.	
	15 years and over.		Under 15 years.		Bushels.	Bush. per tree.	Bushels.	Bush. per tree.
	1897.	1896.	1897.	1896.				
Lake Erie.....	1,161,558	1,068,063	493,210	515,176	2,154,517	1.86	13,087,056	12.25
Lake Huron.....	772,270	729,325	392,187	395,319	1,452,401	1.88	7,236,435	9.92
Georgian Bay.....	448,519	442,216	39,146	417,074	924,294	2.06	3,303,025	7.47
West Midland.....	1,095,234	1,075,992	445,147	448,223	2,174,640	1.99	11,804,969	10.97
Lake Ontario.....	1,766,184	1,739,191	826,253	875,356	4,064,148	2.30	14,273,665	8.21
St. Lawrence and Ottawa	582,853	576,921	554,619	557,010	1,723,251	2.96	4,360,144	7.56
East Midland.....	263,756	273,649	261,742	271,514	823,234	3.12	1,798,647	6.57
Northern Districts.....	12,025	8,549	68,714	68,386	27,235	22.6	31,814	3.72
The Province.....	6,102,399	5,913,906	3,435,018	3,548,058	13,343,720	2.19	55,895,755	9.45

An increase occurred in the number of apple trees over fifteen years old in every group except the East Midland district, there now being 6,102,399 trees of that age in the Province, or 188,493 more than was reported in the preceding year. Every group, however, shows

The following table presents the acres in orchard and garden, and in vineyard, in 1897, by county groups and for the Province, together with the total acreage of these in the years 1895, 1896 and 1897 :

Year.	Lake Erie.	Lake Huron.	Georgian bay.	West Midland.	Lake Ontario.	St. Lawrence and Ottawa.	East Midland.	Northern Districts.	The Province.
	acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.	acres.
Orchard & garden.....	62,534	35,817	25,217	57,317	91,516	34,207	16,792	2,941	326,341
Vineyard.....	3,700	636	553	513	5,212	368	72	46	11,100
Totals. { 1897...	66,234	36,453	25,770	57,830	96,728	34,575	16,864	2,987	337,441
{ 1896 ..	61,496	34,514	24,224	56,382	94,036	31,066	15,744	2,660	320,122
{ 1895 ..	60,141	33,210	22,729	55,442	91,863	30,454	16,813	2,135	312,787

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The Lake Ontario and Lake Erie groups lead in the acreage in fruits. Over eleven thousand acres are now given to growing of grapes in Ontario.

The total rural area in fruit is 337,441 acres, or 17,319 acres more than in the preceding year, every district sharing in the increase.

### NEW YORK FRUIT GROWERS—II.

**P**EAR Culture for Profit was treated on by Mr. D. K. Bell, from whose paper the following notes are taken.

*Soil and Varieties.*—I have found that the best soil for pears is a clay loam, that is, where the loam overlies a clay subsoil. Pears will also grow and produce well on what is known as a gravel loam, with a clay subsoil. The trees will not do well on peaty or black muck soil. These tend to unhealthy growth, and the fruit is of inferior quality. If the soil is not naturally dry, it must be made so by tile drains. Trees will not thrive in ground which is soaked with water. Do not locate an orchard on low land, but select a situation where there is plenty of sunshine and free circulation of air. Where the orchard is exposed to west and northwest winds, I favor windbreaks.

In selecting trees, accept only those that have good, sound roots, clean bark, and have made a strong growth during the past season. The following varieties are to be preferred for a commercial orchard: Standards, Clapp's Favorite, Bartlett, Seckel, Sheldon, Bosc, Clairgeau, Anjou and Winter Nelis. On the quince, Howell, Superfin, Duchess and Anjou. I will add Kieffer, although it is not a favorite of mine. The varieties named ripen in succession.

*Working and Planting.*—The soil should be thoroughly worked the year before setting out the orchard. This can best be done by planting corn, potatoes, or some other hoed crop. The

grade will then be as nearly as possible natural, so that the trees may be set at a uniform depth in the ground. Before the tree is placed in the ground, it should be trimmed of all surplus and damaged roots, and the top should be headed back. This heading should be, at least equal to the trimming of the roots, and it will do no harm if it is a little more. I head back to one or two buds, believing that the remaining buds will push forth stronger than if a larger number are left. The hole for the tree should be dug large enough so that the roots can be spread out without being bent. If some of the surface soil is thrown in first, it will do no harm. Care should be taken not to plant too deep. Two inches below the collar, for dwarfs, and even with the collar, for standards, is sufficient. Nothing is gained in too deep planting, as, in the cold soil, the roots will eventually come to the surface. Fine soil should be well sifted in among the roots, so that the space will all be filled. For Bartlett, Clairgeau, Sheldon, Bosc and Winter Nelis, 15 x 20 feet apart is sufficient; Anjou, Lawrence, Seckel and Kieffer should be 20 to 25. On the dwarf, 15 feet is sufficient for all varieties.

The young orchard should be thoroughly worked by planting it to some hoed crop. If the fertility of the soil is such that it will produce a good farm crop, no manure or other fertilizer need be applied for the first few years, after which the ground should be enriched by applying potash, phosphoric acid and

## NEW YORK FRUIT GROWERS.—II.

nitrogen, the last furnished by plowing under Crimson clover or well-decomposed barnyard manure.

*Treating the Tree.*—At about five years, the trees will begin to show signs of fruiting, which should be regulated by trimming. The trees should be trimmed systematically, according to the form that the grower has decided upon. I prefer the pyramid, and trim to a leader. This is done by cutting the lower branches to four or five buds, those higher a little shorter and so on to the leader, which should be left longer. The cutting back and thinning out must continue annually, to obtain the highest results. Whether this is done closely, must depend upon the variety and the vigor of the trees. Some trees have a tendency to set fruit more than do others. Trimming should be done during the dormant season which, in Western New York, is between Nov. 1 and March 1. No trimming should be done after the sap starts. If the tree has become stunted and exhausted, from overbearing or other cause, it can, if not too far gone, be revived by cutting back into the old wood, and allowing the tree to make a top of new wood.

After the trees have come into full bearing, which is at the age of from eight to twelve years, no farm crops should be grown among them. Plow the orchard during May, but never more than three inches deep; I do not approve of plowing any deeper, as it cuts off many of the pear roots. Then move the soil often by the use of a cultivator or spring-tooth harrow. By this treatment, the soil will be kept in

mellow, moist condition. Under no circumstances should it be allowed to become hard and cracked.

*Feeding and Thinning.*—The orchard should now be in full bearing, and the fertilizers should, consequently, be applied more liberally; I cover my orchard every second year with a light covering of well rotted barnyard manure. In the alternate years, I plow under Crimson clover, adding to this a liberal amount of mu:iate of potash, applied by sowing broadcast, by hand, and worked in by the cultivator. I have sprayed for the last six or eight years with varying success. I believe in spraying, when necessary, but the person doing the work should have a knowledge of what he is spraying for, what to use, and how and when to use it. This is important to insure success.

The thinning of fruit is absolutely essential, in many cases. The work should be done early in the growing season and, wherever a tree is overloaded, a sufficient amount of the fruit should be removed to relieve it thoroughly. The money expended in thinning is amply repaid in the protection of the trees, and the superior quality of the fruit. Thin whenever a tree is overloaded, and bear in mind that, with judicious thinning of the fruit, and careful precautions to prevent the trees from overbearing, annual crops will be the result. Nearly all kinds of pears should be gathered at least one week before they naturally ripen on the trees, as pears allowed to ripen upon the tree, lose much of their substance and quality.



## TOMATOES FOR EXPORT.



FIG. 1571.—HONOR BRIGHT TOMATO.

**W**E are very anxious to find a variety of tomato that may be carefully recommended for export. So far the Ignotum has been the most generally satisfactory variety we have tried, for it is a wonderful yielder, and carries fairly well. Dwarf Champion and Dwarf Aristocrat were a perfect failure, and were to blame for the bad reports of results last year in shipping to Great Britain.

We notice that Mr. T Greiner, gardener near Niagara Falls, N.Y., writes in *Farm and Fireside* most favorably of Mr. Livingston's new tomato the Honor Bright, as follows :

The illustration gives a pretty good idea of this new type, which the Livingston's gave us last year. The following is the catalogue description, and it fits like a glove : "The foliage is yellowish green, and the fruit grows in clusters of from three to five large tomatoes. The color when fully ripe is a rich, bright red, but during growth it makes several interesting changes in

color, first light green, then an attractive waxy white, then lemon, changing to rich, bright red at maturity. It is one of the most attractive varieties grown. The quality is very fine, flesh thick and mealy, with small seed-cavities. The skin never cracks and the fruits are so solid that if picked when white they can be shipped in barrels like apples, and after a period of three to four weeks will be solid and ripened to rich, bright red." My friend, the editor of the *New York (former Orange County) Farmer*, speaks in terms by no means flattering of this sort, and seems to consider it a curiosity. I do not agree with him, and shall plant quite largely of it. But don't plant it for an early sort. It is rather late, as the fruit requires considerable time to go through all these changes in color. I recently saw a report from London, England, saying that the shipment of tomatoes from here had not proved a success, and surely not profitable to the shipper. The fruit in most cases was allowed to get too ripe before



## PEAR GROWING.

being gathered and packed for shipment. With the Honor Bright it would be easy to avoid mistakes, as the color shows the exact stage of progress toward ripen-

ing. I think if picked when in the white stage they could be safely shipped across the water.

## PEAR GROWING.

|| SEE by the Feb. No. of HORTICULTURIST, on page 80, Question 1043, from W. B. Stephens, on pear growing. Perhaps my 20 years' experience would be acceptable, as I have tested and have now growing over 100 varieties, some of which have not fruited yet.

I find Duchess d'Angouleme a good pear, but not a good yielder. I have them both in dwarf and standard. Beurre Clairgeau bears splendidly, but requires thinning on standard trees to get the proper results in size and color. The Beurre d'Anjou, I have both dwarf and standard, the former bears fairly well, fruit of good size and good quality, but the standards, of which I have about 20 trees, some 20 years planted, have not produced as many bushels as years they have been planted; but we have some very fine specimens and of even size. They do not yield enough per tree to compare with Louise which always bears abundantly and sells here at from \$4.50 to \$6 per bbl.; and if picked at the proper season ships better than the Anjou.

I have made more money out of the Kieffer, however, than any other variety I grow, but they must be thinned from 200 to 600 per cent. to get the best results, as they are the most persistent bearers we have so far tested, besides fruiting every year, and if properly thinned bear a fine, large, beautiful fruit. If properly ripened the Kieffer is of fair flavor and excels many other sorts for canning.

If Flemish Beauty can be grown suc-

cessfully at Owen Sound, I would strongly recommend them as a fruit that would ship well and please the customers, as well as being productive and hardy and good quality of fruit, if it can be grown free from the spot or scab.

We have succeeded in growing clean fruit only by persistently spraying with Bordeaux mixture. There are two or three other varieties of late introduction, which I think will prove excellent, viz., Rutter, Comice and Idaho. So far as I have tested them they are hardy, large size, good color and excellent quality when properly ripened, and I think when better known will be highly appreciated.

The Dempsey is proving itself a good yielder, large size and of first-rate quality, much superior, in my opinion, to the Duchess d'Angouleme, which it much resembles.

With regard to the last clause of the question, there is a Mountain Ash grafted about 12 years ago within 80 rods of where I am writing. It has often fruited, but the fruit is invariably small, warty, sour and no good. The scions used were Bartlett and Flemish Beauty.

The varieties I have found to be the most profitable for the last 9 or 10 years are Kieffer, Bartlett, Louise, Lucrative and Clairgeau; any of which would ship to England if properly picked and packed.

R. L. HUGGARD.

*Whitby.*

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NOTE.—We are a little doubtful about the Idaho fulfilling expectations, from our experience at Maplehurst.—Ed.

## GRAFTING THE GRAPE.

**S**HOULD our experimental shipments prove that Wilder and Lindley, Agawam and Salem, for example, are varieties of grapes that may be exported with profit to Great Britain, and that such varieties as Worden, Concord, Niagara and Brighton are unsuitable for that market, it will be necessary to graft over some of our large vineyards to these varieties. With this in view we give a simple method of doing this work, given some time ago by a writer in *American Gardening*.

To prepare the stock, remove the earth from six to eight inches in depth



FIG. 1572

**GRAPE GRAFTING SAW (WAGNER'S PATENT)**  
around the vine. With a common handsaw cut it off at a convenient knob or knuckle, as shown at A in illustration, three to six inches below the surface of the ground. Then cut a number of kerfs diagonally across the knob with the grafting saw. Be sure that every kerf is entirely clean, and free from chips, sawdust, etc. Now select a cion to fit the kerf. If it has a crook or angle like that shown at B, all the better. Cut a thin piece from each side directly below the middle bud. The cut portion of the cion should fit snugly into the kerf. Remove the bark from back of cion, so that this part will appear as shown at C. Then press it into the kerf, driving it snugly in place by a light tap or two with the wooden handle of the knife. Neither tying nor waxing is required. We always like to put a number of cions in each stock; the more we put in, indeed, the better are our chances, although we care only for one to make good growth. The

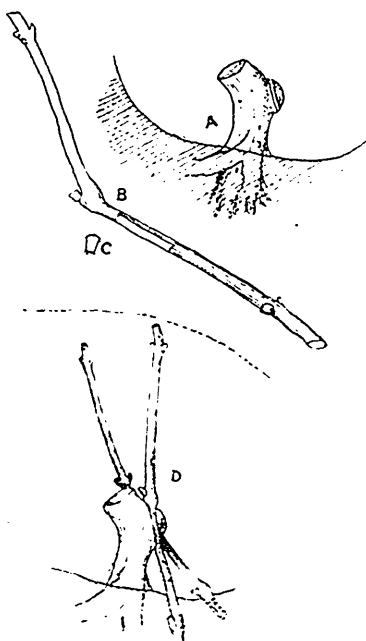
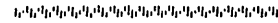


FIG. 1573

cions after insertion appear as shown at D.

The covering of stock and grafts should be done with great care. Pack the earth well about the lower ends of the cions, and between them and the stock. Cover to top of cions, making a broad hill. If a quantity of sawdust is put on top, it will help to keep the soil moist, loose and cool. Often the buds start and then die down again. Usually the secondary buds are the ones that make the growth; they start after the first buds have given out. After the cions have grown six or eight inches, remove all canes starting from the stock, but do not disturb any of the first year's growth of the cion. The second year, if too many cions grow, cut off what you do not want. This method has given excellent results all through the grape districts of Western New York.

## \* Flower Garden and Lawn \*



### HOME MAKING.

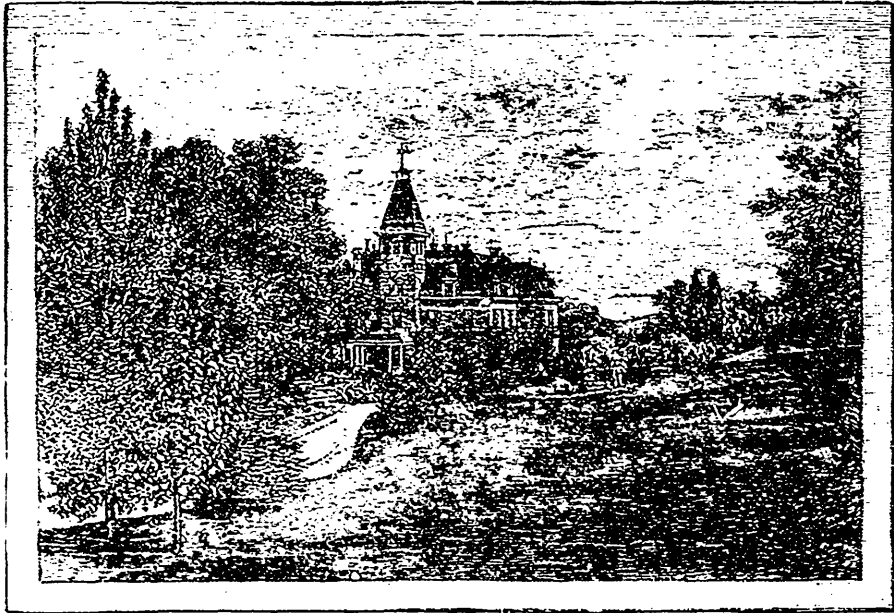


FIG. 1574.

THE time is come when we in Canada need to pay more attention to the surroundings of our homes, and seek to make them more in accord with the principles of good taste.

Many a person will build a fine house, faultless from an architectural point of view, and wholly disregard the setting of the same. Old ugly building may be in full view, beautiful landscape hidden, delapidated fences may surround it, and a yard unkept and untidy.

The surroundings are next in importance to the house itself. Better a plain

old fashioned house, with a fine lawn and artful planting of trees and shrubs, than a most ornate building with no taste in its surroundings. This part of home making is sadly neglected with us in Canada, not always from lack of means, but more often from lack of taste in landscape art. It is with the object of overcoming this lack in our rural homes, where the conditions are so favorable for making beautiful homes, that Prof. Bailey has written such bulletins as No. 161 on Annual Flowers, from which we make the following extracts.



FIG. No. 1575.—THE OPEN-CENTERED YARD.

*Flowers should be accessories*—The main planting of any place should be of trees and shrubs. The flowers are then used as decorations. They may be thrown in freely about the borders of the place, not in beds in the center of the lawn. They show off better when seen against a back-ground: this back-ground may be foliage, a building, a rock, or a fence.

Where to plant flowers is really more important than what to plant. In front of bushes, in the corner by the steps, against the foundation of the residence or outhouse, along a fence or a walk,—these are places for flowers. A single petunia plant against a background of foliage is worth a dozen similar plants in the centre of the lawn. Too many flowers make a place over-gaudy. Too much paint may spoil the effect of a good building. The decoration of a yard, as of a house, should be dainty.

The open centered yard may be a picture; the promiscuously planted yard may be a nursery, or a forest. A little color scattered in here and there puts the finish to the picture. A dash of color gives spirit and character to the brook or pond, to the ledge of rocks, to the old stump, or to the pile of rubbish.

*A flower garden.*—But the person may want a flower garden. Very well; that is a different matter. It is not primarily a question of decoration of the

yard, but of growing flowers for flowers' sake. It is not the furnishing of a house, but the collecting of interesting and beautiful furniture. The flower



FIG. No. 1576.—A DAINY EDGING OF FLOWERS.

garden, therefore, should be at one side of the residence or at the rear; for it is not allowable to spoil a good lawn even with flowers. The size of the garden and the things to be grown in it must be determined by the likes of the person and the amount of time and land at his disposal; but a good small garden is much more satisfactory than a poor large garden. Prepare the land thoroughly, fertilize it, resolve to take care of it, select the kind of plants you like; then go ahead.

*Plants for screens.*—Many annual plants make effective screens, and covers for unsightly places. Wild cucumber (or *echinocystis*), cobra, and sweet peas

## SHRUBS FOR HOME GROUNDS.

may be used to decorate the tennis screen or the chicken-yard fence. The alley fence, the smoke-house, the children's play-house, may be screened with morning glories, flowering beans, and other twiners and climbers. The windows may be screened and decorated by vines grown either in the ground or in window-boxes.

Efficient screens can be made of many strong-growing and large-leaved plants, of which castor beans, sunflowers, cannas, tobacco and other nicotianas, striped or Japanese corn, are the chief. But it is not the mission of this bulletin to report upon foliage plants.

*The kinds of annuals.*—In the selection of the kinds of annuals, one's personal preference must be the guide. Yet there are some groups which may be considered to be standard or general-purpose plants. They are easily grown almost anywhere and are sure to give satisfaction. The remaining plants are mostly such as have secondary value, or

are adapted to particular purposes or uses.

The groups which most strongly appeal to the writer as staple or general-purpose types are the following: Petunias, phloxes, pinks or dianthus, larkspurs or delphiniums, calliopsis or coreopsis, pot marigold or calendula, bachelor's button or *Centaurea*, *Cyanus*, clarkias, zinnias, marigolds or tagetes, collinsias, gilies, California poppies or eschscholtzias, verbenas, poppies, China asters, sweet peas, nemophilas, portulaccas, silenes, candytufts or iberis, alyssum, stocks or matthiolas, morning-glories, nasturtiums or tropaeolums.

Annual flowers possess a great advantage over perennials in the fact that they appeal strongly to the desire for experiment. The seeds are sown every year, and there is sufficient element of uncertainty in the results to make the effort interesting; and new combinations can be tried each year.

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## SHRUBS FOR HOME GROUNDS.

**P**LANT a few small shrubs near the house, so that the foundations of the house will be screened, and the house seem to rise out of its surroundings. The choice of shrubs depends somewhat on the soil and location. There are a great many shrubs that are very appropriate for planting on the grounds, but only a few will be named here.

*Common Lilac*—*Syringa Vulgaris*.—This is one of the commonest and most highly praised of garden shrubs, and one that has given rise, either by natural variation or by crossing with other species, to a great number of superior forms. The colors range from white to various forms of lilac.

*Syringa Persica*.—This is a distinct small growing species, with slender straight branches, and lilac or white flowers produced in small clusters. The form bearing white flowers is named *Syringa persica alba*; and there is one with neatly divided foliage, *Syringa persica lanciniata*.

*Philadelphus*.—This is a genus of shrubs which are remarkable for the abundance of white and usually sweet scented flowers they produce. They will thrive on almost any good soil, and require no special treatment. *Philadelphus coronarius*, *Philadelphus tomentosus*, *Philadelphus gordanismus* are all large growing bushes, and give a succession of bloom.

*Honeysuckles* or *Lonicera*, are all of the readiest culture, and succeed well even in poor soils. There are a large number of species, some vining, and some of a sturdy bushy habit. *Lonicera fragrantissima* blooms very early, and is very fragrant. It retains its leaves nearly all winter. *Lonicera tartarica* produces white and pink flowers in the spring, which are as attractive as the blooms.

*Berberis Vulgaris* also produces at-

tractive flowers in the spring and scarlet fruit in the fall.

*Spireas* are excellent shrubs, and make very good low screens, and also give a beautiful display of flowers. *Spirea Thunbergii*, *Spirea Van Houttei*, and *Spirea reversiana* give a succession of blooms.

*Deutzia gracilis* and *Deutzia crenata floraplana* are very compact shrubs, with close spikes of very attractive flowers.

Kansas Agricultural Coll. Bul.

## \* Floral Hints \*

### LEAVES CURLING.



FIG. 1577

THE leaves of the Tuberosous Begonias, Gloxinias, Fuchsias, Roses and many other plants will curl and become unsightly, when attacked by the red spider. This pest thrives in a dry, hot at-

mosphere, and can only be kept from becoming troublesome by evaporation, and the free use of the syringe. It spins its almost invisible web upon the under side of the leaves, and causes the leaves to curl and appear rusty. When not numerous, the pest may be eradicated by syringing with soap suds, but foliage badly affected should be removed and burned, and the plants encouraged to put out new leaves and branches.

### PEONIES FROM SEED

Seeds from Peonies sown in autumn in a cold frame will germinate—some next spring, and others the second spring after sowing. It is by means of seeds that the new varieties are propagated. Division, however, is generally the more successful and satisfactory method of propagation for the amateur, and the one to be recommended.

### A VASE FOR CUTTINGS.



FIG. 1578.

The propagation of cuttings may be a source of window adornment as

well as of interest and pleasure, by using a standing vase of silver sand, and arranging the cuttings tastefully, as represented in the little engraving. The sand should be kept constantly wet, and in partial shade, at least until the cuttings begin to callous. Avoid strong draughts of air, and keep the atmosphere moist by evaporating water in the room.

### CHINESE SACRED LILY.

When these are grown in water it is generally as well to cast them out after blooming. They are worthless except to produce small offsets, which must be grown for several years before they become of blooming size. When grown in pots of earth, however, continue watering till the tops begin to fade, then gradually dry off.

—*Park's Floral Guide.*

# TUBEROUS ROOTED BEGONIAS, AMARYLLIS AND FREESIAS FOR THE AMATEUR; THEIR TREATMENT AND GROWTH.—I.

A paper read before the Hamilton Horticultural Society by W. Hunt, florist.

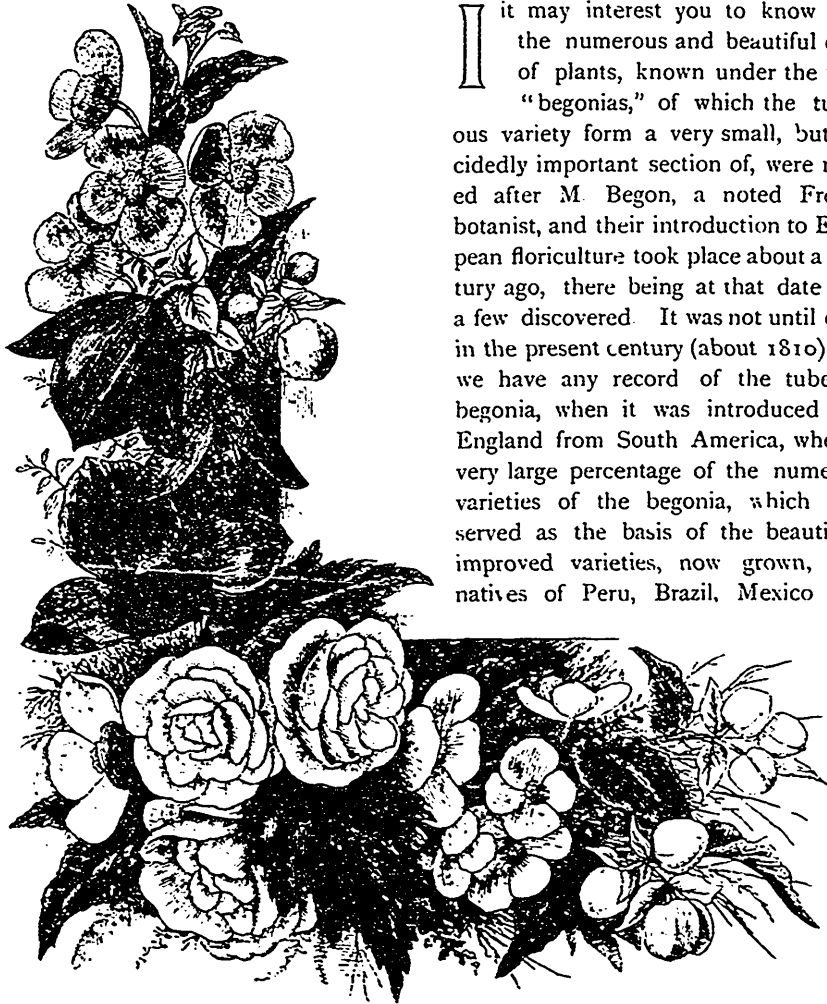


FIG. 1579.— SPRAY OF TUBEROUS BEGONIAS.

It may interest you to know that the numerous and beautiful class of plants, known under the term "begonias," of which the tuberous variety form a very small, but decidedly important section of, were named after M. Begon, a noted French botanist, and their introduction to European floriculture took place about a century ago, there being at that date only a few discovered. It was not until early in the present century (about 1810) that we have any record of the tuberous begonia, when it was introduced into England from South America, where a very large percentage of the numerous varieties of the begonia, which have served as the basis of the beautifully improved varieties, now grown, were natives of Peru, Brazil, Mexico and

Lima, while a few originated from Africa, the west Indies and other warm climates. For a long time the begonia was treated altogether as a stove or hothouse plant, and at the present day, fine specimens can be seen, propagated and grown entirely in the windows and gardens of many of our own citizens, who are lovers of this beautiful and interesting class of plants; but very little was done to materially improve the tuberous varieties of the begonia, until well into the present century, when it was taken in hand by British and continental florists, who by a careful system of hybridization of the few and at that date thought to be almost worthless varieties, together with some more recent importation of a better type, have produced the numerous and magnificent specimens to be seen at the present day in almost every florist's establishment in the world. Among the most successful improvers and growers being John Laing & Sons, Henry Cannell, and Ware & Co., of London, England, the first mentioned firm devoting immense houses, and in the summer acres of ground to the culture and development of this tuber, beside other American and Continental growers that devote special attention to the tuberous begonia, and both seed and tubers of good strains are now offered at very reasonable prices in most of our Canadian florists, and seedsmen's catalogues.

Apart from the beautiful and innumerable shades and colors of both the single and double varieties of the tuberous begonia, varying as they do from pure white to pink and deep crimson, from pale yellow to orange, and almost brown so deep is the shading of some of the bronze varieties, there is also another feature, that strongly recommends this plant to notice, which is the beautiful emerald green foliage of many

of the varieties, shaded and marked by hues of a much lighter color, oftentimes nearly white, making the plant still more attractive than it would be if, as is the case in many plants having fine flowers, the foliage is poor and meagre looking. There are two almost distinct classes of this plant, so far as habit and growth is concerned, viz: Erect and Drooping varieties, the latter being specially adapted for window boxes, hanging pots and baskets, placed in partially shaded positions, filling a much needed want in that respect.

The great aim of the improver and growers of the erect varieties, has been to secure beauty and density of foliage, with flowers having the necessary attributes of a perfect flower, viz., color, symmetry and substance, with the flower standing erect on stout stems, carried well above the foliage and in full view of the admirer. This has been so successfully carried out that one is compelled to think the limit of perfection has been attained, until, as in other classes or natural orders of plants, we are surprised by some new and oftentimes chance addition, so far as human skill and science are concerned, to the floral wonders of the world, showing, as they often do, some delightful feature really distinctive from anything hitherto produced.

I am afraid I shall have already tired you, before coming to what might be termed the practical part of these remarks, so I will endeavor, as briefly as possible, to give you a description of "How to secure and grow this delightful flower."

The easiest method would be to purchase tubers from some reliable firm early in the spring, say February or March, the bulbs will likely then be in a dormant, or resting state, and if in good, sound, firm condition, satisfactory



TUBEROUS-ROOTED BEGONIAS

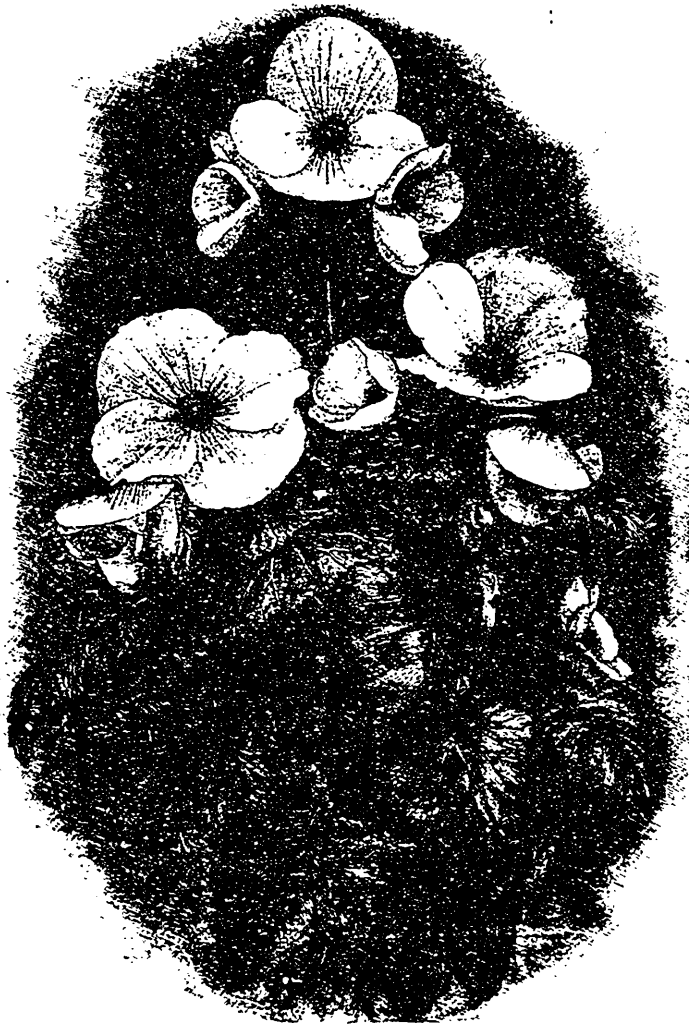


FIG. 1580.—SINGLE TUBEROUS-ROOTED BEGONIA. SUTTON'S QUEEN OF WHITES.  
(Engraved from a photograph)

results should be obtained the first season. If you can command a fairly even temperature of 60 or 70 degrees, you can commence to start the tubers at once by securing a flat wooden box (not a match box), two inches and a half deep, with holes bored through the bottom sufficiently large for drainage purposes, the box to be of a size so that the tubers can be placed on it, and allow about one inch of space between

each one. Put about half an inch of damp sand in the box first, so as to cover the bottom of the box evenly, then place the tubers in as above stated, and fill in around them with sufficient dry sand to cover them and water thoroughly. If the sand settles unevenly after watering even up with dry sand, water again so as to settle the sand firmly around the tubers and when this is done the tubers should be barely show-



FIG. 1581.—MR. HUNT.

ing through the sand. Place the box in a warm position near the glass where the sun at midday does not strike directly on it, and in about a week, or perhaps longer, usually when the tubers show a growth of about half an inch in height, a tuber or two may be carefully lifted from the sand; if small fibrous roots about an inch long are showing, the tuber can be potted, if no root growth is showing, return the tuber at once into the sand and water thoroughly. In potting the tubers use fairly well drained pots, of a size in proportion to the size of the tuber. A tuber one inch in diameter would require a six-inch pot, and so on, in proportion to its size, some very large tubers would require a nine or even ten-inch pot, as it is best to have the pot large enough for them to flower in, without repotting, as repotting tuberous begonias in an advanced stage of growth is a delicate and dangerous occupation, however carefully done, and is not really necessary.

Care must be taken in potting the tubers not to injure the young fibrous

roots by pressing the soil around them too closely; the best way is to fill the pot nearly full with well prepared, enriched, dry loamy potting soil, then take out sufficient of the soil in the centre to make a hole, large enough so that the tuber will be barely below the surrounding soil; sprinkle a handful of dry sand around the tuber to help start root action; fill around carefully with the dry soil taken out, so that the tuber barely shows above the top of the soil; water thoroughly; if the soil settles to leave the tuber bare, fill in with more dry soil, and water slightly again; place the box in a warm situation near the glass, partially shaded, water only when appearing dry, which will be seldom until established, then harden off gradually in a slightly lower temperature, as the tuberous begonia does not need a high temperature— $50^{\circ}$  to  $60^{\circ}$  being suitable—to produce stocky plants with good foliage.

Give the plants a good circulation of air, as the tuberous begonia when well established dislikes a close humid atmosphere; in fact I find it best not to syringe or sprinkle the plants overhead at all; even in the open air, overhead watering is not really desirable, as the peculiar rough, spiny surface of the foliage retains the moisture in a close atmosphere sufficient to spot and rot the leaves; this peculiarity applies to many other varieties of plants, among them being the gloxinia, gesneria and achimenes.

I might add though, that unless there is a long spell of continuous wet weather, the tuberous begonia when planted out in beds or borders, stands the rain very much better than geraniums, especially if sheltered a little from sweeping winds.

The tuberous begonia can be propagated from cuttings with fairly good

## TUBEROUS-ROOTED BEGONIAS.

success, in pots or pans, well drained, first, and filled about half full of loamy potting soil, with a small percentage of sand mixed with it; then fill the pot up nearly level to the top with propagating sand; the surplus growth from a large tuber can be utilized for cuttings, as four or five strong shoots is sufficient to leave on an ordinary sized tuber for flowering purposes, taking the weaker ones off for cuttings.

The method of taking the cuttings, to prove most successful, is to pull or break the growth away from the tuber, for the base of the cutting close to the tuber strikes easier, as it is often already partly callused when taken off; the cuttings can be taken when the growth is about four inches long, about the time the strong shoots show signs of flowering. Pinch the bloom buds, if any, carefully off the cutting; be very careful not to force the cutting into the sand, or the base of the cutting will be injured, thus preventing it from calusing and rooting; put the cutting in the sand so that its base is just above the top of the soil and in the sand, about half way down the pot. Water well once, never allowing the sand to get really dry; I find it is the best plan to allow rooted cuttings to grow on in the pot, or box, they have been propagated in until the foliage shows signs of decay when withhold water gradually until the foliage has decayed entirely, when the box or pot, with the foliage left undisturbed, can be stood away in a cool dry place; a temperature of 40° or 45° will be suitable; but if very vigorous they can be grown on in small pots to winter in, where they can in either case remain until the following spring, when the young tubers can be taken carefully out of the sand or soil and started into growth in the

same way as recommended for large ones.

Of course the size of the young tuber necessitates a slight difference in handling, and even more care than the large ones. I have been very successful in starting them in the spring in the same box they were propagated in, but this requires care, as the tuber cannot be seen so deep down in the pot.

The after culture is similar to that for large tubers, only that the pots used must be smaller, probably at first 2½ inch pots will be large enough; these young tubers can easily be re-potted as required into larger pots, until showing signs of flowering. The soil should have a larger percentage of sand in the first potting than that recommended for the large tubers, or instead of putting into larger pots, the young plants may be planted out about the second or third week in June, in beds or borders, in a partially shaded position and in loamy soil.

I omitted to mention that the cuttings when first started require a warm situation, and not exposed fully to the sun. One advantage in propagating from cuttings is the certainty of securing a plant similar to the original, which is not often the case when propagated from seed.

The cultivation of this begonia from seed is possibly the method that will most commend itself to an enthusiastic amateur, not only because one is kept on the tiptoe of expectancy and uncertainty, from the time of sowing the seed until the first flowers have fully expanded into full beauty, but because there are no difficulties that cannot be overcome by care and watchfulness in the first stages of growth, and that are necessary with all small seeds. To secure satisfactory results, use a seed pan,

(not a saucer) pot or small wooden box, carefully avoiding a match box. I prefer the latter to either of the others mentioned, as the seed does not dry out as quickly as in a seed pan or pot. The box should be about two inches deep with holes bored through the bottom sufficient for drainage; place broken pot or gravel in the box nearly all over, then put a thin layer of sphagnum or common moss over this, fill to within half an inch of the top with soil composed of one part dry sand, one part leaf mould and four parts of dry loamy potting soil mixed well together, and sifted through a fairly fine sieve before putting into the box; press down firmly and evenly; then cover this again with a quarter of an inch of finer sifted soil of equal parts of dry loamy soil, sand, and leaf mould mixed well together, and pressed firm and quite level; then water thoroughly so as to soak all the soil. If any uneven places are seen after watering sift in enough of the last named compost to level up, water again slightly and sow the seed at once, which should be of as good a strain as possible, that is, saved from good varieties. The seed being very minute, will have to be carefully and barely covered with fine dry leaf mould; I prefer to shake it over the seed with the fingers to sifting it over, as it can be done more evenly, in fact, my usual method with all very fine seeds is to use only the tip of the first finger and thumb; it is a slow method, but sure. A layer of sphagnum or common moss may be laid over the seed to prevent washing when watering, but care must be taken to remove it as soon as the plants appear; water carefully with tepid or lukewarm water at this stage, but only when appearing to be dry. Place the box in a warm, partially shaded place near the glass, where the hot mid-day sun does not strike directly on it, as

a few minutes hot sun will burn up the germinating seed or young plants and destroy them. It is the safest plan to put a pane of glass over the box or pot, and then shade with a sprinkle of sand just to cover the glass, or shade lightly in any other way. The glass can be kept close at first, but when the seeds start into growth, especially at this stage, will the tuberous begonia thrive in a close humid atmosphere.

When the plants are large enough to handle, say when the second leaf is formed, take a pointed label or stick which has been dipped in the water first, with this stick take the young seedlings from the box, and plant in a carefully prepared box or pot, prepared in the same way, but with much less drainage than for the seed box, and in a similar compost, excepting that the compost need not be sifted so finely. Be careful to water the seedlings before commencing to transplant them, so as to get all the soil possible to adhere to the roots; place the seedlings about an inch apart each way and when large enough, shift into suitable sized pots, two and a half or three-inch pots will be about the size. These should be filled with a compost, similar to that recommended for the seedlings, with about half the proportion of leaf mould and sand to the loamy potting soil, and possibly less drainage, as moving the drainage material when potting, if in large quantities may possibly injure the roots of the plant.

The next shift or re-potting will be into the flowering pots, when the plants have attained sufficient growth of roots and foliage; 5 or possibly 6 inch pots will be suitable, according to strength of plant to be potted; or they may be planted in the border at once, if all danger of frost is over—possibly the middle of June will be early enough. Plant in a rich loamy soil and in a partially shaded

## TUBEROUS-ROOTED BEGONIAS.

position, a north or east aspect being the best—anywhere so that the burning mid-day sun does not strike them, and, if possible, sheltered from sweeping winds. Plants in pots can be stood out of doors in the same position. Watch the plants carefully and put sticks to support them, as the weight of flowers and foliage will often cause them to topple over and break the stem off close to the tubers, thus ruining the plant, perhaps permanently.

In the fall, about October, after the tops have been slightly touched by frost and before the tubers are touched, take them from the borders, foliage and all if you can; place them in boxes deep enough, so that the tubers can be covered an inch deep with moist sand; place the boxes in a dry cool place, free from frost, a temperature ranging from 40° to 45° is best; if the tubers are in pots, remove pots—foliage and all—in the same way and withhold water gradually until the foliage drops away of itself from the tubers; then, if necessary, remove the foliage and withhold water altogether until the following spring, when they will require similar treatment as before recommended for large tubers.

I prefer keeping the tubers in the pots they grow in, rather than turning them out in the fall, and packing away in cocoanut fibre, or sand, as often recommended; as I have had better results by keeping them undisturbed in the pots until spring, having grown and kept the same tubers for ten years with good results. But I would not recommend keeping them, except for cuttings, quite so long as that, as young tubers require less care and give finer flowers than very old ones.

If these directions are fairly well followed out, you will be rewarded with a gorgeous display of flowers at a season

of the year—July to October—when good flowers are rather scarce; they may possibly require a little more careful handling than some plants, but they make ample returns for the care given. A few well grown specimens in pots stood out so that the burning sun does not strike them, or planted out in beds in the same position, to say nothing of a whole bed in full flower, add beauty and brightness to a spot that without them would look barren, perhaps unsightly.

I may say that I have been fairly successful with cuttings taken when the last flowers are dying off the plants in the fall, and treated as recommended before for cuttings; it is worth a trial, in case of good varieties anyway.

The only disappointing feature in propagating this begonia is that one can scarcely get flowering results the first season; but with the aid of a greenhouse or hot-bed, early sowing and good culture, it is possible to flower the tubers, oftentimes early the first season.

I will conclude this subject by giving in brief, a few leading points to be noticed in the culture of this beautiful and fascinating plant:

1st. Get a good strain of seed or tubers.

2nd. Sow and plant carefully.

3rd. Use good, rich, loamy soil, and pure leaf mould and sand.

4th. Water well at the roots when established, carefully at other times.

5th. Don't sprinkle or syringe the foliage at all.

6th. Give all the air possible.

7th. Select a cool, shaded position in summer.

8th. Dry tubers off gradually.

9th. Keep perfectly dry when once dormant.

10th. Use good loamy potting soil only, for flowering plants.



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

### ✂ Notes and Comments. ✂

**EXPORTING TENDER FRUITS.**—Prof. J. W. Robertson, of Ottawa, gave an address on the prospects of this trade, at St. Catharines. He said that too many had gone into fruit growing because they had failed on the farm, who knew nothing about the best methods. They planted varieties that would grow with least care, and least expense, without reference to the demands of the best markets; and thus we have too many varieties of tender fruits thrown upon our home markets.

For a successful export trade we need to confine ourselves to a few staple kinds, and those the very best.

Great Britain is a good market, importing annually about a million dollars' worth of pears; one and a quarter million of plums, and two and a quarter million dollars' worth of grapes. Success in capturing these markets de-

pended upon the men who undertake it; men who will deliver fruit (1) sound, (2) large, (3) of good appearance, and (4) of high flavor, characteristics that are important in the order named.

During the past season over 2000 packages of tender fruits have been sent over for experiment, and of these 400 were Bartlett pears. The packages held about a basket and a third each, and netted an average return of 72 cents each. Three hundred and twenty-four cases of peaches were forwarded, and most of these were a failure, because not of a variety that would carry.

Of early apples 254 cases were sent, and these realized 44 cents net at Grimsby. These cases were too small; they should contain a bushel.

Four hundred and forty-one cases

## NOTES AND COMMENTS.

of grapes were forwarded, but these were not well received. A few cases of Wilder grapes, however, of about 17 lbs of fruit each, netted at Grimsby about 80 cents each.

FRESH OR ROTTED MANURES.--Mr. F. T. Shutt, in Bulletin 31 of Central Experimental Farm, speaks of the relative merits of rotted and fresh manures as follows:—The advantages of rotted over fresh manure have already been studied; it has also been seen, on the other hand, that even under a good system of preservation, rotting must be accompanied by loss of fertilizing constituents. Weight for weight, rotted manure is more valuable than fresh manure, containing larger percentages of plant food and having these elements in a more available condition, but the losses in rotting may, and frequently do, out-balance the benefits. Undoubtedly the safest store-house for manure is the soil. Once in the soil, the only loss that can occur is through drainage away of the soluble nitrates, and this is usually very slight, indeed it is not to be compared with the loss of nitrogen in the fermenting manure heap. We, therefore, unhesitatingly say that the farmer who gets his manure, while still fresh, into the soil, returns to it for the future use of his crops much more plant nourishment than he who allows the manure to accumulate in piles that receive little or no care, and which, therefore, must waste by excessive fermentation or leaching, or both.

THE ANNUAL ADDRESS of Mr. J. W. Bigelow, President of Nova Scotia Horticultural Society, states that the apple yield of the past season amounted to about 300,000 brls., valued at \$800,000.

The address was printed in pamphlet form for distribution.

THE American Pomological Society holds its next meeting in Philadelphia, on the 7th and 8th of September, 1899, with the Penn. State Society.

THE GREAT AND WIDE SPREAD damage by the severe cold of last February is reported to have been most serious throughout a large part of the United States, and from the fruit report sent out by Mr. Latham, secretary of the Missouri Horticultural Society, it would appear that not only are the fruit buds of the peach, pear and cherry badly killed, but even the trees of these fruits in many instances.

THE SUGAR BEET.--Mr. F. W. Glen, of Brooklyn, sends us a leaf from the sugar planter, and draws attention to the good profits now before those who grow the sugar beet. Granulated sugar is now being manufactured at less than three cents a pound, and the farmers get from \$4 to \$4.50 per ton for their beets, an average crop being twelve tons to the acre. Mr. Glen thinks there is no better land on the continent for the production of the sugar beet than Western Ontario.

FREIGHT CLASSIFICATION OF FRUIT.—In view of the efforts now being made by our committee to secure better rates on the carriage of our fruit, it will be of interest to note that our American cousins are seeking after the same ends. The following is a note from the last meeting of the Western New York Horticultural Society.

### FREIGHT RATES ON PEARS AND QUINCES.

This Society, through its committee on railroad classification, has made efforts to have pears and quinces placed in the same

class with apples. At present the rates for pears and quinces are much higher than for apples, although it costs no more to the railroad to carry them. The difference in price does no longer exist, and cannot be put forward as a justification of the difference in rates. The outlook is also that in ten years the shipments of pears and quinces will exceed those of apples. The only thing accomplished is a slight change for the better in the classification of quinces. Another grievance against the railroad is presented by Mr. Perkins, who states that the railroads are now making the minimum weight for a full car 30,000 pounds, when it used to be 20,000 pounds, later raised to 24,000 pounds, and

the minimum for refrigerator cars 15,000 pounds, while they do not furnish cars large enough to load 15,000 pounds—all these are great hardship to shippers. The Committee on Railroad Classification was finally continued, and charged to make new efforts in securing concessions from the railroad.

COMMISSION MEN.

A resolution endorsing the Legislation now pending the State Legislature, and aiming to clip the wings of dishonest commission men by forcing them to report to the shipper the name and address of the city buyer and the prices paid, passed after a spirited debate, and with much enthusiasm.

✦ Our Affiliated Societies. ✧

KINCARDINE — Mr. Joseph Barker, the Secretary, sends us a copy of the circular being issued their members, which is as follows :—

PLANT AND BULB DISTRIBUTION FOR 1899.—Members will please make a selection and notify the Secretary, Jos Barker, or Walter M. Dack, on or before 15th March. Collection No. 6 will be ordered for all who omit to do this.

Members requiring more than one Collection will pay additional only the wholesale cost to the Society. All stock is guaranteed first-class and named Spring delivery in April ; Fall delivery early.

Collection 1. —(Fall delivery.) Azalea, white or colored, in pot ; 6 double tulips, 3 white and 3 yellow.

Collection 2. —2 clematis, 2 yrs. old —Jackmanii (purple) and Henryi (white).

Collection 3. —2 palms—Kentia Balmoreana (4 in. pot) and Asparagus Sprengeri (4 in. pot).

Collection 4. —3 roses, hardy hybrids, 2 yr. old—Crimson Globe (moss), General Jacqueminot (crimson) and Margaret Dickson (white).

Collection 5 —Tuberous begonia, 2 double and 3 single ; 2 Gloxinias (tigered and spotted).

Collection 6. —(Fall delivery.) 5 hyacinths —3 single and 2 double, assorted colors ; double tulips—6 white and 6 yellow.

Collection 7. —5 gladioli—Childsi ; 3 cannas —Burbank, Bouvier and Queen Charlotte ; 2 cyclamen (white and red).

Collection 8. —3 carnations —Bridesmaid white, Daybreak pink, Flora Hill white ; 3 chrysanthemums — Philadelphia white, M. Henderson yellow, Mrs. E. G. Hill pink ; 1

Gloxinia—spotted ; 1 Asparagus Sprengeri.

Collection 9. —3 currants—Black Naples, 2 year old ; 3 currants—White Grape, strong 1 year old ; 25 raspberry—Cuthbert.

NOTE BY EDITOR.—We would advise our Societies to make up one general list for all members, as they could then buy the stock wholesale in advance at a great reduction, and the distribution would be much less troublesome.

CHATHAM.—Our Society is in a very healthy condition, and gradually creeping up. We shall have over 100 members this year. We are giving each member 1 palm, 1 fern, 1 new geranium, 1 tea rose, 1 hydrangea, 1 fuchsia, 1 canna, 1 tuberous begonia, 1 tuberose, 1 oz. sweet peas, 1 pkt. asters, 1 pkt. pansies, 1 pkt. philox, 1 pkt. verbena. We are also likely to give bulbs in the fall, and talk of having a Chrysanthemum show

HAMILTON.—This Society has issued a printed Directors' report, dated 31st Dec., 1898, showing list of officers, of addresses giving during the year, of plants given away, of honorary awards given at exhibition and of finances This Society receives an annual grant of \$350.

HAMILTON.—At the monthly meeting, held March 6th, a paper was read before the Society by W. Hunt, florist, on "Tuberous Begonias, Amaryllis and Freesias for the Amateur, their Treatment and Growth."



## ✻ Question Drawer. ✻

### Fertilizers for Celery.

**1047.** SIR, — What kind of fertilizers should be used in connection with stable manure for celery, and in what quantities?

*Reply by Prof. Shutt, Central Experimental Farm, Ottawa.*

If it is intended to use a commercial brand of fertilizer, the writer would advise from 700 to 1000 per lbs. acre of one containing—

Nitrogen.....	5 per cent.
Available phosph. acid	6 "
Potash .....	8 "

(NOTE. — When purchasing a commercial fertilizer, the buyer has a right to demand a certificate of analysis.)

The farmer and market gardener will in many cases find it more economical to obtain the ingredients or constituents that are used in compounding artificial fertilizers, rather than the manufactured product. For those who desire to adopt this plan, we recommend the following:—

	Per acre.
Superphosphate (plain)...	300 lbs.
Muriate of potash.....	125 "
Nitrate of soda .....	200 "

If the soil is rich in well decomposed vegetable matter (*humus*), the amount of nitrate may be decreased to 100 lbs. per acre. The superphosphate and muriate should be thoroughly worked into the soil before setting out the celery plants; the nitrate should be given in two applications to the growing plants (some three weeks apart) as a top dressing.

It is not a good plan to apply heavy dressings of fresh manure directly to the plants, but the land should be previously well prepared by deep culture and digging under thoroughly rotted

manure. Further, it should be remembered that the best returns cannot be made unless the plants have a good supply of water, even though the soil is rich in plant food.

### Wood Ashes for Onions and Potatoes.

**1048.** SIR, — What quantity of wood ashes should be put on an acre of onions, and also one of potatoes?

*Reply by Prof. F. T. Shutt.*

To be able to answer these questions, save in a more or less indefinite way, one should know something of the condition of the soil, and its history as regards previous cropping and manuring. On soil in a fair state of fertility, we should advise from 1500 to 2500 lbs. of wood ashes per acre for onions, and from 1200 to 2000 lbs. for potatoes.

(NOTE.—It is generally held that for both of the above crops it is better to apply the stable manure the year previous.)

FRANK T. SHUTT,  
*Chemist, Dom. Exp'l Farms.*

The following questions were put to one of our lecturers at Horticultural Societies, and at his request we are having them answered in this Journal by various authorities, as follows:—

*Questions 1049 to 1055 are answered by  
W. W. Gammage, London.*

**1049.** SIR, — What is the cause of the leaves falling off the carnation plants? What is a cure?

Without seeing your plants, I would say it is caused by the hot dry atmosphere of your rooms; while the same would follow from over-watering, or

by not giving sufficient water; the carnation as a rule is not a satisfactory house plant.

**1050.** SIR.—Should there be a dressing of manure put on lilies in the garden over winter?

I consider it would be beneficial with most varieties.

**1051.** SIR.—When is the best time to separate bulbs from white lilies?

August.

**1052.** SIR.—Have you any experience with house plants getting yellow leaves, but otherwise healthy? Plenty of light and moisture, pots well drained, the leaves turn yellow around the edge first.

The above results can be attributed to one of the following causes: escaping gas from furnace, coal stove, or illuminating or fuel supply pipes: an overdose of liquid manure; a sudden fall in temperature.

**1053.** SIR.—Please explain the effects of gas on house blooming plants?

The injurious effect on plants kept in a room where gas is used, is caused by the sulphur which is contained in the gas, the fumes of which will always cause single flowers to drop their petals.

#### Top-Grafting on Talman Sweet.

**1054.** SIR.—Is it a fact that top-grafting the King apple on the Talman, makes it more prolific?

J. M.

Several of our leading fruit growers have proved by their own experience that the King apple is much more productive when grafted on Talman Sweet than upon other stock.

#### Question.

**1055.** SIR.—Some writers in the HORTICULTURIST advise top-grafting some varie-

ties of the plum. Would it be safe to do the grafting the same spring the tree is transplanted, or would it be better to defer the grafting a year?

It would not be wise to attempt top-grafting a tree the same year it has been transplanted, as the removal checks the growth to a degree that failure would be almost certain.

*The following list of questions, Nos. 1056—1063 are answered by Webster Bros., Florists, Hamilton.*

#### Rose, Queen of Prairie.

**1056.** SIR.—What is the best method of propagating the Queen of Prairie Rose?

The Prairie Roses may be propagated from hard wood cuttings, about 12 in. long, inserted in the open ground all but a few eyes. October is usually preferred for putting in these cuttings. For propagation in a sma way, layering is usually employed, midsummer and a few weeks afterwards is the best time to choose; loosen the soil well around the plants, take a convenient branch, bend it down into this soft earth and cover it over a inch or so deep, letting the end of the branch protrude four or five inches at least. Sometimes a cut is made in the branch before covering it; with the Prairie Roses however, it is unnecessary.

#### Gloxinias.

**1057.** SIR.—How are Gloxinias started and cared for?

Gloxinias should be started in early spring in 60 to 80 degrees of heat in light soil; be careful not to give too much water at this stage. After flowering all summer, give the bulbs a rest by gradually withholding the water, after they have dried off they may be kept in a warm cellar or under the stage of a greenhouse.

### Pruning Shrubs.

**1058.** SIR.—When and how should shrubs be pruned ?

Oleanders are best trimmed in the summer after flowering, this gives them a chance to make new growth. These growths made in summer will flower the ensuing summer if ripened well. Trim them only when the size or shape of the plant demands it. Roses, the hardy varieties, should be pruned in the spring, just as growth is beginning. The severity of the pruning must be varied according to the habit of the rose ; strong wooded varieties such as M. Dickson must be left quite long or no bloom will be the result, while weak growers, such as Louis Van Houtte, should be shortened down to a few eyes.

### Tuberous Begonias.

**1059.** SIR.—What is the best method of treating tuberous Begonias.

Start the bulbs into growth in March or April ; it is best to wait till they show signs of starting of their own accord. A little bottom heat will start them more quickly, a temperature of 60 to 65 degrees is best for the tuberous begonia. If grown in a house or greenhouse they should be protected from the direct rays of the sun. In many parks in the United States these plants are used for bedding in the open air with great satisfaction, we have never heard of them being very successful in Canada. The tubers are stored over winter in boxes of light soil or sawdust and kept in a temperature not too high but secure from frost. An eminently successful American grower of these plants claims that the tubers may be wintered over safely anywhere that potatoes will keep well.

### Calla Lily.

**1060.** SIR.—How should the Calla Lily be treated in summer ?

Calla Ethiopica will flower all the year if frequently repotted and watered. It is usual to rest it during the summer months, as a bulb so treated will produce fewer leaves and a greater number of flowers. The variety Little Gem demands a decided rest, in fact this seems to be the secret of getting it to bloom freely.

### Cineraria.

**1061.** SIR.—What treatment would you give the Cineraria after flowering ?

A berth on the rubbish heap is always recommended for the Cineraria after it has flowered. Young plants must be raised from seed each year.

### Gladioli.

**1062.** SIR.—Do Gladioli degenerate after being grown a year or two ?

Gladioli are generally supposed to produce poorer flowers when the same bulb has flowered several years in succession. Young bulblets taken from the base of the parent bulbs and grown on is the best way to put new vigor into a collection that is degenerating.

### Heliotrope.

**1063.** SIR.—What is wrong when leaves of heliotrope turn brown ?

The leaves turning brown is very likely what is commonly known as "rust," this seldom makes its appearance when the roots have sufficient pot room. The only cure for it is to induce a strong new growth.

### Growing Chestnuts.

**1064.** SIR.—How are chestnuts to be managed to have them grow ?

A SUBSCRIBER.

We presume our correspondent refers to chestnut seed. These should be gathered as soon as ripe in the autumn,

and packed between layers of moist sharp sand in boxes. The boxes are then buried in the ground on some knoll or dry place, until planting time in spring, when they are sown in drills in the open ground, covering them about two inches deep with soil. When these stocks have reached a diameter of about half an inch, three or four feet from the ground, they may be grafted early in the spring.

*Questions 1065 to 1071 are answered by Mr. A. Alexander President of the Hamilton Horticultural Society.*

### Tuberous Begonia.

**1065.** SIR,—I have a tuberous begonia which has been in leaf all winter, it is rotting at the root. What is the cause?

The tuberous begonia as soon as finished blooming should have been allowed to dry off and be kept in sand until about March, when it should again be started into growth. Throw it away and start again

### Nitrate of Soda.

**1066** SIR,—How would you apply nitrate of soda to house plants?

Nitrate of soda is very soluble in water, and the best way to apply it is to put about a tablespoonful in a pail of water, or about a large teaspoonful in a gallon, and water with this once a week. Only plants in a growing state should have this treatment.

### Calla Lily.

**1067.** SIR,—I have a calla lily, and the pot is quite full of shoots. Should these be removed from the parent bulb?

The shoots spoken of are the leaves of young callas which are produced around the parent bulb or tuber and should be allowed to grow where they are until after the season of rest which

all callas should have during the summer. Before starting into growth next fall turn the whole out of the pot and take away these young callas and repot the large bulb. The small ones if desired may be potted separately thus multiplying the number of lilies.

### Charcoal as Drainage.

**1068.** SIR,—Is charcoal, alone, good drainage for flower pots?

Yes, if broken into small pieces about the size of peas. About  $\frac{3}{4}$  of an inch of this material placed over the crock covering the hole in the bottom of the pot with a little rough leaf mould or moss over it would make an ideal drainage for pot plants.

### Cannas.

**1069.** SIR,—How should dormant canna roots be started?—Most of us failed with ours last year.

Canna roots suffer from two main evils when being kept over the winter in a dormant condition. First by being allowed to get too dry, and second by being exposed to too low a temperature. The least frost destroys their vitality. In taking them out of the ground in the fall, as much soil as will adhere should be taken with them and set on the floor of a cellar or in boxes about six inches deep set close together, any place where the temperature never gets below 40 or 35 degrees will do. They will only require looking to once or twice during the winter just to see that the rhizomes are plump and fresh. All they require to start every bud into growth is increased heat and moisture. Small roots of one or two buds or bulbs, if fresh, should be potted in the usual way and placed in a warm place. As soon as growth begins they take plenty of water.

**Sweet Peas.**

**1970.** Should Sweet Peas be planted from north to south, or from east to west; and should it be sunny or shady. What sort of soil?

Rows of Sweet Peas should run from north to south, as they then get the sunlight on both sides of the row. A sunny exposure is best. Any good loamy soil well enriched with *thoroughly decayed* stable manure will do.

*Questions 1071, 1072 answered by Mr. W. T. Macoun, Horticulturist, Central Experimental Farm Ottawa.*

**Fertilization.**

**1071.** SIR,—Does not the honey bee fertilize the second crop of clover?

2. Does nature abhor close fertilization?
3. Have you observed that a certain insect visits only flowers of a particular color?
4. Do different species of flowers ever fertilize each other?
5. Does a plant prefer the pollen of a flower of another species to that of one of its own kind?
6. Are experiments still being carried on in Manitoba to obtain by artificial cross fertilization of Fife wheat with Ladoga or by selection from the Fife alone to secure a variety of Fife that will ripen earlier and before frost?

1. The bumble bee plays a more important part in fertilizing the second crop of red clover than the honey bee; which in most races is unable to reach the nectar in the blossom and consequently is rarely seen in the red clover.

2. It would seem that nature does "abhor close fertilization," as most flowers are so constructed that they can receive pollen from others either by the agency of the wind or insects. Barley, wheat, and oats are among the few which are close fertilized. It has been proven that the seed from flowers, which are made to self-fertilize by preventing the admission of other pollen, do not produce as strong plants as those which are left to cross fertilize naturally.

3. Insects do not appear to have any particular color that they prefer as can be easily observed by watching a honey bee in a garden.

4. Different species are sometimes hybridized in nature, but this is not of frequent occurrence. There are hybrid willows and oaks produced in this way. The Rogers' hybrid grapes are an example of artificial hybridization.

5. A plant does not prefer the pollen of a flower of another species to that of its own; this would mean hybridization which seldom occurs in nature. If the pistil of a flower, however, receives the pollen of another flower of the same species as itself better results will follow than if it were self-fertilized.

6. The cross-fertilization of wheats was begun at the Central Experimental Farm, Ottawa, in 1888. Since that time many varieties have been originated. None, however, have been produced during the last two years. One variety, the Preston, a cross between Ladoga and Red Fife, has during the past four years given a greater average yield per acre than any other kind tested at the several Dominion Experimental Farms; selection of the cross-bred grains is being carried on yearly.

**Apple Canker.**

**1072.** SIR,—I have a lot of young apple trees, planted two and three years, that are affected with a black fungus, the Ontario particularly so.

They have made a very good growth, but the trunks and even the new wood is nearly black in some cases with the fungus.

Would you advise washing trees now with the Saunders wash, or with a strong lye wash? Will either of these washes injure the buds on young wood?

I have idle time at present and would like to prune now, but have been advised not to prune young trees until later in winter. Do you think that trees would be injured if pruned now with a pocket knife? An early reply will oblige.

C. E. SMITH.

Your trees are probably affected with the Apple Canker, a disease long known in the old orchards of Great Britain, but until recently not prevalent in America. Your best remedy is to clean the trees thoroughly of dead and decaying bark, and spray with Bordeaux mixture. We refer our correspondent to Mr. Paddock's excellent article on the Apple Canker.

## \* Open Letters. \*

### Brugmansia Arborea, or Angle Trumpet.

SIR,—Of all the novelties in shrubbery, I think there is nothing to compare with the above-named one. I have one four years old which is now about six feet high, planted in a tub about fifteen inches deep, being a part of an old barrel, which I filled with the very best mould and some rotten stable manure, as this shrub is a very hearty feeder, and also needs plenty of water during summer or growing season.

It is a rampant grower, sending forth very strong stout branches; upon the new wood the flowers are produced, which are a wonder and surprise to the amateur, and no one will walk past this beautiful little shrub, loaded with its gigantic flowers, without making some peculiar remarks about it.

I have heard one observer exclaim, when looking at my shrub when in full bloom, that its beauty was really "supernatural." Last year my shrub bore nearly a hundred flowers, which are creamy white, about a foot long, and about five or six inches wide. The fragrance is delicately sweet, and will perfume a large back door yard for two or three weeks, if weather is favorable and not too hot.

My shrub had last year at one time opened sixty-five of those large flowers at once. This shrub is not hardy enough to allow the frost to strike it, but it is no trouble to winter it over in any room not below freezing point. I never had good luck by trying to winter it in the cellar; the wood is too soft and fleshy; it most surely will rot like a pumpkin-vine.

I have often wondered why the above-named beautiful flowering shrub is so little known. They are no more trouble to grow than the Oleander, Fuchsia and Hydrangea. I always cut back every spring, about two-thirds of last year's growth; this will insure good, stout, thrifty shoots for a good crop of flowers, and also keep the shrub from growing tall and awkward to handle.

The flowering season, if not allowed to grow during winter season, is last of August and September. They will also flower during winter if kept in a warm room and clear of insects, which are so destructive to house plants. But if now and again a sprinkling of persicatic, manufactured by Pickhardt Renfrew, Stouffville, Ont., is applied, it will soon free the tree of the pest.

D. B. HOOVER, *Almira, Ont.*

March 1st, 1899.

## \* Our Book Table. \*

### BOOKS.

The Supervising Committee of the Experiment Farm at Southern Pines, N. C., have just issued a very valuable and important work on "Plant Food." The book is well printed and handsomely illustrated with many fine pictures. It would pay farmers to read this book, which, we understand, can be obtained free by sending to the Director, Experiment Farm, Southern Pines, N. C.

**PLANT FOOD.**—Its nature, composition, most practical use. Prepared to aid Practical Farms, Experimental Farms, Southern Pines. W. C.

**LANDSCAPE GARDENING** as applied to Home Decoration, by S. T. Maynard, Professor of Botany Mass. Agricultural Coll. Published by J. Wiley & Sons, New York City. Price, \$1.50.

A beautiful and valuable work, with numerous illustrations. It treats of the principles of landscape art as applied to location and ornamentation, grading, lawn making, arrangement and grouping, pruning and care of shrubs, walks and drives, renovating old homes, parks and school-yards, climbers, herbaceous plants, etc. A book of 338 pages.

**SPRAYING FOR PROFIT**, a pamphlet of 72 pages, by H. E. Weed. Published by Horticultural Pub. Co., Griffin, Ga. Price, 20 cts.

### CATALOGUES.

**SPRAMOTOR.**—5th Annual Catalogue and Treatise on diseases affecting fruit trees,

vegetables, etc., and their remedies. The enterprise of this firm is well shown by their excellent and useful catalogue. Especial attention is called to the mechanical emulsion attachment, which may be added to any of these spray pumps and by which kerosene or crude petroleum may be combined with water in any proportion required.

**WEBSTER BROS., HAMILTON, Canada, 1899.** Canadian plants for Canadian people. 74 pages.

**E. D. SMITH, Helderleigh Fruit Farms and Nurseries, Winona, Ontario.** Descriptive and illustrated catalogue, 132 pages.

**BARN YARD MANURE, Bulletin 31, Central Exper. Farm, by F. T. Shutt, Chemist.**

**RESULTS** obtained in 1898 from trial plots of grain, etc., by Dr. Saunders, Bulletin 32, Central Exper. Farm, Ottawa.

**FREEMAN'S FERTILIZERS.**—The W. A. Freeman Co., Hamilton, Ont. Contains 48 pages descriptive of the various fertilizers, with testimonials.

**HERSEE'S RELIABLE SEEDS.**—Edwin Hersee, Seed Merchant and Nurseryman, Woodstock, Ont.

**SPRAY PUMPS AND NOZZLES.**—The Deming Company, Salem, Ohio.

**BRUCE'S CATALOGUE OF SEEDS, 1899.**—J. A. Bruce, Hamilton, Ont.

**A. G. HULL & SON, St. Catharines, Ont.** 19th Annual Catalogue Fruit and Ornamental Trees, Shrubs, Roses and Plants.

## SOIL FOR PEARS.

CLAY soil is considered best for pear culture, and still it should not be too tenacious and sticky. A pear orchard will not thrive so well on any soil that has not a clay sub-soil. Next to a friable clay loam, a gravel loam is most desirable. A light sandy soil is the least desirable of any, and yet pears can be grown on sandy soil.

Standard pears can be planted twenty to thirty feet apart according to circumstances and habits of growth. If planted thirty feet apart, dwarf pears can be planted between the rows each way. I prefer a standard pear for general orchard culture, for the reason that they require less fertility and cultivation, and for the further reason that they are longer lived and make larger and more permanent trees.

When the question came up for a vote, however, before the Western New York Horticultural Society, we found that the dwarf pear was the favorite for orchard planting or for garden. Dwarf pears have the advantage of coming into earlier bearing. The dwarf pear is not short lived. It requires more pruning and more attention than the standard pear. Many varieties do better on the dwarf pear than on the standard.

I should not locate a pear orchard or any other orchard on a low piece of ground. I should locate it on a hill-side. The pear is easily transplanted. I transplant several thousand every spring, and they do not lose on an average, one out of one hundred trees. Pear trees come into bearing earlier than the apple.

## TEN CHOICE PEARS.

I WILL now give what I consider the best ten varieties of pears for export or home market or any purpose, for profit to the general planter, and I will start with Bartlett, Beurre Bosc, Beurre d'Anjou, Beurre Clairgeau, Doyenne de Comice, Duchess d'Angouleme, Sheldon, Lawrence, Doyenne Boussock, Ritson, and you may add the Keiffer, for the short time it will be in demand, and when there is no more call for it, you then could not have a better tree for top grafting, to any variety you wish, and in fact, if I was to plant a pear orchard, I would plant every tree Keiffer, and then top graft to what varieties I wanted, as there could not be a better parent stock to work from. Another good parent stock would be the old Edmonds or Church pear. I think if our Flemish Beauty

was worked on to either of these, we might get it back to its original cleanliness and good quality, and also a number of other varieties, such as the Brockworth Park, White Doyenne, etc. I think that the want of cleanliness and their tenderness is due to weak parent stock, and I do believe that if all varieties of trees were treated in the same way, that we would have less diseases, such as blight, yellows, black knot, scab, etc. I will now ask, since I have taken up the pear, who will start the peach, plum, apple and cherry, and give their opinion, as to what they think the best six to ten varieties for the general fruit grower to grow.

I will also add what I would consider the best twenty varieties for exhibitions: Bartlett, Beurre Bosc, Beurre d'Anjou, Beurre Clairgeau, Beurre Hardy, Beurre

Gris de Hiver, Beurre Superfin, Doyenne de Comice, Doyenne Boussock, Ritson, Glout Morceau Lawrence, Goodale, Sheldon, Duchess d'Angouleme, Mount Vernon, Seckel,

Clapps' Favorite, President Drouard and the Keiffer on the recommendation of the British market.

RODERICK CAMERON.

Niagara Falls.

## GROWING GOOD PEACHES.

**A**MERICAN GARDEN reports Mr. Hall's address before the Massachusetts Horticultural Society as follows :—

"The difference of preparation of land for peach orchards, is the difference in business methods, the one being superior which is most thorough, practical and intelligent. The land cannot be plowed too much, and harrowing and cross-harrowing are less harmful than sensible.

"The trees should be planted early in the spring; fall planting is apt to be disastrous because the tender roots will not bear transplanting then from nurseries to open soil. While 16 feet each way is accepted now as a proper distance, the theory of planting trees 13 feet apart is justified by the fact that peach trees are mighty uncertain and may not fill out. Medium-sized trees, 3 or 4 feet high, are best to plant, and they should be trees one year old. In fact, no nursery ever delivered a two-year-old tree, though it is claimed that it does.

"It is not essential that a tree have many fibrous roots; most of them are dead anyway at planting, and a modest number will serve, provided they are cut smoothly when out in the ground. Fine earth should pack the roots, and the only thing having any business in the orchard after that is a horse, a harrow, and a plow. The practice of mixing crops, of planting alternate rows of corn and expecting to get a peach orchard of any vigor is extreme folly. At the first year's growth cut off all but

a few top sprouts, and the next year cut off the interfering side spurs. Twice can these be removed, yet the tree will yield well.

"Do the pruning and shaping in the first two years. In pruning for fruit the question is, "How are your buds?" If they are nearly all killed, wait until spring, and when the buds are swelled, prune. Trim for peaches then. Don't trim for form; you may have one of the worst looking orchards in the country, but you will get more peaches.

"As to winter bud killing, 75 per cent. of your peach buds may blight, but if the remaining 25 per cent. are evenly distributed among the trees you need not worry. It is a popular fallacy that when it is announced that 50 per cent. of the buds have been killed the peach crop for the following season is doomed. It is time enough to thin your fruit after it has set in the spring. Large, fine fruit can be raised only when there is a moderate number of peaches on each tree.

"It takes from 10 to 12 days to gather peaches which have come to maturity. Don't use a machine in sorting them. Hire bright, intelligent women; they are better than men as a rule. And remember always that there is more profit in selling 50 or 60 peaches to the half-bushel at \$2 than 100 to the half-bushel for 50 cents. There may be less nutriment and more water in the large fruits, but the people like them and will have them. As to the profit in peach growing, it depends on the individual.