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Development of Spraying Operations

IN no department of orchard operations has the advancement of recent years been so noticeable as in spraying. Constant progress from the small knapsack to the crude barrel pump worked by hand, and from the hand pump attached to the barrel to the various power devices of present-day use has been evident in all fruit sections. Although ridiculed by many when first taken up, spraying has become recognized by the more progressive growers as one of the elements which enter into successful orcharding. Its advantages have become so clear to the fruit men that now it holds a place along with cultivation, fertilizing, pruning and other cardinal operations on the up-to-date fruit farm.

Those who ridicule the practice of spraying are becoming fewer year by year. Now and then an unprogressive grower chances to have a good crop of fruit, although he never sprayed. This is held up by himself and a few neighbors who do nothing until forced, as a straight proof that spraying is not required. Or, perhaps, a thrifty fruit grower decides that he will spray his trees. Careful and thorough spraying at frequent intervals during the summer season is done, but when the crop is harvested he has no greater yield than a neighbor who went to no bother and no expense in carrying on spraying operations. Again the unprogressive fellow has a chance and spraying is pronounced "no good."

To the orchardist who reads and studies, however, such isolated cases are not taken into serious consideration. Because the grower's dwelling and fruit sheds are not burned each year, is that any reason why he should not insure his buildings? The same argument holds good in regard to spraying. Importations of nursery stock and fruits have resulted in the introduction into Canadian fruit sections of so many injurious insect and fungous pests, that it has come to be realized that scientific and thorough spraying each year is essential to success. It may be that weather conditions are unfavorable to the development of these enemies to fruit production for a season, and the man who sprays none may reap as great a harvest as the one who attends

to his trees regularly; but for certain returns year after year the man who sprays is the man who wins. Did any of those cranks who maintain that spraying is a useless innovation in fruit culture, ever consider that the man in his section who sprays most scientifically and most persistently, provided other essential orchard operations are given due attention, is in the front rank of the growers? He is making money and increasing his fruit plantations almost every year. Competition on the various fruit markets is becoming so keen that it does not pay to ship inferior fruit. Experience has shown that number one fruit cannot be guaranteed if the trees are not sprayed. Some may say spraying is no guarantee. However, the experiences of leading growers has proved that if it is done intelligently, the one who practises it never regrets the time and labor given to the work.

To answer the question, Does spraying pay? the experiences of some leading fruit growers may be cited. Mr. D. Johnson, president of the Forest Fruit Growers' Association, in a letter to THE CANADIAN HORTICULTURIST, said: "After almost 12 years' experience, I have great confidence in spraying. Previously my apple orchard was producing only 300 to 400 barrels a year. Although the orchard was cultivated and fertilized just as well then as it is now, the fruit would not set properly, and that which did set and come to maturity was often so defective with scab and worm as to be of little value. I determined to try spraying with Bordeaux mixture and Paris green and to give it a thorough test. So successful was the test, the orchard in a few years was producing 1,500 to 1,500 barrels a year, the greater part of which were XXX in quality. Some varieties, such as Spitzenburg and Snows, that at one time seemed beyond redemption, are producing excellent fruit perfectly free from scab or worm.

"My experience in spraying plums, pears, peaches and grapes has been equally successful, and has produced most astonishing results. Some years ago I lost the entire plum crop, with the exception of about 35 bushels, from the Black Rot. The next season I

sprayed with Bordeaux mixture, and although the Black Rot was as prevalent, I harvested over 1,000 bushels. The Black Rot fungus is always with us, but I have little difficulty in keeping it in check with the Bordeaux mixture. I use the strongest barrel pump I can get, with an elevated platform for the spray operator to stand on. I usually spend 12 to 14 weeks each season spraying."

Another illustration of the value of power spraying was evidenced during the past season in the orchard of Mr. A. C. Cummins, of Burlington. Regarding this orchard, Mr. A. B. Cutting, travelling representative of THE HORTICULTURIST, writes: "Perhaps the finest lot of Spy apples grown in this locality during the past season came from Mr. Cummins' orchard. Of the total crop the buyers say that 75 to 80 per cent. were XXX stock, and less than five per cent. culls. This is an exceptionally good record, and is due, as Mr. Cummins says, to persistent and thorough spraying. Three years ago in this orchard, when spraying was not practised, only 10 barrels of XXX apples were found in a total crop of 1,500 barrels.

"A very marked comparison of the merits of spraying vs. non-spraying was seen in this same orchard last season in the case of a single Spy tree standing in a raspberry patch where it could not be reached with the sprayer. Surrounding the raspberry patch are the trees that gave the good results mentioned. The lone, untreated specimen in the patch produced an excellent crop of Codling Moths and scabs, with little or nothing else. The single unsprayed tree was diseased and attacked by insects; the sprayed orchard, only 50 feet away, was clean."

The excellent results obtained by growers in various states of the Union were referred to by Mr. A. N. Brown, of Wyoming, Delaware, in an address at the annual convention of the Ontario Fruit Growers' Association held in Toronto last November. Mr. Brown pointed out the absolute necessity of having a first-class power outfit and only the best nozzles, so that a perfect mist would be given. He said that experience had shown the growers that

intelligent and perfect spraying gives perfect fruit. He cited a case where a grape grower sprayed four times with Bordeaux mixture and had with some varieties 99 per cent. perfect fruit, despite adverse conditions. Other varieties averaged 94 to 92 per cent perfect. Several owners of large vineyards in

the same section did not spray, and had not a single pound fit for market.

Direct results of this nature have been obtained by the leading growers in all sections. Scores of other cases could be mentioned by THE HORTICULTURIST. Those growers who have undertaken spraying most extensively,

provided intelligence was combined with the work, realize the benefits and the returns in dollars and cents. Insect pests and fungous diseases must be combatted. It is then the part of the grower to study the method of procedure which would best suit his conditions.

Fruit Enemies and Their Treatment

MANY fruit growers with good intentions are disgusted with spraying each year because they do not know what spraying mixture to use, nor when to apply it. Bordeaux mixture is recognized as the standard for general orchard use, but there are pests on which this mixture has no effect. Every grower has not the time nor the opportunity to study insect life, but very little investigation regarding these enemies is necessary to distinguish between the forms that are destroyed by certain classes of spraying mixtures.

A study of insect life has revealed the fact that as far as injury to plant growth from insects is concerned there are two main classes—those that eat the vegetable tissue and those which suck the juices without destroying the tissue proper. The former class, to which belong the Potato Beetle, the larvæ of the Codling Moth, and numerous other forms, can readily be destroyed by Paris green or some such poison. To the class of sucking insects belong the scale insects, aphids or plant lice, and various other forms. Since these do not eat the tissue they must be destroyed by some means other than poisoning. Some caustic preparation that injures the body must be applied. For years kerosene emulsion was the standard but many commercial mixtures, including Scalecide, Kiloscale and such preparations are recommended by prominent fruit growers as being effective and cheap. Powder preparations, too, such as hellebore, are effective because they get into the breathing pores and so destroy the pest. The Lime Sulphur wash has become popular in many sections and is by many claimed to be the standard treatment for scale insects.

Then there are the fungous and the bacterial diseases. The former include such well-known troubles as Apple Scab, Black Knot, Mildew, Black Rot, and kindred diseases. These are readily destroyed by such fungicidal mixtures as Bordeaux mixture or ammonia copper carbonate, if treated thoroughly and at the proper time. The bacterial diseases comprise Peach Yellows, Pear Blight, several rots commonly found in vegetables, and many other troubles. They are the most difficult enemies to combat. Prevention is better than cure.

Care should be taken to discard varieties that are most susceptible to the diseases and every trace should be removed and burned as soon as it is noticed. If the soil becomes infested with the germs that produce a certain trouble, it takes years to remove them.

A careful consideration of these classes of pests shows that the Paris green and Bordeaux mixture merits the place it holds as a standard material for spraying. The Paris green plays havoc with insects which eat the tissue, while the Bordeaux mixture destroys fungous forms. The mixture used, however, must be regulated by the pests that are present and the sooner growers disabuse their minds of the idea that Bordeaux-Paris green mixture is the cure all for the orchard the better for them. Any quantity of it would never eradicate San Jose Scale. Likewise, the most effective treatment for San Jose Scales and other would be useless on combatting insect forms which eat.

Labor is scarce and some spraying mixtures expensive. It is, then, important that the grower make a careful study of the troubles with which he has to contend, and that he apply the proper mixture in whatever way is best suited to his conditions. As a general rule those who have made a study of fighting insects and fungi recommend about five sprayings in a season. This rule, however, does not hold good in every case.

In an interview secured by a representative of THE CANADIAN HORTICULTURIST with Mr. J. C. Harris, of Ingersoll, Mr. Harris said: "Spraying must be done according to the season. If done thoroughly, four times is usually enough. Considerable difficulty is frequently experienced in giving the first application in the spring because the ground is so soft. On the average 80 or 90 per cent. of the fruit is free from blemish if the trees receive four or five applications of the Bordeaux-Paris green mixture.

After carefully studying orchard and garden pests, and the best methods of combatting them Prof. W. Lochhead, of the Ontario Agricultural College, prepared a spray calendar showing the preparation of the various spraying mixtures, the mixture most effective in destroying the common pests and the dates at which applications should be

given in each case. This information has been published in bulletin 122.

In fighting leaf-eating insects and fungous diseases that attack the apple and the pear, Prof. Lochhead recommends Paris green and water (Paris green 1 lb.; water, 150 gals.; freshly slacked lime, 2 lbs.), just as the leaf buds are expanding, to destroy bud-moths and case-bearers. About a week later Bordeaux mixture and Paris green (blue stone, 4 lbs.; lime, 4 lbs.; Paris green, 4 oz.; water, 40 gals.) is required for bud-moths, case-bearers, canker-worms and tent-caterpillars as well as scab, leaf spot and mildew. Three subsequent sprayings with Bordeaux and Paris green are recommended one just before the blossoms open for canker-worms, tent-caterpillars, etc., as well as for such fungi as scab and leaf spot; one just after the blossoms fall for Bodling Moth, canker-worms, tent-caterpillars, pear slugs, scab and leaf spot; and one 10 days or two weeks later for Codling Moth, Palmer worm apple Bucculatrix, scab, leaf spot, etc.

For sucking insects on the apple and pear kerosene emulsion, whale oil soap, or lime wash are recommended, for pear-leaf, blister-mite, pear psylla, aphids, oyster shell, bark louse, etc. Applications should be given before the buds open, as the leaves are unfolding, again 10 days later, and about June 1. Professor Lochhead also advises the application of lime wash during winter for these pests.

The following treatment is suggested for the peach orchard: against Peach-leaf Curl, Brown Rot, Curculio and Bud-moth, Bordeaux mixture and Paris green before the flower buds open, after the blossoms fall, and again two weeks later. Besides a spraying with ammonia-copper carbonate (copper carbonate, 1 oz.; strong ammonia, $\frac{1}{2}$ pint or more; and water 10 gals.) is advised after the fruit is well formed. At this season the Bordeaux mixture cannot be used because it spoils the appearance of the fruit. Aphids and scale insects on the peach can be kept in check by the use of kerosene emulsion (soft soap 1 qt., boiling soft water 1 gal., coal oil 2 gals.) diluted one part in 10 of water or whale oil soap one pound in seven gallons of water. Aphids should be treated as soon as they



appear. For San Jose scale, whale oil soap two pounds in one gallon of hot water, or crude petroleum 25 per cent. is recommended in early spring before the buds open.

Enemies of the plum and cherry

require much the same treatment to those of the peach. Leaf-eating insects, Curculio, Brown Rot, Shot Hole Fungus, etc., should be subjected to three applications of Bordeaux mixture and Paris green—the first when the last buds are opening, the second when the fruit is formed and the third two weeks later—and one spraying with ammonia copper carbonate when the fruit is large. Plant lice and scale insects require treatment similar to that given in the peach orchard.

For the vineyard, four sprayings with Bordeaux mixture and Paris green are advised as follows: One as the buds begin to swell, 10 days or two weeks later, before the blossoms open, just after blossoming, and two weeks later. To prevent later developments of Black Rot and Mildew, Professor Lochhead recommends spraying with ammonia copper carbonate after the fruit is well formed. Thrips and leaf hoppers are destroyed with kerosene emulsion, one part in

nine of water, soon after the leaves are formed.

Treatment for the raspberry patch is given as follows: To destroy Anthracnose, Leaf-blight and Saw Flylarvæ, Bordeaux mixture and Paris green before growth begins, and again when the first blossoms open, and Bordeaux mixture when the fruit has been harvested. On currants and gooseberries Bordeaux mixture and Paris green before the buds expand, and again 10 or 15 days later is the best for worms and mildew. The worms can be killed by Paris green alone or by hellebore. Plant lice on these bushes can be effectively treated with kerosene emulsion, whale oil soap, or by dusting with finewood ashes. Strawberry Rust or Leaf-blight can be controlled by applying Bordeaux mixture at intervals of two or three weeks when it can be applied without disfiguring the fruit.

It must be considered, however, that these are not hard and fast rules for applying these mixtures. If the weather is favorable fewer applications may suffice, but on the other hand if a rain should come almost immediately after spraying the effects would be nullified. The successful sprayer regulates his work by conditions as they exist. Thoroughness is the prime requisite. If the proper mixtures are applied intelligently the results will be satisfactory.

A Grower's Experience with a Power Sprayer*

W. M. Black, Wolfville, N.S.

AMONG the many important points to be considered in the selection of a power sprayer are, cost, ease of operation, economy, draft, accessibility of valves and other working parts, large bearings, stuffing boxes and other matters of minor importance. After giving these various points due consideration, and corresponding with many makers of spraying outfits, I finally decided to purchase a certain machine. The style secured is known as the "Triplex Power Sprayer," and consists of a three-plunger pump, capable of maintaining a pressure of 200 pounds, with, however, a pass valve that allows the pressure to be adjusted as desired.

The pump is supplied with pressure gauge and outlets for four lines of hose. The working parts are of brass or of composition metal, and the stuffing boxes so arranged as to be easily and quickly packed. It is operated by a one and a half horse-power "Fairbanks" four cycle gasoline motor, the speed of which can be regulated by a governor as desired. When adjusted for 50 revolutions a minute it consumes one pint of gasoline per hour.

In operating this outfit I used two lines of hose with six vermorel nozzles

on each line. Another line of hose was run from the pump to the bottom of the cask and fitted with a two outlet Bordeaux nozzle adjusted for a coarse spray. This was for use as an agitator and worked in a most satisfactory manner, keeping the solution in active motion at all times. When first operated I used one of the common half-round tanks with agitator worked by hand, but found by experience that the agitation was not satisfactory, so I removed the paddles and placed the hose in as above stated. Although this improved matters somewhat, it was still unsatisfactory, and I finally replaced the half-round tank with a puncheon and found no further trouble.

The form of wagon on which to mount the outfit was the next consideration. After consultation with some of the largest fruit growers in my vicinity, I decided on what is known as a low down "Farmer's Handy Wagon," narrow gauge, six inch tires on solid wood wheels, with front wheels turning under the body, thus enabling the outfit to be worked in closely set orchards without damage to trees or land. As the orchards I had contracted to spray were mostly in full bearing and low headed, this selection proved a wise one, as even with this low down wagon many limbs were scraped and the fruit spurs destroyed.

During the season of 1905, 14 orchards were sprayed and 12,600 gallons of solution passed through the pump. No trouble was found with clogging of the nozzles as a general thing, but owing to the strong suction the strainer at the bottom of the suction pipe became clogged; later this was obviated by using extreme care in straining the solution into the tank.

I cannot give the exact weight of the outfit when loaded for operation, but it was found that a team of horses,



A Government Power Sprayer

This illustration and the one above shows how the gasoline engine was loaded with the tank and the stand for the man spraying on one of the sprayers operated last year by the Ontario Department of Agriculture.

*Paper read at the Annual Convention of the Nova Scotia Fruit Growers' Association in 1905.



Spraying a Spy Orchard.

One of the government sprayers, at work in the orchard, at Trenton, Ont., of Messrs. L. & A. Little, is here shown. This orchard contains over 700 Spy trees, all of which were sprayed three times with most satisfactory results.

weighing about 1,050 pounds each, could handle an outfit on hilly, cultivated ground as easily as could be expected with an outfit of this capacity.

It was necessary at frequent intervals to replace the small washers in

the nozzles with new ones, as the chemical action, together with the high pressure at which the pump was run, 125 pounds, soon enlarged the holes so that the spray was not as fine as it should be for good work. It was necessary, also, to replace the length of hose three times during the season, the regular half-inch, four-ply spraying hose of the best quality being used. The continuous high pressure, together with the dragging of the hose over the ground, served to shorten its term of usefulness. For the season of 1906 I propose using what is known as "Pneumatic," a hose used in mines and other such places. It is one-quarter inch, four-ply canvas, covered with capped ends, which will stand hard usage.

It is also my intention to place a small platform over the highest part of my outfit and to spray the tops of the trees from that; then with two lines of hose on the ground to take care of the lower parts, the trees can be well

covered. With the proposed platform no higher than the present outfit, and with removable nails, the trees would suffer no more damage than in the past.

Four nozzles instead of six on each line of hose would be an advantage, as better work could be done with less waste of material. In practice we find that we can easily spray out one tank of the solution, or 80 gallons, in 20 minutes.

The daily capacity possible with the outfit may be estimated from the fact that in spraying one orchard with two lines of hose, 1,040 gallons were applied in eight working hours. When it is considered that at times the outfit was at the extreme outskirts of the orchard and had a long distance to travel from the base of supplies, it is unnecessary to say that it was much more economical, so far as labor was concerned, than the usual hand work, to say nothing of the maintained pressure of 125 pounds which of necessity made possible a better application of the solution.

In spraying my orchard I can apply in half a day more solution than I formerly could in two days, and thus leave my men and horses at liberty to perform other necessary work at that busy season.

The outfit more than paid for itself last year in the saving of labor alone in the orchards in which it was operated.

Spraying Experiences for 1905

Joseph Tweddle, Fruitland, Ont.

I HAVE found the application of lime and sulphur to red currants and gooseberries once before the buds open, followed by one application of Bordeaux mixture after the bloom, gives wonderful results in the growth of wood and healthy foliage. Currants hold their foliage much longer than usual. English gooseberries that had been almost destroyed in previous years, were entirely free from mildew on both foliage and fruit. Not only was the crop clean but also the bushes themselves. I attribute the results obtained largely to the application of lime and sulphur.

Another lesson learned was the danger in the use of what is known as Soda-Bordeaux used on fruit trees in conjunction with arsenic, either in the form of Paris green, white arsenic or arsenate of lead. The sal-soda of the Bordeaux and the arsenic form a chemical compound very injurious to foliage. I shall use the standard lime and Bordeaux in the future, especially when mixed with arsenic as an insecticide.

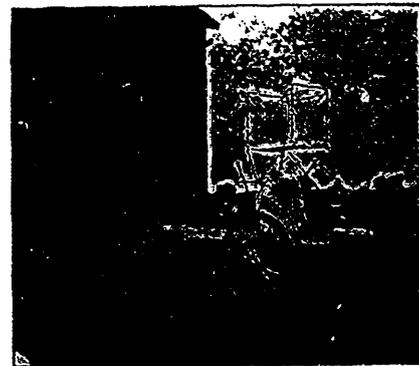
In treating Pear Psylla, the lime and

sulphur, where thoroughly applied in April, destroyed all the eggs, but where small portions of the tree were missed enough were left to reinfest the trees, as badly as ever before the season was over. Nothing but perfect work in spraying will accomplish its extinction. A Psylla will kill a pear tree just as quickly as will the San Jose Scale, but it can be eradicated by thorough spraying with lime and sulphur mixture. I would respectfully warn pear growers of this serious pest. It is much more prevalent than may be suspected by most growers, but it is too small for easy detection by the naked eye. To the initiated observer, however, its presence is readily detected in the orchard by the busy hum and buzz of numerous wasps and flies, seeking the honey-dew which is exuded by the larvæ, and which is easily observed on the surface of the foliage.

With the general use of power sprayers the advantages and disadvantages in the use of the different machines have been watched with interest. With fine weather and the soil in firm condition for using the wheel-gear horse-power sprayer, a great amount of excellent work can be done at a minimum cost for power, as the team drawing the sprayer furnishes the power. One disadvantage of this machine shows up in

wet weather, the horse-power sprayers where the soil is heavy sometimes being laid up for a week at a time from the soft condition of the ground, while the conditions of moisture were propagating fungous trouble most rapidly, thus preventing the application of the spray when most needed.*

The gas sprayer which is a new competitor in the field, using carbonic acid gas for power, relieves the team of the heavy draft, in the case of the wheel-



A Well Tried-Machine

One of the spraying outfits used by the Department of Agriculture last year in Ontario was a Niagara Gas Sprayer. It gave excellent satisfaction. This shows it when it was being dismantled at the close of the season, last fall.

*A number of growers who have been using wheel-gear horse-power sprayers have reported to THE HORTICULTURIST that they have never had trouble on this score. Mr. W. H. Dempsey, of Trenton, states that his team of light horses have little difficulty operating his machine under almost any conditions.

geared power sprayer, and admits of the prosecution of the work, even when the soil is wet, and when the foliage is dry, and usually permits of getting the work done in time for thorough protection. The cost of the gas is the price to be paid for this advantage, which when looked at in comparison with the cost of the horse-power in the case of the wheel-gear machine, would appear to be a considerable item. Again when we come to compare the cost of the gas, which is less than half a cent per gallon or 40 cents per acre per application, it

would appear to be a very small consideration looking at the matter from a scientific or business standpoint. The gas sprayer has the advantage also of simple construction and operation. With ordinary care vexatious delays are unnecessary. There are no pumps to get out of order, and the work is done quickly, furnishing any desired pressure for any desired number of nozzles. It remains for the grower to decide which will best suit his special conditions.

The compressed air power machine, also, has the great advantage of light

draft, but it is a very expensive outfit, and liable to delays by the use of the engine and air compressor. Besides, the services of an experienced operator are required.

Thorough preparation and straining of the mixture are imperative with power sprayers, especially where a large number of nozzles are in use. A strainer or separator placed between the tank or pump and the hose is the latest and best arrangement. A valve is provided by which the strainer can be cleaned in an instant in case of clogging.

The Peach Nursery

A. B. Cutting, B.S.A.

BEFORE we can raise good peaches we must raise the trees, and before we can raise good trees we must know how to select and treat the seed. Many growers prefer seed from natural fruit rather than that from cultivated varieties, claiming that such is more vigorous and hardy and that the trees are longer lived. While this contention has considerable weight, and while no mistake is apt to be made by its adoption, yet, there are men who use only the seed of budded trees and with the same degree of success.

SELECTING AND TREATING THE SEED.

Whether selected from natural or cultivated fruits, care should be taken to secure pits that are healthy, of good size, and from ripe fruits. It is better also to obtain them from trees of known hardiness and strong growth. Preference is sometimes given to pits from yellow peaches, particularly when the seedlings are to be budded with the same colored fruit. Pits from distilleries, where peach brandy is made, are not fit for the nursery, as the boiling process destroys their vitality.

When it is desired to grow the peach on heavier or moister soils than suits its own roots, the seed of the plum may be used for the production of stocks. For growing peaches on heavy clays, budding on plum stocks is particularly desirable and often necessary. For very dry soils the hard-shell sweet almond is used as a stock in countries where climatic conditions are favorable.

To get an even stand of trees the pits should be stratified in the fall (*i. e.*, mixed with alternating layers of sand in a box, or buried in a fairly dry pot in the garden or orchard) and exposed to freezing and thawing till spring, then soaked in water till they have absorbed considerable moisture. They should then be placed in thin layers on the surface of the ground and exposed to the action of frost, being protected from drying by a light covering of leaves or straw. Some growers put the seed in fall di-

rectly in the nursery, but by so doing only a portion will grow and no regularity can be attained in the rows. It is better to treat the seed by stratifying, as that prevents vacancies. In the spring, when taken up, most of the shells will be found to be cracked open; the others may be loosened with a hammer. They are then ready for planting in the nursery.

CHOOSING THE SITE.

The most important requisite in choosing the site for a peach nursery is the selection of a suitable soil. Peach pits will germinate and develop in a more or less questionable shape on a variety of soils, but to get the best results one should select a very light, sandy loam, well drained, warm and easy of cultivation. The exposure and location should also be considered. The sweep of prevailing winds should be avoided, and the slope of the land, if any, should be towards the north to retard bud growth in spring until danger from late frosts is past. If near large bodies of water the slope should be towards the water. Select, also, a place that is easy of access, near the road for ease in transporting the trees, and near the house so that the development of the young seedlings and buds may be conveniently watched. A location convenient to a constant water supply is also desirable and, in some sections and seasons, necessary.

PREPARING THE GROUND.

The ground for a nursery should be in the form of a square or parallelogram, and it should be laid out so as to admit of horse cultivation. Strips of land on the ends should be left sufficiently wide for a horse to turn about on.

To get the soil in the best possible condition for the growth of young seedlings, a hoed crop should occupy the land the previous season. A fall plowing is necessary, followed by a similar working in the spring, and a subsequent harrowing and rolling will leave the land in good condition to receive the

pits. If the land is not rich enough, apply barnyard manure that is well rotted, and, if obtainable, unleached hardwood ashes at the rate of 40 bushels per acre will be found to give good results.

PLANTING THE SEED.

Nursery rows, for horse labor, should be about three and a half feet apart and laid out as straight as possible. Mark out with a hoe or plow furrows two inches deep and drop the pits about six inches apart and firmly press the soil upon them. Care should be taken that the seeds do not become dry or mouldy before they are planted.

CARE OF NURSERY.

The ground should be cultivated as often as is required to keep the weeds down and the soil loose, especially during the early growth of the young seedlings. Hand hoeing is necessary between the trees in the row. Where the seed may have been dropped too thickly, through carelessness or accident, the superfluous trees should be removed. As the season advances the cultivator should be used less frequently, and when the trees are large enough to shade the ground it should be stopped altogether. In late summer or early fall—the month of August usually—the young seedlings should be budded.

The following spring, when growth begins, the wood above the bud should be removed and all the natural buds and twigs below the scion rubbed off. This should be repeated as often as new buds or twigs appear. All shoots that spring from the roots must also be watched and kept down. Cultivation of the ground should be resumed and continued throughout the growing season. Early in the season a little nitrate of soda may be applied if the growth of the trees is not satisfactory. Summer pruning is practised by some nurserymen, and sometimes with advantage. It is not essential, however. Whether it is advisable or not is a matter of opinion.

Annuals for the Town Lot

Roderick Cameron, Niagara Falls South, Ont.

SINCE the owners of small town lots are in the majority, and many of them are thirsty for information regarding the planting of their lots to the best advantage, a further treatment of that subject in THE HORTICULTURIST is necessary. Many persons have recently bought their homes. Others live in rented homes. In each class may be found parties having admirable taste and love for flowers, etc. Those who have recently bought homes, however, cannot afford yet to plant with the permanent material. Those having rented homes wish to have them beautiful with as little expense as possible, since it would not pay them to plant and improve permanently property belonging to others better able to do so than themselves.

To meet this want, I submit the same diagram as was used last month. Bor-

The fence must be covered. Sow close to it a row of the tall growing nasturtiums. No. 17 may be planted with ferns from the woods. No. 18 and 27 would look well planted with dwarf nasturtiums. 22-22-24 can be devoted to mixed geraniums, or scarlet salvias bordered with Golden-bedder Coleus, or Madam Saleroy geranium. If the dividing line fence at 11-12-12-13-13 is open picket or netting, plant sweet peas a foot from it, beginning at 12, and coming to the front 11. From the centre 12 to the end of the fence 13 may be planted or sown with ornamental gourds, and from there to the grass margin with Asters, Ten Week Stocks, Annual Gaillardias or Sweet Scabiosa. Beside the clothes posts, 1, 2, 3, 4, 5, and 6, plant or sow a few seeds of Morning Glory or Adlumia cirrhosa to cover them. At 33 sow next the fence

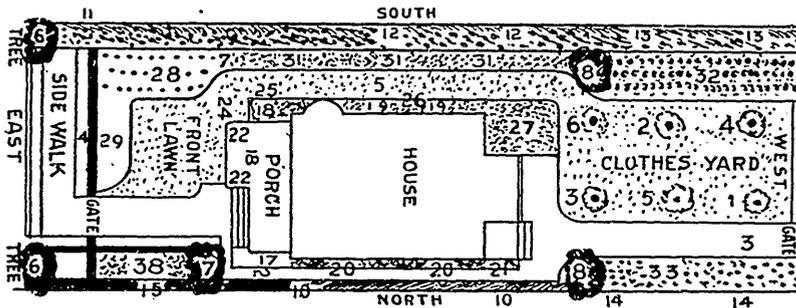
frame on it. About the first of April I place the sash on the frame tightly for a day or two, and then open the sash and put into the frame four to six inches of rich loose loam, and replace the sash, leaving about three inches at the top open to let out the steam. About April 8 or 10 the bed should be in good condition to receive the seeds. About that time I stir the soil thoroughly, rake level and fine, and draw shallow lines or drills four to six inches apart north and south, because the frame should face south. In these lines or drills sow the seeds thinly, and cover in proportion to the size of the seeds. The smaller seeds like dust should be sown on the surface; they will find their way into the crevices of the soil be it ever so fine.

Some varieties of annuals germinate very quickly; others are very slow in germinating. The latter must be known so that they can be treated properly. The best results are obtained by covering them with long strips of paper, held in place with a few small stones. This keeps the heat and moisture on the seeds, forcing their germination much faster than if left bare. Be sure to uncover them as soon as they are up, by placing the strips on a few stakes from four to six inches above the plants. In a few days they will be strong enough to stand the direct rays of the sun.

I scarcely ever prick out the annuals separately. It is too much labor. I prefer sowing enough rows to begin with. If they are too thick, I thin them out and throw the thinnings away.

About June 1 these plants should be in good condition to plant in the open for blooming. At this time I treat them differently to any other person I have seen or heard of. I drench them, soil and all, with water, and allow 10 or 15 minutes for it to settle. I then begin at one end, place my hands one on each side of the row of plants, and press the fingers down through the soft soil below the roots. The soil and roots between the fingers is packed tightly and drawn up, the soil and roots being formed into a hard ball. There may be in each ball of earth two or three plants.

When all the plants are treated in this fashion, I place them back into the frame in rows, covering the balls with the soft soil in the frame, and the frame is shaded for a day or two until the plants survive the shock. After three or four days they may be subjected to all the light and heat they can get. In two days more they may



Arrangement of Annuals on a Town Lot.

ders, paths and lawns are similar, but annuals are to be planted instead of perennials. There can be excellent results obtained, and quicker returns than from perennials.

I would recommend the following annuals to be planted, or sown according to the numbers on the diagram. The vines on the building recommended last month will be left as they are, since they should be permanent from

At number 28-29, one foot from the grass margin, sow a row of Sweet Alyssum, and a foot from the Alyssum sow a row of purple Candytuft. There is room for another row, and it can be planted with French Marigolds or zinnias mixed. 38 may be sown with Mashet Mignonette, and here and there may be dropped a few seeds of that beautiful poppy, Papaver umbrosum, to brighten the plot of mignonette. The poppy seeds should be sown about midsummer, to make strong plants for blooming the following summer. They are biennials, and will seed and care for themselves after once sown.

the tall or climbing nasturtiums to cover it, and edge the border next the grass with tufted pansies, the remaining space with Antirrhinums and Linaria bipartita, of which there are two colors, purple and white, the purple being the type. They are prolific bloomers all summer, resembling miniature antirrhinums, and good to cut.

Most of the above annuals may be sown where they are expected to bloom, but there are a few that would bloom earlier, and perhaps be better if sown in a hot-bed early in the spring, and planted outside when large enough. Those that would be the better for this treatment are Ten Week Stocks, antirrhinums, asters, Tufted Pansies, Sweet Scabiosa and Linaria bipartita.

When I want to grow some choice annuals in a hot-bed from seeds, I generally commence to get some good hot manure ready about the middle of March. I like to turn it over once or twice before the first of April to get rid of the most of the heat and steam. I then form it into a bed and place the

be lifted. The balls of earth are now bound together with roots, and may be handled much more quickly than if the plants were grown in pots from the

beginning. There is no wilting, and the plants do better. They make more fibrous roots, giving them a better hold of the soil. This method will save

growers of such plants many disappointments, not only in the growing of annual seedlings, but all other seedlings as well.

Formal Gardening

A. K. Goodman, Cayuga, Ont.

EVERY home in the smaller towns should have a garden, for the beneficent influence on the taste and character, as well as for the pleasure which it confers. The pursuit of gardening in connection with the ordinary business of life is to be highly commended. The amateur must of necessity avoid the many exotics requiring a degree of care and protection from adverse influences which only those who have conservatories can bestow; but there are in Ontario a very large number of hardy varieties, both beautiful and fragrant,

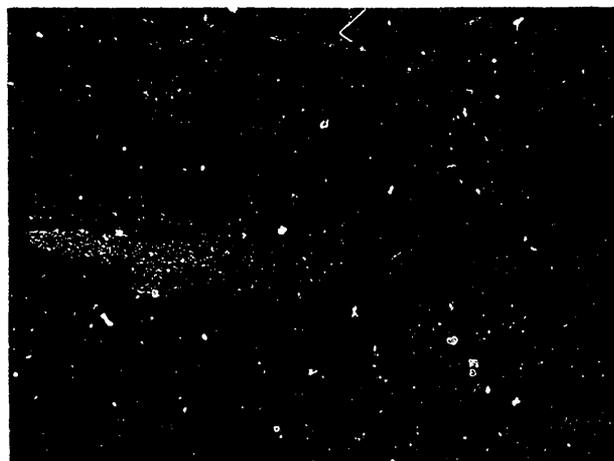
for the development of individual tastes, and wonderful scope for the artistic colorist in formal gardening; yet the steps of progress are circumscribed by certain primary rules rigidly laid down by nature. These rules must be obeyed. They are drainage, good soil suitable to the plant, sunlight, freedom to develop unchoked by plant life or roots of trees, and water. If these are ever borne in mind the grower may revel in a pleasure numbered among the greatest given to man.

In the shapes, sizes and proportions,

ing grounds must all be taken into consideration. Use the three colors or shades of the three colors in each bed. Cut 1 shows a charming result obtained from a centre of castor oil bean, surrounded by dark red geraniums and climbing blue ageratum, with a border of alyssum. The ageratum climbs over the other plants to the castor oil plant, making the general effect superb. A large oval bed raised in the centre may contain castor oil beans, two circles of cannas, one of helianthus, one of elephants' ears, one of climbing ageratum, one



A Charming Flower Bed with Castor Oil Bean in the Centre



A Circular Bed of Cannas and Coleus

which the owners of the smallest gardens can cultivate easily and successfully. Formal gardening is a wide subject, but, as commonly practised in Ontario, usually means, from a floral standpoint, those beds that are planted by the flower-lover to ensure a continuity of bloom or color from spring until frost. It does not always comprise set pieces, but is apart and distinct from those specimens grown in the garden for cut flowers.

Now is the time to plan the summer gardens of 1906. There is ample room

and in the blending of color, there is no limitation. The amateur's beginning should be simple, but he should be in earnest and thorough. From the public gardens of the city he can personally obtain ideas for reproduction. One thing more he must learn, that is, after the garden is made and planted it must be cared for, weeded, edged, etc. Once safely started, he will, in a few years, be coaxing others along the path he so feebly walked in the beginning.

Circular, oval, ribbon, star or oblong are all effective, though the surround-

of red achyranthes, one of bronze bedding geraniums, and a border of silver-leaf geraniums, Madam Saleroi.

A good ribbon bed may be made with a centre of four rows of scarlet geraniums; on both sides have three rows of dark red coleus; on both sides again plant two rows of silver-leaf geraniums; extend as far as required and border with red alternantheras. A circular garden of cannas with different colored coleus gives a handsome general effect along with the foliage of the shrubbery and trees as shown in the second cut.

The Freesia

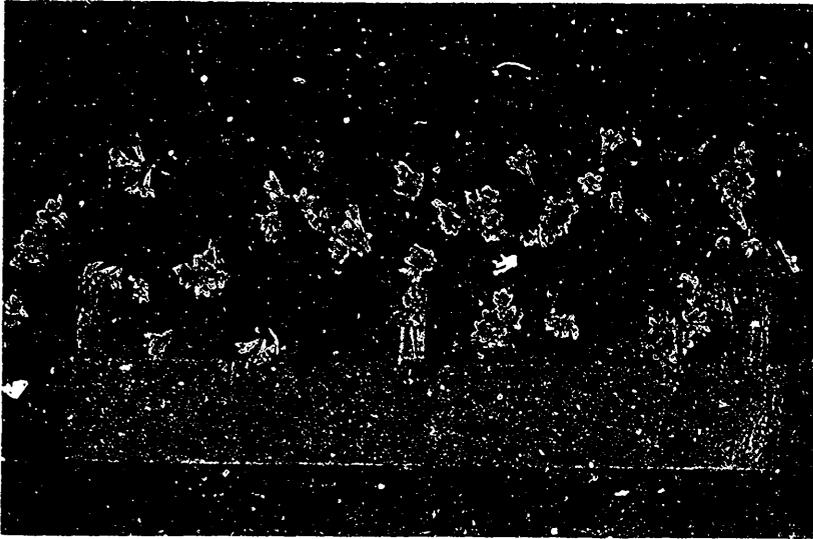
W. T. Macoun, Ottawa, Ont.

THE freesia is one of the most charming and most graceful of the winter flowering bulbs. It has a delightful and penetrating odor, and one flower will scent a whole room. Unlike most other bulbs which bloom in the winter the freesia does not require to be

well rooted before forcing. The most satisfactory results are obtained by leaving the bulbs in the cellar for a few days, only until roots begin to push out, and then bring the pots up and force them. They may even be forced with satisfaction by bringing the pots or

boxes into a warm room as soon as the bulbs are planted.

The soil should not be kept very wet until they are growing thriftily, as the bulbs might rot. Many a beginner has thrown out a pot of freesias in disappointment at no flower-buds showing,



Freesias Grown in the Window
Photograph by Prof. F. T. Shutt

while had he had patience they would soon have rewarded him with an abundance of bloom.

Freesias should be started in August if the bulbs can be obtained, and even if kept growing steadily no flowers need

be expected before the last week of December, unless with Bermuda-grown bulbs, which can be purchased early in July. With them flowers should be produced a little earlier. As the bulbs are very cheap, about \$1.00 per 100 retail, they may be used freely, and there will be a greater mass of flowers if planted fairly close. Freesias are very effective when grown in boxes, as is well shown in the illustration. They should be placed in the window so that the plants will get an abundance of light, for it takes a considerable time for them to come into bloom, and the plants will be very spindley and the flowers small unless they get plenty of light and sunshine.

The bulbs should be planted from one to two inches apart to get the most effective display of flowers. From a pot of six bulbs 124 flowers were produced. As the plants grow tall before blooming, they should be supported by a wire. They are very easily grown, but as they make a great deal of growth before the flower-buds show, one must have patience, but the reward is well worth waiting for.

Our Native Ferns

Dr. Douglas G. Storms, Hamilton, Ont.

THERE is no branch of plant culture so fascinating as the collecting, arranging and growing of ferns in the garden. About 10 years ago I started to make a collection with the object, at first, of being in the woods and close to nature with my two little boys, but gradually the quest assumed new interests, until I was absorbed by it, and now I have a collection of 40 to 48 varieties all growing in the garden as well as they did at home in their own haunts. With about six exceptions all these varieties have been collected in the district surrounding Hamilton. Last fall I had a collection of 33 varieties at the Horticultural Exhibition held in Hamilton. Although the exhibit was interesting, it would have been much more so had the show been in July rather than in September.

When I began making the collection I was told by some men of wide experience, that ferns would not grow in such an exposed situation as mine was, but time has proved that they were wrong. The bed of *Adiantum pedatum* shown in the photograph, is nine years old, and is better than can be found in the woods anywhere to-day.

Several important points regarding the handling of these plants have been learned since the first specimens were put in the garden. Great care must be taken in gathering them. Less danger of loss will result if they are transplanted when in a quiescent state, but

with my limited time I have been obliged to take them at whatever season they were found, and I have rarely lost any specimens. Plenty of earth should be taken up with the plants, especially if they are removed out of season. A moderately good soil in as

shady a place as possible is the most suitable for their development. After being planted they should be left alone. If ferns are coddled they die.

Conditions, as nearly as possible the same as existed where the ferns were found, should be maintained at all sea-



Seventeen Varieties of Ferns in Dr. Storms' Garden



A long bed of ferns between the walk and the fence in Dr. Storms' garden.

sons of the year. In the fall it is well to spread leaves over the fern beds.

It is interesting to determine, and which should be carefully studied by all those who

These can be left there, and in the spring a layer of leaf mould is formed almost the same as the plants were accustomed to in the woods.

In collecting I have found the little book, "How to Know the Ferns," extremely useful, and in fact better for an amateur than many larger works. A good lens is needed to distinguish some of the varieties.

In studying the names it is better to get both the household and scientific names, as though the latter are seemingly long and difficult, are not easily lost when once learned, and it is much easier to talk ferns using the botanical names.

These names, too, have each a meaning which is most in-

teresting to determine, and which should be carefully studied by all those who

have a special liking for beautiful flowers. The names of the ferns exhibited last fall will give a fair idea of those best for cultivation. They are as follows: *Asplenium angustifolium*, Narrow-leaved Spleenwort; *Asplenium acrostichoides*, Christmas Fern; *Asplenium acrostichoides, undulatum*; *Asplenium filix-foemina*, Lady Fern; *Asplenium filix-foemina latifolium*, Broad-leaved Lady Fern; *Asplenium thelypteroides*, Silvery Spleenwort; *Asplenium trichomanes*, Maiden-hair Spleenwort; *Asplenium ebeneum*, Ebony Spleenwort; *Aspidium cristatum*, Crested Shield Fern; *Aspidium marginale*, Evergreen Wood Fern; *Aspidium spinulosum*, Spinulosa Wood Fern; *Aspidium spinulosum dilatatum*; *Aspidium munitum*; *Aspidium noveboracense*, New York Fern; *Aspidium Goldieanum*, Goldie's Fern; *Aspidium thelypteris*, Marsh Fern; *Adiantum pedatum*, Maiden-hair Fern; *Camptosorus rhizophyllus*, Walking Fern; *Cystopteris bulbifera*, Bublet Bladder Fern; *Onoclea sensibilis*, Sensitive Fern; *Onoclea struthiopteris*, Ostrich Fern; *Osmunda cinnamomea*, Cinnamon Fern; *Osmunda Claytoniana*, Interrupted Fern; *Osmunda regalis*, Royal Fern; *Pellaea atropurpurea*, Purple Cliff Brake; *Phegopteris dryopteris*, Oak Fern; *Phegopteris hexagonoptera*, Broad Besch Fern; *Pteris aquilina*, Umbrella Brake; *Scolopendrium vulgare*, Hart's Tongue; *Woodsia ilvensis*, Rusty Woodsia; *Woodsia obtusa*, Blunt-lobed Woodsia; *Polypodium scolari*; *Lomaria spicant*.

The Growing of Tender Evergreens

Roderick Cameron, Niagara Falls, South

THE cupressus are among the most beautiful evergreens, and amateurs who know the secret find little difficulty growing them successfully. Many varieties are tender in this country, and the tenderest varieties are the most beautiful and graceful. The variegation in some of them is equal to some of our most beautiful tropical plants, and, for the above reasons, I am surprised that they have not been more extensively grown as tub plants for the lawn during the summer, or for the decoration of halls and churches during the winter.

A collection of cupressus are very pretty in beds on the lawn. The illustration shows the cupressus in half-inch, galvanized, chicken netting baskets, lined with moss, and then planted the same as a hanging basket lacking the vines. The netting was obtained from a wire factory in a bale, and was cut to the size desired for each plant with a plumber's shears, and sewed in basket form with wire the same as the netting. Any handy man can make one of these baskets in a few minutes.

The plants on the right, showing the

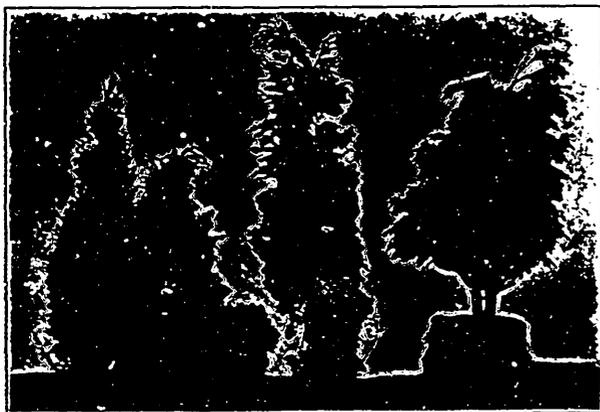
roots protruding through the side of the basket, has been in the basket for two years, and will remain there for another year, when it will be changed into a larger basket. It must be borne in mind that this method is only intended for half hardy, or tub plants, of any variety grown by the general public. The nurserymen can make general use of it for evergreens, and many expensive and rare deciduous plants.

Each basket costs about five cents. Tubs that look respectable, when made of material that lasts any time, cost about two dollars, and are heavy and awkward to handle, and they look unnatural and are out of place on the lawn. There is also a loss of time connected with caring for them, and the continual watering that if neglected, means sickly, diseased, insect eaten plants, and probably their death. The basket described requires no watering, as the plants, with the exception of the basket, are the same as if planted in the natural manner. The plants take the moisture through the basket, from above as well as round about. The roots, also,

have freedom to pass through the meshes of the basket. Plants treated this way are always clean and healthy, and can be moved from place to place during the summer without loss.

WINTERING HALF HARDY PLANTS

My method of keeping the half-hardy plants through the winter is very simple and inexpensive. I dug a cold storage pit, eight feet deep, below the natural surface of the ground, 16 feet wide and 30 feet long, lined it with galvanized corrugated iron along the sides and threw joists across on a level with the surface soil. A much smaller hole would do for amateurs with only a few plants. On top of this was placed a greenhouse roof for light and air when necessary. Two feet of good soil was placed on the natural floor of this cellar. Into this is planted the plants that will not stand our winters. The basket and tub plants are dug up before severe frost, and replanted in the cellar, basket and all, as they were out doors. The two feet of soil in this cellar is thoroughly watered in the fall before the plants are put in. This is all the watering required until



Cupressus as grown in half-inch galvanized chicken netting baskets lined with moss.

the following spring, when the plants are set out again in the open.

Hydrangeas and oleanders, as kept in the greenhouses over winter, bloom during the spring months, but by adopting the foregoing method, they bloom the whole summer, until late in the fall. Our lawns, thus, are more beautiful when friends are visiting us.

The plants in this cellar have stood the

Some of the plants that are not hardy that were treated in this way include, Cotoneasters, Eleagnus, Euonymus, Hydrangeas, Holly, Laurel, Rhododendrons, Cupressus, Taxus or Yews, Oleanders, Acubas, Lenon Verbena, Fuchsias, and I could mention many others, but space forbids. Is it not then possible to have a beautiful home without a greenhouse?

The Velvety Lawn

Rev. P. C. L. Harris

LAWSNS are developed, not made in a day. They ought to be at their best hundreds of years after they are made. Many people wonder why their lawns give so little in return for the labor they put on them. Devotion in cutting or proper watering is only a portion of the work needed. In the making of the lawn was where the care was needed, but was not given. Frequently when a fine, comfortable house is built the practice is to level the hard pan soil taken from the cellar, sow some indifferent lawn mixture on it and wait in vain for the velvety grass. It will never come that way.

An ideal lawn is desired, but circumstances tell you that you cannot afford it. It would be wise to begin now and start an improvement fund by placing aside a little money every week or every month until there is sufficient to pay for the work. Many people wonder why so much water is required. The main reason is because the lawn has not been properly made. Care at the beginning spells success.

The first and most important factor is to have the ground thoroughly prepared by trenching two to two and a half feet deep, the soil to be well mixed with crushed bone not too fine. In trenching carry the soil from the first trench to the far side of the plot, where it will

be in place to fill in the last trench dug. If the soil is sandy, use plenty of cow manure with the bone; if clayey, use plenty of half-rotted stable manure with the bone. Then level and roll and re-roll until perfectly smooth.

It is important to ascertain what kinds of grass does best in the particular locality. For a general mixture use the following: Red Top, Kentucky Blue, and plenty of Festuca Ovina, with a little White Clover. If the locality is subject to heavy rains before the grass becomes well established, sow some white mustard or rape with the grass seed. As soon as the grass is nicely up, mow, so as to destroy the mustard and rape.

Nothing is more beneficial to a lawn than a fair sprinkling of crushed bone early in the springtime. This is a cheap and valuable fertilizer.

Many people have excellent opportunities for fine lawns were it not for the density of shade. In such cases the trees should be trimmed, and perhaps some of them cut out. This will pay. However, do not dock the maples. The lilacs are very injurious, and it would be best to keep them well removed, if you want a good lawn. The roots are great travellers, and gather up all nourishment for a considerable area around them.

test of 16 degrees of frost, and I believe they would stand a few more degrees without injury. This is the secret. As soon as they become frozen, they are not touched until the frost comes out. This may not happen for weeks at a time. The place is kept in perfect darkness until the frost is out by laying a temporary inch board floor over the joists over head. As soon as the frost is out the light must be let in again.



BULB DEPARTMENT

Questions Answered by
Mr. Herman Simmers

Bulbs for the Season

What are the best varieties of bulbs for outside culture? I would like to have a few to cover the season if possible.—Subscriber, Port Hope

This question is wide and I would suggest that subscriber condense his query. This question might be answered by giving a list showing in what succession such bulbous plants flower. The list is Snowdrop, Crocus, Tulip, Narcissus, Hyacinth, Liliun candidum, Montbretia, Japanese lilies, in variety), Tuberous-rooted Begonias, gladiolus, Tuberoses and dahlias.

Keeping Bulbs Over

Are bulbs grown in the house during winter of use to keep for the following season? If so, how are they best kept?—H.B.L.

To answer this directly I would say they are not of any use for the following season. If, however, they are wanted to be kept over, the pots should be set in the cellar after the plants are through blooming, and the tops allowed to die away. At this time water should be put on occasionally. As soon as the tops are dried off no more water is required. The bulbs should be left in the pots for a few months, after which they may be taken out and partially cleaned to allow them to become thoroughly dried. Final cleaning can take place, after which they will be ready to plant again. They do not flower nearly as well the next season.

Coffee in Glengarry

Any novelties in horticultural lines are to be found in different parts of Canada, but coffee growing in northern Ontario is something beyond the ordinary novelty. Without the aid of greenhouse or hotbeds Mr. William Gamble, of Lancaster, has had success with this plant for two seasons.

His plants this year were obtained from seed sown on May 10 last in drills two feet apart. The coffee beans were put about three inches apart in the drills and covered lightly. In about 10 days the seed had germinated and soon the crop was making good headway.

"It will thrive on any good garden soil," said Mr. Gamble, "and needs no special care. All that is necessary is to keep the ground free from weeds by frequent use of a hand cultivator."

The coffee plant grows somewhat the same as the common bean but much taller and with an abundance of pods. Many plants reached a height of three and a half or four feet and pods were scattered freely in clusters of one to

three from within six inches of the base of the very tip of the vine. Two or three round and slightly flattened beans smaller than the common pea were



Two of Mr. Gamble's Coffee Plants

found in each pod. Their productiveness can be judged from the fact that over a bushel was harvested from four ounces of seed.

Japan Quince is Edible

Prof. H. L. Hutt, O.A.C., Guelph

Is the fruit of the Japan Quince, *Pyrus Japonica*, an edible thing? It seems as if it might be, but one scarcely likes to risk it.—J. S. McClelland, St. Catharines.

The Japan Quince, *Pyrus Japonica*, has been cultivated for its flowers rather than for the fruit, hence the development has been more in the improvement of the flowers than in the improvement of the fruit. The fruit, however, is edible, although not nearly so good as that of the common quince, which has been grown especially for the fruit. I have used jelly made from the fruit of the *Pyrus Japonica*, which was excellent, but this is probably the chief way in which it can be used to advantage.

Crushed Bone is a cheap and valuable fertilizer. Nothing is more beneficial to a lawn than a fair sprinkling early in the spring.—Rev. P. C. L. Harris, Guelph.

Early Tomatoes.—I grow a few early tomatoes for the fancy market, and I obtain best results from plants that have been transplanted at least three times before being set out. When this is done there is a ball of fibrous roots and practically no top root. These plants when set out never wilt. I start the seed about February 15, and set the plants out soon after May 24.—Geo. Renner, Burlington, Ont

Selling Vegetables in Cities

Many vegetable growers who can produce excellent crops are not successful in disposing of their products. Those who attended the meeting of the Toronto branch of the Vegetable Growers' Association on January 6, and heard the remarks made by Mr. Geo. Syme, obtained many pointers of value to growers who truck their crop to the town or city. He emphasized the fact that every gardener must understand the trade thoroughly and also know the characteristics of his customers if he hopes to do a good business.

Some men want to do business in a hurry but there are others who are slow-going and there is no use trying to rush matters as it is detrimental in closing a sale. He advised growers never to have more on the wagon than the merchant wants and not to pretend they have all their load sold except enough to meet their requirements. As a rule it is best to make the retailer believe you are somewhat ignorant and to keep him thinking he knows it all.

Too many growers are afraid of competition. This should not be the case and no matter how many vegetable growers' waggons are around a store door an attempt should be made to do business there. If no sales can be made that day, learn what the chances are for another. The best practice is to have a load sold ahead, and no grower should take in more than he knows he can handle. Customers should not be secured too close together, because if one merchant sees a gardener supplying another a few doors from him it creates a jealousy and it is much better to hold a large trade with one man than to sell a little to several. The practice of selling to an individual in front of the door

of a customer was strongly condemned because it was claimed that he immediately lost faith in the producer who resorted to such practices.

The shrewd gardener exercises great care in loading his stock and in getting rid of the inferior grades. As a rule the retailers who are after the low grade vegetables are out early in the morning to meet the growers before they reached the city. The good product should be kept covered, because if a box of good vegetables is placed beside inferior stuff the latter looks 100 per cent. worse than it really is. Usually the low grade stock can be sold before the merchants who wanted the good line are reached. Mr. Syme advised the producers to hold out for a good price for a good article and not cut down the price through fear of losing the sale. Poor stuff, however, should be got rid of at any price.

Growers were warned never to misrepresent their goods by saying it was first-class when it was not. When a retailer asks for a certain article and you find that you had none on hand it is good policy to buy it for him from some other grower.

The general appearance of the man and his team and rig were fully discussed by Mr. Syme. He advised every grower to furnish a first-class outfit as there is nothing that keeps a man down so much as a poor team and rig. As for the man himself he should never go into a store with a pipe in his mouth or smelling of liquor. It is never wise to interrupt a man when he is doing business. In every case he should be approached in a business way, but if he does not want any of your stock do not raise a fuss about it or hang around coaxing him. There is no use trying to force goods on a merchant.

The Progressive Vegetable Grower

A. J. McMeans, Brantford, Ont.

The progressive vegetable grower is an enthusiast and, unlike the farmer, he believes in intensive cultivation, and wants to secure two or more crops from the one piece of ground. He may be classed with the florist, bee-keeper or chicken-fancier, in the fact that he is more ready to attend conventions, subscribe for trade journals (and right here let me drop a word of congratulation to the management of THE HORTICULTURIST for the improvement they have made in that valuable magazine), or in any way further the interests of the business they are engaged in.

Take the florists as an illustration, and look back a few years and see the improvement that has been made in that industry. The question then arises:

How and why has this advancement been made? Because the florists are enthusiasts, or in other words, what some people choose to term cranks on the business they are interested in. They are always striving and seeking after new ideas and new methods of culture so as to be in the advance guard. So, too, is the advanced vegetable grower, with this difference, that he is just entering into the new era that will eventually place him where he belongs. With the co-operation of the Government through a fully equipped and thoroughly up-to-date experimental station, he will soon forge to the front, and be a credit to his home and an honor to his country.

Kindly send me THE CANADIAN HORTICULTURIST for the ensuing year. It is well worth the price asked and should be in the hands of all who are interested in fruit or flowers.—(Samuel Shearer, Niagara-on-the-Lake, Ont.

Tomatoes and Cucumbers for Early Markets

W. W. Hilborn, [Leamington, Ont.

ON growing early cucumbers and tomatoes for market two special local conditions are requisite for the most profitable production of the crop. The first is a high, warm, sandy soil; the second is nearness to a large body of water to prevent late spring frosts. Within the last few years this phase of vegetable growing has become an extensive industry in this locality. Early tomatoes receive the most attention.

The plants are grown in greenhouses. I have four houses 10 feet wide and 50 feet long, and one house 52 feet wide and 80 feet long. They are cheaply made and cheaply heated, but specially adapted to the growing and hardening of early vegetable plants. The construction and heating of these houses may be a subject for a future article.

The seeds are planted about March 1 to 15, in trays or flats one foot wide, two feet long and four inches deep. In these is put about two and a half inches of good garden loam which is thoroughly saturated with water, and covered with about an inch of soil. This makes an ideal bed on which to sow the seeds. Make small drills across the tray one quarter inch deep and one and a half inches apart, and in them sow the seeds thinly. By having the soil wet in the bottom of the tray, enough moisture is usually supplied to last until the plants come up. They should be watched carefully at this period, and not allowed to get too dry, nor should they have too much water as they are very easily destroyed from the time they begin to germinate until they come through the ground.

When the seedlings have developed two rough leaves, transplant them two inches apart each way. When they begin to crowd each other, transplant about three inches apart, and when they again crowd, give them their final shift into individual boxes five or six inches square, or to positions five or six inches apart each way in trays or beds. The soil in which these plants are grown should not be too rich in nitrogen, but should contain a good percentage of phosphoric acid and potash. In growing the plants great care must be taken in watering. Early in the season it should be done in the morning. Saturate the soil to the bottom and do not water again until the soil is dry on top. Give ventilation whenever possible to secure a strong, stocky growth. The house should be kept at a temperature of about 60 degrees at night until the plants come up. After that about 50 degrees at night and 75

or 80 degrees during the day is sufficient. As soon as the weather will permit many of the plants are put in cold frames and covered at night with cotton.

Planting in the field is usually commenced about May 15 to 20. A warm sandy soil, rich enough to produce a good crop of corn, is selected, and the plants set four feet apart in rows five feet apart. It pays to put a large handful of good fertilizer around each plant, and to work it well into the soil. A fertilizer containing about four per cent. nitrogen, eight per cent. phosphoric acid, and seven per cent. potash is satisfactory. The plants are cultivated frequently until they are so large that they prevent it. As the plants grow larger the cultivation should be more shallow.

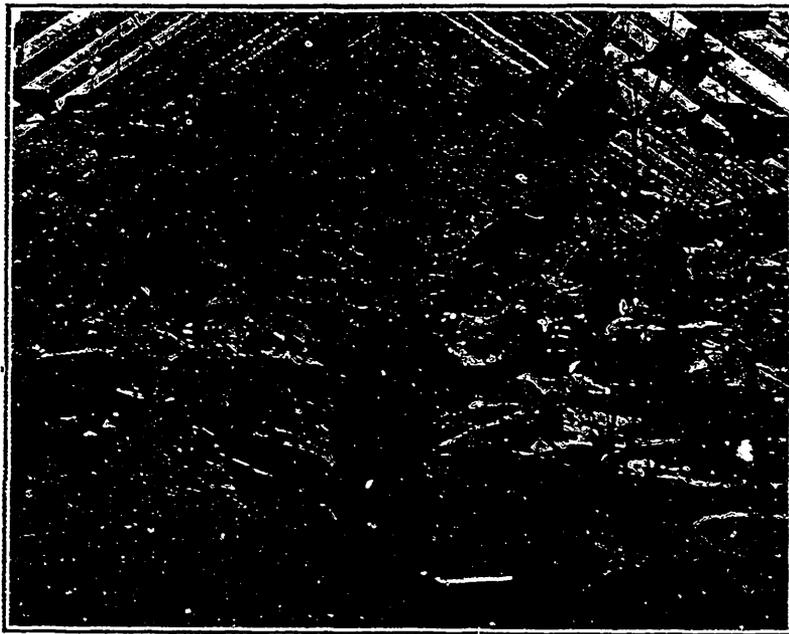
I have tested many varieties and find Earliana much the best early sort for this locality. I put out 18,000 plants of this variety last season, and began to ship the fruit July 6. The fruit is sent by express to cities, towns and villages from Quebec to Winnipeg. The greatest drawback we have is excessive express rates. About one-quarter to one-third of the proceeds of the crop is taken by the express companies for carrying it to market.

Cucumbers are started in trays in

the same way as the tomatoes except that the seeds are planted farther apart—not less than one and a half by two inches. The trays should be placed in the warmest part of the greenhouse. Cucumbers require a soil rich in humus or decayed vegetable matter.

When the first rough leaf is about the size of a dime, the seedlings should be transplanted and set three or four inches apart in other flats. When they have made four or five rough leaves they can be set in boxes seven inches square, one plant in a box. If trained to stakes the plants can be left in these boxes until part of the tomato plants are set out. Then they are put where they are to remain for cropping. Two rows are put in the 10 foot houses and 10 rows in the large house as shown in the illustration. The plants are set three feet apart and trained to a V shaped trellis six feet high, made of binder twine. All the vines are kept on the trellis and none are allowed on the ground.

In the large house there are no benches. The plants are set in the ground soil, which is made rich with manure, finely ground or dissolved bone, and wood ashes. Large quantities of water are required to grow cucumbers. We use a windmill and a gasoline en-



Cucumbers as grown in Mr. Hilborn's Greenhouse.

gine to raise water into an elevated tank. This gives us a good supply, which is piped into all the greenhouses and arranged so that we can reach all parts of the houses with hose.

Arlington White Spine is the variety used most extensively. The past season we began shipping cucumbers May 29 in 11 quart baskets, 18 to 24 in a basket. This industry is rapidly increasing in importance, and the need for experimental work is generally recognized.

Forcing Cucumbers

THE forcing of cucumbers is treated in Bulletin No. 231 of Cornell University, Ithaca, N.Y., by Professors Craig and Hunn. It is advised that the seed be started in small pots or sod, so that the soil cannot break away from the roots of the young plant when being transferred to the benches. Soil consisting of equal parts of loam, leaf mould and sand is recommended for the pots and loam, sand and well-rotted manure for the benches. The plants should be placed two feet apart. To avoid "damping off" a handful of sand is scattered under the ball of roots and over the surface around the stem. The plants are trained on wire trellises. Stout wires are run lengthwise and finer wires connecting an upper and a lower strand used. The plants are tied to these as they grow. When the main vine has reached the desired height the tip is nipped off and the development of laterals induced. No fruit development should be encouraged until the vines are stout and strong. The fruits develop rapidly and in many cases require some support to prevent them breaking the vines down. Some growers make slings for the fruit, while others place a thin board horizontally and rest the fruits on this. The time of planting depends on when the crop is required. About two months from the time the seed is sown the crop is ready for market if no setback has been received.

Some growers do not use trellises, but those who have tried both methods prefer having the vines overhead. Considerable quantities are grown in Ontario every year.

"I always like to have the cucumber vines on wires above the benches," said Mr. J. E. Terrill, of Picton, to THE HORTICULTURIST, a short time ago. "The plants are much more easily watered, the fruits are kept out of the dirt, and the crop can be handled more readily. I like to have them ready for market by May 15, and the same vines produce a crop until the outdoor varieties come in."

I have been a regular subscriber for THE CANADIAN HORTICULTURIST for 24 years, and would not think of doing without it.—(W. C. Reid, Belleville, Ont.)

Planting Asparagus

Prof. H. L. Hutt, O.A.C., Guelph

I am getting ready to plant a bed of asparagus. The land is fertile, and somewhat wet, but I am having it underdrained. I cannot get the pipes down more than two feet or so. Would this soil be sufficiently deep for asparagus, and would the underdraining be likely to make the soil produce a crop early in the season? I would like to get a clearer idea as to how soil that has been drained compares with natural sandy soil, that is, in earliness of workability and in earliness of the crop produced. The distance apart for planting asparagus varies from six feet between the rows and three feet in the rows down to three feet by one foot apart. Which is the best and most practical space?—(F. P. W., Toronto)

I have at hand no data from which to make comparison of naturally well-drained sandy soil and thoroughly tile-drained low soil on the earliness of the crops grown on them, but my impression is that the naturally well-drained soil would be earlier and far more satisfactory than the tile-drained soil. Asparagus does best on soil naturally well drained, and I would hesitate to plant it very extensively on soil which was not well drained. I am inclined to believe that with the tiles only two feet below the surface there might be danger of the roots getting into and blocking the drains.

The distance apart for planting asparagus has been variously given, both for field and garden culture. For convenience of cultivation, it is recommended for field culture that the rows be four or five feet apart and the plants two or three feet apart in the row. This, however, is more than is necessary for the full development of plants. To economize space or to get as much crop off a given area as possible, I would recommend setting the plants two feet apart, in rows three feet apart. This will give plenty of room for full development, and if the ground is liberally manured the plants will not suffer from exhaustion of the soil.

Bunching Vegetables for Profit

In discussing the best methods for bunching crops, at a meeting of the Toronto Vegetable Growers on January 6, Mr. R. Lankin claimed that much time and money was lost by the system followed by many of the growers. Putting up small bunches was claimed to entail a great loss of time, and it was pointed out that with the vegetable grower, as with other people, time means money. With almost every crop larger bunches can be made with advantage and profit to the grower.

It was asserted by Mr. Jos. Allen that many retail dealers want five cent bunches and if larger bunches are made they frequently sell for less than they are worth. Mr. Jos. Rush advised that an effort should be made to establish a

uniform system of bunching throughout Ontario. One grower does not know what another grower means by a bunch. A five cent bunch means anything. It may consist of 12 onions or there may be only six. Something definite should be decided on. He recommended that beets and carrots should be put six in a bunch, onions 12 in a bunch, and radishes 12 in a bunch. He pointed out that more care should be taken by the individual grower in grading the vegetables. It was suggested that the Association draw up a scale for bunching and submit it to the other Vegetable Growers' Associations. Something should be done to adopt the same system throughout the Province.

Mr. Delworth remarked that bunching as practised by many growers is very expensive, and in many cases more could be had for the same crop if it were sold in bulk. Much of the bunched good was sold at a loss when labor is counted in. The time required for washing and tying ran away with the profit. A great many growers get into the way of bunching and do not change their methods because they have never figured it out. It was suggested by Mr. Geo. Syme that the system of bunching should be regulated by the merchants to whom the goods are to be sold. The high-class butchers and grocers want bunches that will sell two or three bunches for 10 cents, whereas peddlers want everything in five cent bunches.

The Onion Bed

In an interview with THE CANADIAN HORTICULTURIST, Mr. George Benner, of Burlington, said, "The onion bed should not be ploughed in the spring as the ground is much more easily kept clean. I use plenty of manure and plough it in in the fall. If the bed is slightly rounded up to keep it free from water and prevent baking of the surface soil, better results are sure to come."

"Snow or frost will not hurt onions. I sow early Globe Denvers as early as the ground can be worked. The best yield can be had from planting in rows 12 inches apart. These can be cultivated readily with the hand cultivator. Plenty of work is needed to keep the onions growing steadily". "One of the main things in growing onions," says Mr. Benner, "is to have the crop ripened and cured before rainy weather comes in the fall."

Peppers need rich sandy loam and frequent cultivation. I grew 8,000 plants last year. They were started in the greenhouse about the middle of February. One transplanting is sufficient. After all danger of frost is past I plant them in rows two and a half feet apart, and one foot apart in the row.—(Geo. Benner, Burlington, Ont.)

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THE SPRAYING SITUATION

Happily for the fruit industry of Canada, orchardists in all sections are gradually adopting spraying as one of the essentials to the production of first-class fruit. In some districts and in some exceptional seasons, conditions are such that the grower does not feel that the ravages of insect or fungous pests warrant the expenditure of time and money demanded for thorough work. For continual success, year after year, scientific spraying pays. Leading orchardists in the various fruit sections have proved this.

Some successful growers claim that they can reap bountiful harvests by proper cultivation and by maintaining such conditions that insects have no harboring or breeding places. These precautions are beneficial, but where 60 or 75 per cent. of the crop is free from blemish under such conditions, 90 per cent. would be perfect if spraying were carried on in conjunction. In most sections the orchard pests must be fought in more ways than one. That this is the case has been brought home forcibly during the past few years to those who grow fruit extensively.

The difficult part of the spraying problem is to show the man with the small acreage that thorough spraying must be done. Many such growers cannot afford to purchase a power sprayer, and effective work cannot be guaranteed by the ordinary hand pump. In some sections, an attempt has been made to have the spraying done by the same system as threshing is done. This method furnishes the proper power but it has disadvantages. The chief objection is that a great number of orchards are not sprayed at the right time. Practically all the trees in a locality are ready for spraying about the same date. Farmers at the best, are slow to agree under such circumstances. Everybody wants the sprayer at the same time. The result is numerous orchards go unsprayed and the owner of the machine does not make sufficient cash to convince him that it is a paying investment. When associations own the machine and hire the operator the latter difficulty is overcome, but the former remains.

There are two ways in which this may be remedied. One is the education of the farmers or fruit growers, by example where possible, to work together more harmoniously for mutual benefit; the other is the placing on the market of a less expensive power machine. At present too many have to club together to make the operation of the machine a paying proposition, and the result is some orchards do not receive effective treatment. Thus, centres are left from which insects and fungi spread to the surrounding orchards. The same conditions exist in the leading fruit sections. Here and there is a grower who will not spray. His orchard, then is the breeding centre for the district, and the labor connected with spraying is doubled to his neighbors.

There is yet much to be done before spraying will become general in the apple sections. The governments have done yeoman service, but much remains to be done. The co-operative fruit growers' associations, too, have in some cases been of great benefit in introducing the practice, and in forcing members to spray their orchards thoroughly a certain number of times. The small, unsprayed orchards are the curse of fruit growing. It is the duty of those who realize the advantages of spraying to spray the more thoroughly and show their less intelligent neighbors by practical results that it pays. It may take time but eventually they will be converted.

DOMINION FRUIT CONFERENCE

There will convene at Ottawa this month the most important gathering of fruit growers ever held in Canada. The delegates appointed by the various provincial fruit growers' associations are the leading and most representative fruit growers in the Dominion. It is well that this is the case, because the matters that are to be discussed are of vital importance to the fruit industry.

The convention will fail in one respect if it does not succeed in arranging for the holding of similar conferences at regular periods in the future. Spasmodic gatherings of this nature accomplish but little. There is as much and even more reason for the holding of annual, or at least bi-annual national conferences, as here is for the annual conventions of the provincial associations. The matters to be discussed this year are of such far-reaching importance they can be carried to a successful issue only by systematic and sustained effort. The provincial governments give financial assistance to their local associations each year. The Dominion government should do the same for a larger body.

THE CANADIAN HORTICULTURIST will be enlarged next month that it may contain as full a report of the conference as possible. Here's wishing the gathering will prove a complete and unqualified success—the first of many more to follow.

HORTICULTURE AT GUELPH

In another column appears a letter explaining some of the difficulties under which the staff on horticulture at the Ontario Agricultural College has been working, and improvements that are needed. This letter has been brought out as a result of the criticism in these columns last month of the work being done by this department at the college. The latter really goes to prove the strength of our contention. Had the need for these improvements been pressed with sufficient vigor, it is probable they would have been secured long ago.

In the speech from the throne, at the opening of the Ontario Legislature, improvements in the work at Guelph were foreshadowed. THE HORTICULTURIST understands that considerable is to be done to strengthen the horticultural department. We trust this is the case, and will be glad to do what we can to assist and supplement the work of this branch of the college in every way possible.

A RETRACTION

THE HORTICULTURIST regrets to find that in its Winnipeg correspondence last month an injustice was done the branch of The Ottawa Fruit and Produce Exchange at Winnipeg, which was credited with having sold 300 to 350 barrels of Ontario fall fruit a day at five cents a barrel. Our Winnipeg correspondent first sent us his notes alone. These referred to the large quantities of fall apples that were being stored in Winnipeg, and that would have to be sold at prices that would demoralize the market. Later he forwarded a clipping from the Winnipeg Free Press, which stated that large quantities of Ontario fall fruit were being sold at five cents a barrel, as high as 350 a day having been auctioned off by The Ottawa Fruit and Produce Co. Although our correspondent did not vouch for the truth of the article, he suggested that it might be published in a manner that would tend to strengthen the point made in his correspondence. As space prevented our using the article in full separately and as it had been sent by our correspondent, we took the liberty of embodying a short note concerning same in his correspondence. Care was taken to quote the Winnipeg Free Press as authority for this information.

The Ottawa Fruit and Produce Exchange has written us that the information as published was false and that the Winnipeg Free Press has made a complete retraction of same. Instead of large quantities of Ontario apples having been auctioned off at that price some twelve barrels only were sold. These apples had been kept in cold storage by mistake through the shipper not naming correctly the variety of apples in the cars. The company further states that they have no artificial heat in their cold storage cellar to injure the quality of their apples, although our correspondent did not intend to imply that they had. These being the facts of the case THE HORTICULTURIST desires to express its regret that anything was published that did an injustice to The Ottawa Fruit and Produce Company.

The Fruit Growers of Canada Indignant

It is evident from the expressions of opinion that are constantly reaching THE CANADIAN HORTICULTURIST that the fruit growers of Canada are not going to be content until they have and independent fruit commissioner of their own. The feeling of dissatisfaction over the existing arrangement, by which the chief of the fruit division is under the dairy commissioner, is general throughout the Dominion. The following are views from representative fruit growers that have been received recently. Rev. Father A. E. Burke, Aliberton, P.E.I., president Prince Edward Island Fruit Growers' Association: "This province, through the fruit growers' association, has protested vigorously, by a resolution sent to Hon. Mr. Fisher, against the degradation of the fruit division of the Department of Agriculture. We will continue to do so until this important branch of our national resources is placed on a proper footing and permitted to exert the measure of influence it should exert in developing fruit culture in Canada. The general feeling is that a fully authorized commissioner should direct the policy of the fruit division under the minister only, and nothing less will satisfy the organizations specially fostering horticulture or the horticulturists of this country."

Mr. J. C. Metcalfe, Hammond, B.C., president British Columbia Fruit Growers' Association: "The fruit interests of the Dominion are of sufficient importance to have a department and chief of their own. It should not be subordinate to any other department or chief. The head of the fruit division should stand next to the Minister of Agriculture and should not be under the necessity of making representations through an intermediate or the chief of another department. The various problems that are continually cropping up and confronting the fruit grow-

ers, such as the changing conditions of trade and markets, transportation, cold storage, co-operation and numerous other questions, render it necessary that we should have a department and chief who could give his time and special attention to the requirements of the industry, having at the same time the direct ear of the minister without the interference of the chief of another department whose sympathies and energies are given more to the department or class of work congenial to his tastes, training and education."

Mr. S. C. Parker, Berwick, N.S., secretary Nova Scotia Fruit Growers' Association.—"Fruit growers in Nova Scotia are feeling very strongly the injustice of making the fruit department subservient to the dairy branch of the Department of Agriculture."

Constitution Changed

At a general meeting of the Niagara Peninsula United Fruit Growers' Association, held in St. Catharines, Feb. 17, the principal business dealt with was the amendment of the constitution as proposed by a committee at the last regular meeting. After considerable discussion on all clauses of the constitution a few changes were made. It was decided to drop the word "United" from the name of the association. The work and area of the association was extended from Welland and Lincoln counties, as heretofore, to include also the counties of Wentworth and Haldimand. The membership fee in future will be \$1.00 per annum, which sum will include membership not only to the Niagara Peninsula Association, but also to the Ontario Fruit Growers' Association, with its many privileges, including a year's subscription to THE CANADIAN HORTICULTURIST.

It was decided to hold a series of meetings at the same points as last year, and on the following dates: Stony Creek, Mon., March 12; Grimsby, Tues., 13; Beamsville, Wed., 14; Jordan Station, Station, Thur., 15; Queenston, Fri., 16; St. Catharines, Sat., 17.

The association is now in communication with Prof. Craig, of Cornell; Mr. Geo. T. Powell, of Ghent, N.Y.; Prof. Van Deman, Rochester, N.Y., and others, and of these one will be secured to address the meetings. Local practical men also will deliver addresses and lead the discussion.—(A.B.C.)

Dominion Fruit Conference

The Ontario, Quebec, Nova Scotia and Prince Edward Island Fruit Growers' Associations have appointed the following delegates to attend the Dominion Fruit Conference to be held in Ottawa, March 20, 21, 22. The list of delegates appointed by the British Columbia Association has not been announced yet.

ONTARIO—Harold Jones, E. Lick, W. H. Bunting, Robert Thompson, M. Pettit, A. W. Peart, J. L. Hilborn (?), (W. D. A. Ross), D. Johnson, A. E. Sherrington.

NOVA SCOTIA—Ralph Eaton, R. W. Starr, G. C. Miller, W. H. Sangster, S. C. Parker. One N.S. delegate will have to be left off, and it will probably be Mr. Sangster.

PRINCE EDWARD ISLAND—Reverend Father Burke, A. E. Dewar, Professor Ready.

QUEBEC—G. Reynaud, La Trappe; J. M. Fisk, Abbotsford; N. E. Jack, Chateauguay Basin; R. W. Shepherd, Comon; Robert Brodie, Westmount.

An Omission.—In the report of the annual meeting of The Horticultural Publishing Co., Limited, published in our last issue, the name of Mr. A. W. Peart, of Burlington, was omitted from the list of directors appointed for 1906.

Please accept my congratulations for the February HORTICULTURIST, which is the first issue I have seen in its new form, and I like it very much indeed. It should be of much more value to its readers.—(Prof. F. C. Sears, Truro, N.S.)

The Horticultural Department at Guelph

THE editorial in the February issue of THE CANADIAN HORTICULTURIST entitled "Improvement Needed at Guelph," and claiming that the horticultural department at the College has not been as valuable to the fruit and vegetable growers of the province as they feel it should have been, has attracted a great deal of attention. One or two letters have been received claiming that the editorial did not do justice to the College, but among the rank and file of the growers the editorial has been generally commended.

The following letter, which is referred to editorially, has been received from a gentleman who is well informed in regard to the work of the horticultural department at the College. This party requested that his name should not be published.

EDITOR THE CANADIAN HORTICULTURIST:

The editorial in the last issue of THE CANADIAN HORTICULTURIST, in my opinion, does not do justice to the work of the horticultural department at the Guelph College. In the first place, I think your criticism is likely to mislead the public because they are not aware of the nature of the manifold duties devolving upon the horticultural department. Its first duty, of course, is the instruction of students. This part of the work has developed more within the last few years than the public has any idea of. When Prof. Hutt took charge of the department 13 years ago, horticulture was a minor subject on the curriculum, consisting of but a few lectures in fruit growing given to the second year. To-day it is one of the major subjects, embracing fruit growing, vegetable gardening, landscape gardening and floriculture, given throughout the year to the first, second and fourth years, and to the lady students and teachers' classes in attendance at the Macdonald Institute. Thirteen years ago the attendance at the College was less than 300 students; last year the total attendance was over 1,000 students. Yet in this time but one assistant has been added to the teaching staff of this department, and through necessity the florist has been pressed into the work in addition to his regular duties. At the Illinois Agricultural College two professors, two assistant professors and two demonstrators are employed to do the same work that three men are doing at Guelph, and Ontario does not in anyway have to take second place to Illinois in importance of horticultural matters.

Second, the horticultural department, in addition to its teaching, has to maintain a large catering department, furnishing fruits and vegetables to the College boarding-houses, and furnishing flowers and plants for the regular decoration of tables, and almost weekly decor-

ation of other buildings for public receptions and meetings. This particular work has more than doubled since the addition of the Macdonald Institute. It has also to maintain greenhouses for public display, and to keep over 40 acres of lawn and grounds in a condition to be above criticism from the thousands of visitors who visit the College annually. For all of this work the department has been barely able to get a sufficient grant to employ the labor needed; yet it has received no credit for anything of this kind in the public accounts, and to but a limited extent in the eyes of the general public.

Third, the general public looks to the department to carry on as much investigation work as is done at the Ottawa Experimental Farm, where the members of the staff have their whole time for such work, and are not required to lecture or manage a catering department for the rest of the institution. At many of the American Experiment Stations they have a separate staff for the college and one for experiment station work. It is hardly to be expected that with all the other work devolving upon the staff at the College it can do as much investigation work as where they have nothing to do but investigation work, as has been the case, even in the Experimental Department at Guelph. You will find by referring to last year's report that much more investigation work has been undertaken at Guelph than your editorial would lead the public to believe; in fact, the staff has undertaken as much as the funds at its disposal would allow, for it has never yet had any special grant for this purpose, and what has been done has been squeezed out of the already insufficient labor grant.

An effort has been made to overcome the handicap of climate by developing the co-operative plan of work. This has been done through the Fruit Experiment Stations and through the Experimental Union, both of which the horticultural department was instrumental in organizing. Last year there were over 2,000 experimenters engaged in this work. With a promised increase in the grant for the work this year, the work has been greatly extended, and already over 1,000 applications from experimenters who wish to undertake the work this spring have been filed.

The crying need of the department is for more assistants and more financial support to enable it to undertake the work before it, and it is up to the fruit growers, vegetable growers, florists and horticulturists throughout the Province to see that their department is as liberally sustained as other departments of the College which have a well-organized constituency and good financial support at their back.

A FRIEND OF THE COLLEGE.

Excellent Work of the Toronto Branch

That the monthly meetings held by the members of the Toronto branch of the Ontario Vegetable Growers' Association will result in much benefit to the gardeners surrounding Toronto, impresses those present more forcibly at each meeting. On Feb. 3, the executive reported on the progress they had made in securing lower rates by purchasing their supplies as an association. Several firms had been seen, and it was learned that a considerable reduction in prices could be had on boxes, Paris green, etc. The matter of deciding on what firms should be dealt with was left in the hands of the committee. Several members referred to different purchases of seeds and other supplies in which they had been defrauded. It was suggested that in future, if any firm misrepresented its goods to the disadvantage of the grower the matter should be reported to the executive, and the matter be investigated. Judging from the free-

dom with which the discussions were entered into the members are gradually getting away from the idea that the gardener's neighbor is his greatest enemy. Each member seemed anxious to let his brother gardener know all the secrets that he had gained from his experience.

The question of "Forcing Rhubarb" was fully dealt with by Mr. Thos. Delworth, of Weston. He had tried growing this crop from seedlings, but found it difficult to obtain satisfactory results. Better returns could be had if strong, thrifty roots were used.

In discussing celery-growing, Mr. Geo. Syme, Jr., said that it was the most profitable crop a gardener could grow. His experience with three different kinds of soils had shown that sandy loam was best.

At 3 o'clock on March 3, in the Albion Hotel, the following subjects will be discussed: Early Cabbage, by J. Stevens; Celery Growing, by W. Harris; Early Beets, by A. Shuter. The members are requested to bring along any gardeners who may be interested, whether members or not.

With the Horticultural Societies

At a meeting of the directors of the Toronto soc. in St. George's Hall, on Feb. 20, steps were taken to obtain some permanent improvement in the condition of the boulevards and lawns of the city by the planting of trees and shrubs and hedges at street corners, etc., and to establish combined effort on the part of the residents of different neighborhoods. It was decided to appoint qualified persons to make suggestions for the beautification of a street or neighborhood, and interest the residents by advising them of the recommended and possible improvement, and to invite them to meet and discuss these improvements, and to obtain the combined effort sought.

To stimulate the civic improvement move, arrangements have been made with Mr. J. Horace McFarland, pres. of the American Civic Improvement Assn., to deliver a lecture on or about Mar. 20. Lectures regarding beautifying home surroundings and others of a similar nature will be delivered bi-monthly during the year. The executive decided to join forces with the Guild of Civic Art, and Col. Delamere was appointed representative of the society, to work with the executive of the Guild.

DUNVILLE'S NEW SOCIETY

In January residents of the town of Dunville held a meeting and organized a society known as the Dunville Horticultural Society. Already our membership is approaching the 200 mark. The people of this town are interested and we expect to make Dunville one of the most attractive towns in Western Ontario.

Officers for the year 1906: Pres., F. R. Lalor, M.P.; 1st v.-pres. Judge Douglas; 2nd v.-pres., S. W. Brown, D.D.S.; treas., L. Werner; sec., L. H. Weaver, directors, Wm. Patterson, J. H. Rowe, G. H. Brett, F. Waines, R. G. Hucks, J. A. Scholfield, C. H. Weaver, J. H. Smith, W. Fry, auditors, Messrs. A. W. Hume and G. Mussen.

BRANTFORD.

The adjourned annual meeting of Brantford soc. was held Jan. 18, when the following officers were elected: Pres., John Thresher; 1st v.-pres., A. McMeans; 2nd v.-pres., H. Waddington; sec., R. W. Brooks; treas., John H. Adams; auditors, H. F. Leonard and C. T. Errett; hon. director, J. Y. Morton; directors, Jas. P. Hoag, W. B. Wickens, D. Dempster, J. T. Rose, H. B. Adams, J. E. Baker, J. Tilley, R. J. Taylor, T. Ranson.

Committees were appointed to arrange membership cards in regard to offering premiums and flower seed to the school children.

Last year nearly 6,000 packages were distributed; a considerable increase is provided for this year. The secretary was authorized to communicate with the city council asking for an increased grant, and also to have some land now belonging to the city, containing about two

acres, laid out with walks and planted with trees, shrubs, and perennial flowers and properly labelled with both botanical and common names, with the idea and purpose of nature study.

The society is on the eve of a very prosperous term, having a balance on hand of \$160. The teachers of the public schools are anxious to

have a school show of work done by the pupils to be held at the same time and place as the exhibition, but not in any way to interfere with the funds.

MILLBROOK.

During 1905 much was done by the Millbrook soc. to maintain the high standard of beauty that is found around the residences and public buildings of that town. At the annual meeting it was decided to continue distributing plants, seeds and bulbs among the members. The officers for 1906 are: Pres., A. T. Armstrong; 1st v.-pres., G. A. Duncan; 2nd v.-pres., Mrs. T. Gillott; sec.-treas., W. S. Given. Last year some members took *THE CANADIAN HORTICULTURIST*, and others selected other papers. This year, however, it was unanimously voted to take *THE HORTICULTURIST*.

HAMILTON.

At a meeting of the Hamilton soc. on Feb. 5, Prof. H. L. Hutt, of Guelph, gave a very interesting address on "The City Man's Garden." Prof. Hutt advised the members to make the best use they could of the space at their disposal in the gardens by having fruits, flowers and vegetables. He gave a number of valuable pointers, and distributed documents of an instructive character. One paper contained a list of 50 hardy perennials of a desirable kind which had been tested at the college. Mention was made of the way in which they were usually propagated. Another paper contained a list of the leading varieties of vegetables with notes on their cultivation. He also gave pointers on fruit trees.

GRIMSBY.

At a meeting of the directors of the Grimsby soc., Jan. 29, at which two very important questions with regard to the coming year's work were taken up. First, that of endeavoring to encourage the school children in the cultivation of plants and flowers. The plan presented was that of appointing a committee to distribute flower seeds to the children in the spring, with the object of having them cultivate a plot of plants and flowers at their homes, and in the fall hold an exhibition at which one department would be given over to the children, and prizes would be offered for the displays from the children's flower gardens. The committee would also have the oversight of the children's gardens during the season, instructing and encouraging them in the cultivation and attendance.

Another matter discussed was that of "beauty spots," or local improvement, and the beautification of the village and township. A committee, consisting of J. A. Livingston, Dr. Smith, H. K. Griffith and J. W. Brennan, was appointed to take steps with regard to this matter.

GUELPH.

There was a large attendance at the postponed meeting of the Guelph soc., Jan. 30. Floral songs were a special feature. A resume of the work done during the past year, given by the sec., Miss A. Rose, showed that 8 public meetings had been held, 925 packages of aster seeds distributed to pupils in the public and separate schools, an exhibition of the aster blooms held, and many prizes given, 57 trees, donated by citizens, and planted under the direction of the horticultural society, and window boxes placed on the city hall and post office.

Pres. Harris emphasized the work among the school children, and said it was most important and should be continued. Civic improvements should receive great attention. He suggested prizes for best window boxes, best kept lawns and gar-tens, and asked the members to be satisfied with smaller premiums that the money might be expended on civic improvements. Mr. Harris strongly urged all to become members, and so enable the society to receive the maxi-

mum Government grant, which is based on membership. The premiums for 1906 include Sweet Pea seed, Asters (Semple's branching), Gladioli, Hydrangea paniculata, Spirea Van Houtti, Rose, Gen. Jacqueminot.

The following officers were elected:—Pres., Rev. P. C. L. Harris; 1st v.-pres., E. Shuttleworth; 2nd v.-pres., Jas. Anderson. sec., Miss Annie Rose; treas., Wm. Ross; hon. director, Jas. Goldie, directors, Mayor Sleeman, Prof. Hutt, Dr. Dryden, J. W. Lyon, Thos. Till, Wm. Hunt, Jas. Gilchrist, C. C. Dawson, T. J. Moore.

PORT DOVER.



J. A. Symington,
Port Dover

At the annual meeting of Port Dover soc., the election of officers resulted as follows: Pres., Jas. Symington; v.-pres., John Aldridge; 2nd v.-pres., R. M. Taylor; sec.-treas., F. J. Taylor; directors, W. J. Carpenter, J. Aldridge, W. Stamp, G. Walker, F. Ryerse, J. E. Anderson, C. McNeillidge, R. S. Fleming and M. Hodge; auditors, L. G. Morgan, W. R. Liddy.

Pres. Symington called on Mr. W. R. Liddy, B.A., to lead in a discussion on the advantage and profits of peach growing. Mr. Liddy gave an interesting and instructive address and was followed by L. G. Morgan, Jas. Symington, J. E. Anderson and R. M. Taylor.

A committee was appointed consisting of Messrs. Symington, F. Taylor, Anderson and R. M. Taylor to report on the best variety of peaches for that locality, and a resolution passed requesting the residents of Port Dover and surrounding tountry to give the growth of peaches a fair trial and report the result to the society.

A Valuable New Idea

We are in receipt of that marvellous book of strawberry lore, the 1906 issue of R. M. Kellogg's "Great Crops of Strawberries and How to Grow Them." This book is one of the handsomest of its kind in print and it is a veritable picture book, filled with beautiful illustrations of home scenes of enthusiastic strawberry growers and other characteristic views beautifully reproduced in half-tone.

The R. M. Kellogg Co. is authority on everything that relates to the strawberry and its production.

The flood of questions concerning strawberry culture, which reaches that company's office daily, has resulted in the determination of its management to establish a correspondence school of strawberry culture, in which everybody, everywhere, may receive thorough, practical instructions just when most needed. An illustrated monthly magazine will be the medium between this school and its membership.

The new catalogue issued by John A. Bruce & Co., seed merchants, of Hamilton, is full of valuable information for those interested in horticulture or general farming. A full line of seeds used on the farm and in the vegetable garden, flower garden and greenhouse is listed. New introductions are offered to the public with full descriptions and fine illustrations. This firm also carries a supply of gardeners' tools, spraying outfits and general sundries handled by up-to-date seed merchants.

Work Being Planned by the Ontario Vegetable Growers

THE various branch associations of the Ontario Vegetable Growers' Association have all held their annual meetings, and appointed their representatives on the board of the provincial association, which is now fully organized. A meeting of the executive committee of the Ontario Association was held in the secretary's office, Toronto, Feb. 7. Those present included Messrs. J. H. Lewis, of the Hamilton branch; Geo. Syme, Jr., Jos. Rush, F. F. Reeves, and Thomas Delworth of the Toronto branch; John Atkin of the Sarnia branch, Mr. Ross of the Chatham branch, A. McMeans of the Brantford branch, W. C. McCalla of the St. Catharines branch, and the secretary, H. B. Cowan. Mr. Robert Thompson, president of the St. Catharines branch, was also in attendance, although not a duly qualified delegate.

The secretary reported that lists of paid-up members had been received from the various branches as follows, entitling them to the number of representatives on the provincial board mentioned: Toronto, 152 members, 6 directors; Brantford 25 members; St. Catharines, 26; Chatham, 26; Hamilton, 30; Sarnia, 25; each entitled to one director.

The election of officers resulted as follows: President, F. F. Reeves, of Humber Bay; 1st vice-pres., A. McMeans, Brantford; sec.-treas., H. B. Cowan, Toronto.

Mr. Rush reported on behalf of the committee who had been appointed to interview Mr. Putnam in regard to a series of meetings for vegetable growers, that he had seen Mr. Putnam, who was willing to assist this work.

The secretary read a series of questions that had been sent to the branch associations, and the representatives from the various associations reported the decisions of their members in regard to the points raised in the statement. On motion of Mr. Delworth, seconded by Mr. Ross, it was decided to appoint an executive committee which committee should conduct the routine business of the association. On motion of Mr. McCalla, seconded by Mr. Atkin, the president, vice-president, Mr. Lewis and the secretary were appointed a committee.

The advisability of the association expending money to obtain crop reports was considered. The feeling of the meeting was that crop reports would be a splendid thing for the vegetable growers of the province, and that if they were issued properly they would be of great value. The best method of obtaining these crop reports was considered, and the expression of opinion was that it would be better to have a few men in the leading vegetable sections paid to forward letters at stated intervals covering the conditions in their sections, rather than to obtain a large number of correspondents and expect them to report for nothing. It was pointed out that such men would make it their business to acquaint themselves with the actual conditions in their districts. The matter was left in the hands of the executive committee with power to act.

The advisability of petitioning the government to appoint an appraiser whose duty it would be to examine consignments of vegetables from the United States imported into Canada and find if they were undervalued by the consignee, and where such was found to be the case to place a proper valuation on same was considered. It was decided that a deputation from the association should wait on the Dominion Government and impress on the government the urgent need for a specific duty on vegetables, but failing this the need for the appointment of a competent appraiser, whose duty it would be to watch the valuation placed on vegetables imported into Canada through the principal points of entry. On motion of Mr. Lewis, Messrs. Delworth, McMeans and the secretary were appointed a committee to wait on the government to press this matter. The committee was authorized to arrange with the growers in the Province of Quebec and with growers in the vicinity of Ottawa, to act with them in pressing this matter on the government.

The executive committee was instructed to wait on the Minister of Agriculture for Ontario, to request that experimental work in the growing of vegetables and combating insect pests, fungus diseases, etc., be carried on much more extensively than in the past. It was stated that this committee should gain information as to what has been done in this direction not only in Ontario but in the States of the American Union.

Mr. Syme reported that the committee to wait on the officials of the Toronto Industrial Exhibition to see that the association was given proper representation on the board of management of that exhibition had seen Dr. Orr. At first Dr. Orr had not given them as cordial a reception as they felt they were entitled to receive, and it was not until they intimated that the association might be willing to make a grant to the Toronto Industrial that Dr. Orr seemed willing to give them the reception they felt they should have been accorded. Dr. Orr finally suggested that a committee from the association should meet

with him and go over the prize list for the Toronto Industrial. On motion of Mr. Syme, Mr. Reeves and Mr. Rush were appointed to confer with Dr. Orr in regard to this matter.

The secretary reported that he had written to the members of parliament in the various districts of the province where it was stated that there were vegetable growers and had asked them for the names of prominent growers who might be interested in forming branches of the association. He had received a large number of replies from the members, and thought it would be advisable for a committee to be appointed to go into this matter thoroughly. One reply from the Napanee section stated that there should be no difficulty in organizing a branch at that point with 170 members. The executive committee was authorized to act as an organization committee.

Messrs. Reeves, Delworth, McCalla and Lewis were appointed to represent the association on the executive of the Ontario Horticultural Exhibition.

Our Prince Edward Island Letter

Rev. Father Burke, Alberton, P.E.I.

AS the session of Federal Parliament is to be called March 8, the Horticultural Council so anxiously awaited by the fruit growers will not assemble until about the middle of that month. Meantime the schedule of questions is before those concerned, and it is the duty of the delegates to properly qualify themselves to intelligently discuss the subjects, and give a vote calculated to advance the general interests involved. Concerted action is earnestly required to remove from the region of controversy many of the burning questions that have beset the instruction propaganda of the country, and confused the public mind at home and abroad. Different sections may hold widely different views, but a policy of give and take must be adopted in many things, so that something definite may be snatched from the assembly, and the fruit interest advanced a long pace towards complete organization.

In Prince Edward Island we are deeply interested in all the phases of horticulture, from the educational to the commercial. We had a sort of paternal attention from the Federal Department of Agriculture under Prof. Robertson. Since his withdrawal from the general commissionership of agriculture for Canada, however, this department has failed us, and failed us at a most untoward time. The fruit inspectors under the Marks Act were here as instructors in the interim between crops and they did much to advance horticulture generally. They visited the neglected orchards and inspired the dejected with new courage: they brought fresh methods

and new ideas to those who were busy at the work; they held meetings and aroused the whole community—and thus thoroughly awakened the province to its possibilities in fruit production.

The fruit division at reconstruction went as an appendage to the dairy division, and with this much of its usefulness, so far as we were concerned, departed. The instructors were withdrawn at the moment the province was suffering from a great loss in its orchards because of severe snow banks which resulted in the breaking down of innumerable plantations. Then spraying was withheld and instruction done away with as a specialty of our horticulture, with the result that the forward pace of other years has not been maintained.

We hope for a better adjustment of representative interests at Ottawa, and a return to the policy that helps the country forward most here, handicapped by our insularity, we cannot be too generously treated in the encouragement of the few pursuits that can be followed with some show of success.

Our winter is not such so far—and the worst is probably past—as to cause us any concern about our apple plantations. The weather is very mild and there is enough snow to cover the ground perfectly, but not enough to make dangerous banks such as break down trees, or afford a shelter for the mischievous mouse. The glass has seldom registered zero, and the killing back of severe seasons need not be feared. There is no ice in the straits. The conditions are unusually mild.

Workmen Fined Too

Further penalties have been meted out to those who persist in violating the Fruit Marks Act. Some time ago Mr. Jas. Coyle, of Colborne, was fined \$50 and costs for improper marking. This was not sufficient to put a stop to the fraudulent practice in that section. Since the first conviction John Coyle, a member of the firm of J. and R. Coyle, apple operators, Colborne, Ont., has been fined \$30 and costs as owner at the time of packing of very poor apples marked No. 1 in violation of section 6 of the act. He also was fined \$5 and costs under section 4 of the order-in-council, as foreman of the men who packed this fruit.

Geo. Bachelor, boss packer for J. and R. Coyle, and A. Turney, boss packer for F. C. Morrow, were fined \$5 and costs under section 4 of the order-in-council. Other convictions under section 6 of the Fruit Marks Act were: C. A. Nugent, fined \$5; F. F. Snelgrove, \$12.75;

R. D. Snelgrove, \$6.50; and J. D. Osborne, \$6, with costs in each case.

In the case of the workmen, Messrs. Bachelor and Turney, there was no desire to be particularly severe. It was only where there was the clearest evidence of the workmen knowingly assisting in perpetrating a fraud that the fruit inspectors felt justified in prosecuting the laborers in the packing houses.

Seed Potatoes.—Smith Bros., of Beachville, have worked up a large business in seed growing. Last year ever 1,000 bushels of potatoes alone were grown for seed. This firm is carrying on a very important work in selecting from the finest of the finest each year. The Eldorado potato, mentioned in their advertisement in this issue, is highly spoken of as a heavy cropper and good quality. Smith Bros. are members of The Canadian Seed Growers' Association, and sell seed stock with registered pedigrees.

Spraying Pointers from Practical Sprayers

THE practical value of spraying becomes more and more evident as the seasons go by. Insects and fungi are becoming more numerous and are constantly changing their habits from one class of plants to another. Man is constantly enlarging the number of these foes by increasing the area of cultivated plants upon which they feed. Competition itself, which is the life of the fruit trade as well as all other branches of commerce, forces fruit growers to realize the necessity of spraying by elevating both the ideals of the growers and the demands of the market.

Government aid and legislation also have done much to encourage the practice of spraying, while there are some insurmountable difficulties in the enforcement of pest laws; yet, their value to the fruit industry of this country has been and is much greater than most people realize. Our pest laws have helped to keep out of the country many serious plant and tree troubles; they have demonstrated to the practical grower the practical value of spraying in holding within bounds the San Jose Scale and other pests now in the country; and also they have materially controlled the distribution of plant diseases and fungi that are more or less permanent or perennial, such as peach yellows and the black knot of the plum and cherry.

SODA BORDEAUX AND PARIS GREEN

In the Niagara district last year some growers suffered loss through the application of soda Bordeaux and Paris green to fruit trees, particularly in the case of cherries. Some time ago Professor Shutt, of Ottawa, and Professor Lochhead, of Guelph, recommended the use of this mixture on potatoes; they did not recommend its use on fruit trees. Many practical growers used it on their cherry and other trees—which they were free to do if they wished—and as a result considerable damage was done. Now, some of these growers are throwing the blame on the officials at Ottawa and Guelph. At the fruit growers' convention held in Toronto last November, Professor Shutt explained the cause of the damage as follows: When the compound that makes up soda Bordeaux comes in contact with the compound Paris green, the soda of the soda Bordeaux enters chemically into combination with the arsenic of the Paris green and forms a new compound known as arsenite of soda, which is known to be harmless when applied to the potato plant, but very injurious to fruit trees.

THE CARE OF NOZZLE AND OUTFIT

Mr. W. H. Brand, Jordan Station, Ont., who has had many years' experience with various makes of spray pumps, gave the writer some general information in the following words: "From many people we hear a howl about the difficulty in starting up their spraying outfits after they have been idle for a period. A great deal of this could very easily be avoided if sprayer operators would spend about five or ten minutes in washing out by running perfectly clean water through the machine pipings, valves, etc., and by taking off the nozzle heads entirely and placing them in a bucket of clean water, there to remain until wanted again. Being of either brass or aluminium they will not rust. Spraying outfits would be longer lived if accorded better care and better winter and summer housing."

STRAIN THE MIXTURE THOROUGHLY

"A large number of sprayer operators are astray in their preparation of mixtures, containing lime, sulphur, or other such ingredients from which a sediment forms or in which may be at the outset coarse particles. All such mixtures should be run through three screens, viz., first a 20-mesh, next a 30-mesh, and finish through a 40-mesh, (a 50-mesh would be still better).

This removes particles which are not of the slightest value but which prevent free flowing through very fine nozzles, which are best for finest atomizing. Spraying with the air current or wind saves from $\frac{1}{2}$ to $\frac{2}{3}$ of the mixture and

means money. Free flowing means less time spent in stops to clean out clogged nozzles and waste of material while so doing."

AN EXPERIMENT WITH SCALECIDE

Early in December last Mr. W. H. Bunting, of St. Catharines, made an application of Scalecide, in the proportion of two gallons to forty gallons of water, to plum, pear and peach trees badly encrusted with scale. On February 20 he examined the trees in company with your representative, and compared them with unsprayed trees in adjoining rows, and found no apparent injury to the trees from the application of the Scalecide. After a careful examination under the glass, he came to the conclusion that while not all have been killed a very large percentage of the scale has been destroyed. Mr. Bunting has forwarded samples of sprayed twigs to Professor Lochhead of Guelph, and to Dr. Fletcher of Ottawa, for further examination. At a later date we hope to publish further details.

Scalecide was tried this winter also by Mr. F. G. Stewart, Homer, who cites his experiences as follows: "About the middle of January I applied this mixture in the proportion of one gallon to 20 gallons of water, using about one gallon to a tree. I examined the trees early in Feb., and found that the scales were loosened and could easily be rubbed off the bark with the fingers. I think that most, if not all, of the scales have been killed. If further examination confirms present results, I shall use Scalecide in my orchards in future instead of lime and sulphur."

SULPHUR FOR PLUM ROT

Mr. Murray Pettit, Winona, said that plum rot can be controlled by dry sulphur dusted through the trees. Two applications should be made; first, when plums are just formed; and second, two weeks later. Mr. Pettit has tested the sulphur treatment on rows side by side with trees treated with Bordeaux mixture, and found the former to be the better.

IS SPRAYING NECESSARY?

In interviewing fruit growers I occasionally find a man who objects to spraying. Some have never given the operation a trial, and others have tried it and obtained no results. Both these classes of growers should bear in mind this fact—healthy foliage in fruit trees is necessary one year for the crop the following season. If a grower has an orchard with foliage that is vigorous and free from all kinds of tree troubles it may be a waste of time and expense to spray—but the grower cannot always be sure that his trees are immune, even in the face of good appearance. In the other case, good results from spraying may not be evident the first year, particularly when badly infected orchards are treated the first time. Spraying should be done regularly each year.

The opinion of ... W. E. Gorman, Stoney Creek, is this: "There is more in keeping the trees healthy by treating the ground with desirable food and good tillage than in doctoring the tree after it is diseased." Mr. A. O. Bowslaugh, Grimsby, is another grower with the same opinion; also Mr. J. W. Nash, Stoney Creek. This theory of making trees resistant is good as far as it goes, but practical experience and experiment has not proved it infallible. A case can be cited, at Jordan Harbor, where some apple orchards non-sprayed but otherwise well cared for, yielded less than 25 per cent. XXX stock; while in the same locality sprayed orchards yielded a much larger average, notably the orchard of Mr. W. S. Duncan, which last season yielded 12 XXX barrels for every one of XX stock.

THE CARLSON MIXTURE

A spray mixture for the San Jose Scale that is commanding considerable attention in the St. Catharines district is one originated by Mr. John Carlson. Many growers have tested it and all

whom I visited were well pleased with the results. "I have used many spray mixtures including the lime and sulphur wash, and Carlson's, and with me the latter has given best results," said Mr. H. B. Kottmeir, St. Catharines. "Last spring I applied Carlson's mixture to a plum orchard so badly infected that I was about to cut the trees down, and now the trees are clean and healthy. I applied the regular strength, 4 gallons to 40 gallons of water, on trees seven years old and the cost of labor, material and all amounted to only five cents a tree—on calm days it cost less. The beauty of this mixture is its cleanliness on operator, horse and apparatus."

This mixture was used last spring also by Mr. Archibald, who is working a farm for Mr. Edward McArdle, St. Catharines. In the same orchard he used lime and sulphur and Carlson's mixture and found that fruit from trees treated with the latter was the better in quality and appearance—pears brought 10 cents a basket more than those from trees sprayed with lime and sulphur. "On some trees," he said, "I used the mixture where pears and plums were half grown and infected with scale and it cleaned the fruit for market. Carlson's mixture can be used when trees are in leaf, if diluted one half; that is, two gallons to 40 gallons of water."

The New Method of Killing San Jose Scale

It has long been known that petroleum oils would kill San Jose Scale if they could be mixed with water so as to be conveniently applied. That Scalecide is such a practical triumph is shown by letters from growers and by references in bulletins, etc. It is a perfect mixture of oils that effectively penetrates the scale, causing it to curl up and die, and fall off. This new preparation is said to supplant the lime-sulphur wash with its bothersome preparation, boiling of ingredients and danger of serious injury to the clothes and hands.

Prof. R. L. Taft, Horticulturist Michigan Agricultural Experiment Station, wrote of Scalecide, "I find that the results of the winter application has been quite satisfactory as, judging from the results on peach trees, considerably less than one per cent. of the adult scales escaped treatment."

Prof. John B. Smith, Entomologist New Jersey Agricultural Experiment Station, New Brunswick, N. J., wrote: "I believe that applied at the right time and in a thorough manner, this is as good, if not a better remedy for this pernicious insect than any we have up to the present time."

For further testimonials from fruit growers and experiment stations, and for samples, address, B. G. Pratt, Company 11 Broadway, New York.

Horticulture in the West

THAT horticulture is increasing in the west as the population grows was shown by the interest taken in the sessions at the annual meeting of the Western Horticultural Society, held in Winnipeg, on Feb. 14 and 15. Horticultural subjects were ably dealt with, and the vast importance of forestry dwelt on. It was decided to hold an horticultural exhibition in Winnipeg this year in August or September. A resolution was passed asking for the establishment of experimental stations in horticulture throughout the country in connection with the Dominion Experimental farms. Other resolutions asked the western provincial Governments to endeavor to check the prevalence of prairie fires, which are very destructive to timber areas within the prairie region and endorsed the recent forestry convention at Ottawa.

The election of officers resulted as follows:—Pres., W. G. Scott; 1st vice-pres., A. P. Stevenson; 2nd vice-pres., John Caldwell; secretary, Geo. Batho.

The president, Mr. D. W. Buchanan, in a short address at the opening session referred to the prosperous condition of the society, which had nearly quadrupled its membership during the past year, increasing from about 60 to 200 members. This result he attributed to increased attention throughout the country to horticultural work, to the increase in population and general advancement of the country, and to the energy with which the society had been conducted during the year. They had passed the experimental stage in growing many kinds of fruits, he said and in some cases some of the small fruits were being grown on a large scale in a commercial way. Some large shipments of local grown strawberries had been received in Winnipeg during the year. The chief difficulty in growing small fruits was the scarcity of help and high wages. Land around Winnipeg was getting too dear for ordinary farm purposes, and it would be necessary to encourage horticulture in order to make their lands profitable. In tree fruits progress was being made, and many apple trees were coming into bearing in the Red River valley and some other sections of the country, so that the problem of growing tree-fruits was also being solved.

The secretary in presenting the annual report, reviewed the work of the society during the year. He referred to the free distribution of plants to the members, which helped to increase the membership. The society also published a list of trees, shrubs, fruits, etc., showing what varieties are hardiest and best adapted to growing in this country, and it, too, was sent to the members.

The treasurer's report showed that a surplus remained on hand notwithstanding the heavy expenditures.

At a public meeting on the evening of the 14th, Dr. Fletcher, of Ottawa, gave a very interesting address on nature study, illustrating his remarks with limelight views. President Creelman, of the Ontario Agricultural College, spoke on the need of more practical education in the public schools.

The remaining sessions were devoted to discussions of questions pertaining to practical horticulture. One of the most interesting papers was that given by Norman M. Ross, who has charge of the Dominion Government forestry work in the west. Mr. Ross said that trees could be grown for fuel, fencing, etc., very profitably in the prairie provinces, and recommended the box elder, white elm, green ash, cottonwood, basswood and the native spruce and tamarac.

Dr. Sheekey, of Pilot Mound, Man., discussed the shrubs and flowers best suited to this country. For hedges he preferred the common lilac, as it holds its foliage late in the fall. A paper on potato-growing in the Winnipeg district was read by W. H. Tomalin. He spoke of the potato blight, which was unknown here until lately, but which was bad last year. So far no spraying had been done in Manitoba. Dr. S. J. Thompson, of St. Charles, Man., explained his method of growing small fruits, in which he has been very successful, with currants, gooseberries and raspberries.

A. McLeod, of Morden, Man., said that at first he did not succeed in growing tree fruits, but after planting wind breaks and shelter belts, he had been able to grow apples, crabs and plums. W. G. Matthews, of Macleod, Alta., spoke on horticulture in Southern Alberta. He had been able to grow many trees without artificial watering.

A paper on roses and flowers was given by Mrs. J. B. Hodgson, of Foxwarren, Man., and addresses were delivered by J. B. Merrill, J. D. Carwell, Alf. Andrews, James T. Drysdale and Robert Atkin.

Pickers and packers should be required to obtain a certificate before they are allowed to begin operations. Some of the work is done so poorly that one would think crazy men had been at it.—(P. J. Carey, Dominion Fruit Inspector, Toronto.



Your Spring Help

What kind of help will you have this spring. Will you do your work the old way with many men and much expense, or employ the time-saving, laborlessening and money-making

IRON AGE Implements

These implements comprise tools for the cultivation of all crops. The No. 4 tool shown, prepares the ground, sows the seed and cultivates the growing crop. The Iron Age (Improved Robbins) Potato Planter has no competitor. The only planter performing absolutely perfect work. Hiding and Walking Cultivators, Sprayers, Hoos, Drills, Potato Diggers, etc., all are shown in the New Iron Age Book. Most complete and instructive book on crop raising published. Write for it. It's Free.

BATEMAN MFG. CO., Box 516, Cranloch, N. J.

Iron Age (Improved Robbins) Potato Planter.

New Brunswick Fruit Growers are Progressing

THE second annual convention of the New Brunswick Fruit Growers' Association was held at Fredericton on Jan. 25. A committee comprising Messrs. W. W. Hubbard, Henry Wilmot and W. A. McIntosh, appointed to consider the suggested topics for discussion at the Dominion Fruit Growers' Conference, submitted the following report, which was adopted by the association:

1. We suggest that the work already started by the fruit division of the Department of Agriculture in regard to statistics and fruit crop reports, should be encouraged, and that fruit-growers everywhere should furnish statistics and crop prospects within their reach promptly when requested by the division.

2. That an extension of cold storage and refrigerator car service is urgently needed, and that the rates of the express companies operating in Canada should be brought under the supervision of the Railway Commission. We believe that the rates charged by the express companies seriously interfere with the development of our fruit interests.

3. In addition to recommending that there be a uniform barrel for Canada, we would suggest that more expeditious means than exist, be provided to prevent the use of barrels and other fruit packages below the legal size. Our federal department should be urged, in every way, to safeguard and develop our export trade, and to make conditions as easy as possible for trade within the Dominion.

4. It is regrettable that many of our best growers consider that to be sure of getting pure fruit jams and jellies they must import them from English manufacturers, and we would suggest that the Department of Inland Revenue be asked to give this matter their special attention.

5. Fruit growers would be in a safer position if such control were exercised over nurseries, that their owners, before they could legally collect money for trees sold, should be compelled to hold a certificate from a competent inspector stating that their stock was free from dangerous scales, insects, or diseases.

6. We would suggest that the following definition for number 2 fruit be embodied in the Fruit Marks Act:—"No. 2 Apples shall consist of well-grown specimens of fair size, color and shape, and not less than 85 per cent. free from scab, worm holes and other defects, and packed in the same careful manner as provided for No. 1 fruit."

7. We would recommend that our delegates examine into the moves that have been made in the direction of horticultural education in the different countries of the world, and be in a position to assist in making such suggestions as may be in the best interests of Canadian horticulture.

8. Your committee would recommend that our delegates give this subject thorough investigation and consideration, and make such

recommendations as will, in their judgment, make our fruit exhibitions more educational to both producer and consumer, more encouraging to the growth of the best commercial varieties adapted to the district, and in every possible way calculated to encourage the growth and disposal of our fruits.

For 1906 officers were elected as follows: pres., John C. Gilman, Kingsclear; v.-pres., I. W. Stephenson, Sheffield; treas., Henry Wilmot, Sunbury; sec., T. A. Peters, Fredericton; directors, J. W. Clark, Sunbury; J. F. Tilley, Carleton; William McIntosh, St. John; John Ferguson, York; S. B. Hatheway, York; George McAlpine, Queens; Mr. Richardson, Charlotte. Pres. Gilman and Mr. Isaac W. Stephenson, of Sheffield, were appointed delegates to the Dominion Conference.

Among the speakers were Mr. W. T. Macoun, Ottawa; Prof. F. C. Sears, Truro, and Mr. W. A. McIntosh, of St. John, N.B., the leading entomologist of the maritime provinces. A very creditable display of apples was made, and before the close of the sessions a motion to have a fruit exhibit at the next annual meeting was carried.

Mr. Macoun and Prof. Sears judged the fruit exhibit, the following being the prize winners of the varieties named: J. C. Gilman, Fredericton—Fameuse, McIntosh Red, Alexander, Milding; Geo. McAlpine, Gagetown—Wolf River, Bishop Pippin, Ontario, Golden Russet, King of Tompkins, Northern Spy, Gano, Ben Davis; Henry Wilmot, Lincoln—Wealthy and a Seedling; S. B. Hatheway—Canada Red; Rev. T. Hunter Boyd—Stark; collection of 10 varieties—Geo. McAlpine, Gagetown, and J. C. Gilman, Fredericton; collection of five varieties—Geo. McAlpine and J. C. Gilman.

Pres. John C. Gilman opened the meeting with an admirable address, in which he referred to the extreme cold of the winter of 1905, which pointed out to fruit growers the great advantage of planting hardy varieties. The midsummer drought, on the other hand, showed the vital need of a generous supply of plant food and sufficient moisture in the soil to maintain a steady growth. After impressing on the growers the importance of having only the best fruit for the markets, the president said that the best way to increase the percentage of number one fruit was to start at the beginning and get the right varieties. Then prepare the ground, as any good farmer would, for a crop he expected to yield a good return; cultivate and keep up the fertility; fight the insect pests; have a good spraying equipment, and use it at the right time and often enough to answer the purpose; nip back and prune off all unnecessary growth; give the air and sunshine a chance to help you; use proper ladders, baskets, barrels and boxes; grade to comply with the Fruit Marks Act; haul on spring wagons, and see that every operation is done with care.

In discussing injurious insects, Mr. W. A. McIntosh, of St. John, N.B., whose collection of New Brunswick insects exceeds 14,000 specimens, gave an interesting address illustrated with large colored plates and also specimens of the insects in their various stages.

Mr. Macoun pointed out that it was difficult to get a good winter apple on a thoroughly hardy tree, because an apple that will keep well means one that is not matured, and if the apple is not matured, the tree is almost certain not to have its wood hardened up in time for early frosts. The Milwaukee was referred to as the nearest to a northern grown winter apple known. He recommended it as a good tree to plant as a filler between rows, but would advise planting it extensively as a winter variety might soon be discovered.

Prof. Sears gave a talk on pruning, illustrating his lecture with the shears, as he talked.

Ideals in British Columbia

W. J. Brandrith, Sec. British Columbia Fruit Growers' Association

SOME maintain that the fruit grower in British Columbia has set himself too high an ideal, and that when he comes in competition with the fruit growers of the rest of Canada he will have to come down a peg. These prophets will be surprised to hear that instead of reducing the grade, the British Columbian intends to raise it. We put the clip on our shoulder in 1904 when a display was made at the Dominion Exhibition in Winnipeg. Last year, in New Westminster, prizes such as were never offered in Canada before were hung up with the hope of inducing competition from the rest of Canada, and in order that there should be no hint of partiality, Prof. H. E. Van Deman, of Washington, D.C., was secured as judge. As at Winnipeg, so at New Westminster—growers from other parts of Canada were conspicuous by their absence.

Personally, I do not place such a high value on the gold medals British Columbia fruit has been winning in England as do some people. They are good advertising for British Columbia, but when I see in the market reports that Ontario apples are selling in Winnipeg for \$3 to \$4 per barrel, and at the same time British Columbia apples are selling in the same market at \$1.25 to \$1.75 per box, I ask myself why this is? It can be answered only by calling to mind the high ideals of the British Columbia fruit grower. To-day, in our own market, apples are retailing at \$1 to \$2.50 per box. It is the apples packed by the man with high ideals that bring the latter price. It is too early yet to predict what the crop of 1906 will be. So far there has been no damage by frost or snow. The output for 1905 was about double that of 1903, and barring accidents, will nearly double again this year.

With rapidly increasing home consumption, and the enormous emigration to Alberta and Saskatchewan, we have no fear of the market. As soon as satisfactory rates to eastern cities can be obtained there will be a certain market there for choice apples and pears from this province.

Apples for Burlington District

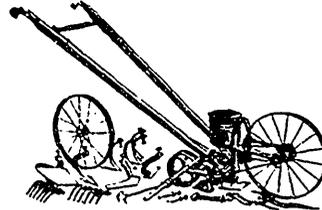
In discussing the best varieties of fruits for the different sections of Ontario in the last issue of THE HORTICULTURIST an omission by the printer caused an error in the Burlington list that resulted in the placing of the leading varieties for domestic purposes under the commercial list.

The paragraph relating to Mr. A. W. Peart's recommendations for that district should read "For commercial purposes: Duchess, Ribston Pippin, Blenheim Pippin, Greening, Baldwin, and Northern Spy. For domestic purposes: Astrachan, Sweet Bough, Gravenstein, Wagener, Seek-no-Further and Golden Russet.

Modern Garden Methods

Think what a change it must be from the tiresome labor of old-fashioned garden planting by hand, to be able to open the ground, plant and cover seed at any desirable depth or spacing, at a single operation and at an easy walking gait! Yet this is just what is made possible by the use of the Iron Age Implements made by the Bateman Manufacturing Co., of Grenloch, N.J.

The No. 6 Iron Age Combined Double and Single Wheel Hoe, Hill and Drill Seeder, cut of which is shown, can be changed in a moment from a seeder to do any of a dozen different kinds



of garden cultivation. It can be adjusted to work one or both sides of a garden row, to cultivate to or from the growing plants; to rake, plow or hoe; or many of the attachments can be used to advantage in combination.

This too, however, is only one of many of the wonderful Iron Age labor saving implements. Every farmer or gardener will find a vast amount of valuable information in the New Iron Age Book, which will be sent to any address free on application. This book describes and illustrates the full line of Iron Age Implements, comprising Seeders, Wheel Hoes, Cultivators, Horse Hoes, Fertilizer Distributors, etc. Also a full line of Potato Machinery, consisting of Planters, Sprayers, Cultivators and Diggers.

Write to the Bateman Manufacturing Co., Box 516, Grenloch, N.J., or to J. A. Simmers Seed Co., Toronto, for a free copy of this valuable book.

Hints and Helps

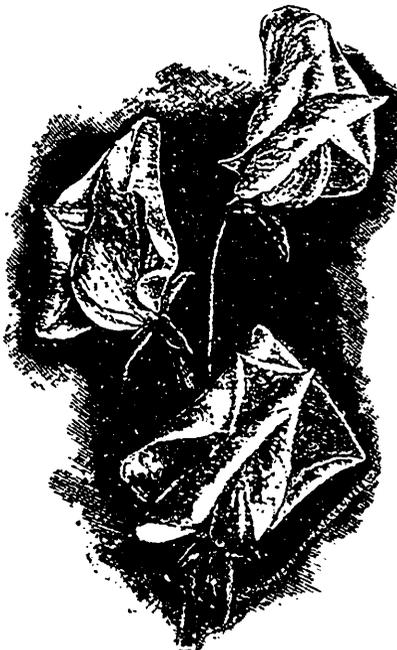
A book of special interest to amateur horticulturists has been issued by H. D. Hemenway, Director of the School of Horticulture, Hartford, Conn. This book has been prepared with a view to furnishing a low-priced guide to school and home gardeners, and is of value not only to youthful gardeners but also to those young in experience. Directions are given for planning the garden, for fertilizing, cultivating, and the methods to be followed clearly outlined in each case.

The making of hotbeds, window gardening, strawberry culture, asparagus culture, seed testing, tree planting and numerous other subjects of interest to general gardeners are fully dealt with. A table has been prepared for both vegetables and flowers, giving the particulars regarding the method of planting, the time of planting, and general culture of each. The book sells at 35 cents.

Sprays More Than Grapes.—An error in the punctuation of the extract from Henry L. Roberts' letter used in connection with the Wallace Sprayer advertisement in the Feb. issue of THE HORTICULTURIST made it appear as though the "Duplex" power sprayer maintained abundant pressure for grapes only. This extract should have read "My Wallace Power Sprayer (a 'Duplex') has always worked well; also maintained abundant pressure. For grapes, etc., I use only one pump and find it ample."

The catalogue recently sent out by Flansburg & Potter of Leslie, Mich., contains much that is of interest to the grower of small fruits. Several pages are devoted to information regarding strawberry culture and the description of the leading varieties handled by that firm. In raspberries the New Eaton is mentioned as being one of the best red raspberries for the commercial gardener.

BRUCE'S SWEET PEAS



We have a magnificent collection of these beautiful flowers, over 60 of the newest and best varieties; we offer:—

Royal Nosegay Collection—1 pkt. each 10 superb varieties; each separate and named for 25c., postpaid.

Novelty Collection—1 pkt. each 6 of latest sorts; each separate and named for 25c., postpaid.

Bruce's Finest Mixed—Mixed from named sorts by ourselves; pkt. 5c., oz. 10c., ½ lb. 20c., ¼ lb. 35c., 1 lb. 65c., postpaid.

Grand Collection—1 oz. each of 20 distinct varieties; each separate and named for \$1.00, postpaid.

Latest Novelties—HELEN PIERCE, bright blue mottled on white ground; GLADYS UNWIN, finest pink, each 10c. per pkt.

Send for our new 96 page Catalogue of Seeds, Plants, Implements, Poultry Supplies, etc. FREE to all applicants.

John A. Bruce & Co.
HAMILTON, ONT.

ESTABLISHED 1850

POULTRY DEPT.

Conducted by
S. Short Ottawa

IN the February number of THE HORTICULTURIST it was recommended to beginners in poultry-keeping, in fact to all who do not keep pure breeds, to make an investment at once in a trio of any of the pure breeds which could be purchased, preferably in Canada, and usually from a near-by fancier. A reasonable figure for a fair trio is \$5.00. This statement I will endeavor to prove.

At the beginning of March all hatching plans for this season should be fully mature and the breeding birds in the breeding pens. In support of the statement made above I am quoting the figures supplied me by a lady in this neighborhood who began last summer to hatch and raise chickens artificially. Her experience will be of interest in that it will show the outlay that a beginner may expect to make, and also what it costs a poultry keeper to raise pure-bred chicks to maturity, and then to sell them at less than \$5.00 a trio would mean to sell them without profit.

I had the privilege of visiting the yards of the lady whose experiences I am giving, and can therefore vouch that the strictest economy was used and care taken to prevent waste, while giving the chicks ample rations. Any mishaps

that took place were such as a beginner might expect to have. Accidents and misfortunes are the price of experience. At the end of January the pens contained about 50 very good specimens of Barred Plymouth Rocks, chiefly pullets, several of which were laying. The cost of the eggs from which these birds were hatched, and the food and other expenses are as follows: 220 Barred Rock eggs, \$15, coal oil (2 hatches), \$4.50; food, straw, sand, etc., \$33.77. This gave a total expenditure of \$53.27. The receipts in that time were: 14 eggs at 50 cents a dozen, or 58 cents, and chicks used and sold, \$11.10, or total receipts of \$11.68. This, then, leaves the actual cost of the 50 fowl to be \$41.59, about 83 cents per head.

A trio eight months old, therefore, will on the average actually cost the producer \$2.49. Selling at \$5 leaves a profit of \$2.51, from which the producer or fancier has to deduct the cost of management, care, advertising, shipping, coops, and sometimes cartage to express office. Under these circumstances no fair-minded person will say \$5.00 a trio is an exorbitant price.

The question is often asked, "How much will it cost to start keeping fowl on a small scale?" Below will be given the exact expenditure in detail, regarding the chicks hatched, how they were fed and all about them. They represent the experiences of the lady beginner whose figures have been used already in this article. This lady had very little, if any, experience in poultry keeping, and was guided always in the operation of the incubator by the instructions supplied with it. The very successful hatches speak well for the machine—a new one never

before used—as well as for the watchfulness and care of those who operated it.

The items are as follows: Expenses—Incubator, \$22.00; 120 eggs (Barred Rock, 1st hatch May 24), \$8.00; 120 eggs (Barred Rock, 2nd hatch June 22), \$7.00; brooder (second hatch), \$3.60; coal oil, \$4.50; wire for the run-way, \$1.00; thermometer, 40 cents; lumber, 54 cents; new burner, wick, etc., 17 cents. From this total expenditure of \$47.21 the first hatch gave 75 and the second 77 chickens. The cost of feeding until eight months old was as follows:—Puritan food for small chicks, \$5.24; grain (wheat, oats, cracked corn, barley, \$17.38; ground food (corn and shorts), \$3.85; straw for scratching pen, \$3.00; grits, 35 cents; sour milk, 25 cents; cabbage, 70 cents; sand for pens (2 loads), \$3.00; giving a total cost of \$33.77.

By the end of July the 152 chicks had dwindled to 90. By keeping the brooder too hot 38 had been smothered at one time. Over-crowding at night killed the others. All were healthy.

These figures show for the first outlay to begin on a fairly extensive scale, \$50.00 will be required for implements, lumber, etc., all of which with care will last for years. Then there is the cost of a building unless there are some sheds that can be converted into poultry houses, as was done in the case here quoted.

It might be said that it would be cheaper to use hens for hatching the eggs. I have not met

MARCHMENT'S Sure Growth COMPOST

Supplied to all the largest nurserymen and fruit growers in Ontario. Shipments made by car or boat. Prices reasonable.

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Creighton Poultry Yards

OTTAWA, ONTARIO

Have won First Honors on Barred Plymouth Rocks for the last ten years under judges such as Jarvis, Cosh, Bennett and Butterfield.

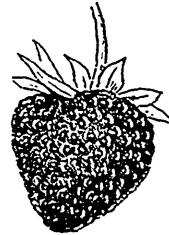
A few good Breeding Pullets to spare at \$2.00 each. In White Wyandottes we have several fine Cockerels at \$2.00 each—good value. Eggs in season from both breeds at \$2.00 per 13. Utility stock at \$1.00 per 13.

S. SHORT, Proprietor

The Herbert Raspberry

The Earliest, Hardest, Finest Flavored, Most Productive Red Raspberry. See Particulars in February Horticulturist. 40c. each; \$4.00 dozen; \$25.00 per 100

The Renfrew Nurseries Company, Limited
RENFREW, ONTARIO



STRAWBERRY Plants for Sale

Every garden should have an extra early and extra late variety to expand the season of fruiting to its full limits.

SPECIAL OFFER—60 early and 60 late plants sent post-paid to any address for \$1.00.

Attractive prices on thousand lots of Haverland, Parker, Earl, and Williams. TERMS cash with order.

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Strathroy Ontario

CANADA'S GREATEST NURSERIES

Offer Four New Specialties for Spring, 1906

Why plant OLD varieties when the NEW will produce DOUBLE QUANTITY, BETTER QUALITY and BRING HIGHEST PRICES?

THE MAYNARD PLUM

"Mr. Luther Burbank's greatest plum. In the May-1 and we believe Mr. Burbank has reached the point of perfection.

GOLD COIN POTATO

Tested at Experimental Station, Ottawa, and produced 554 bushels to the acre. Best showing made out of seventy five varieties tested. Free from Blight and Rot.

IDEAL ASPARAGUS

A new mammoth French Asparagus. Early. Largest size and most productive. A bunch of 20 stalks weighs 2 lbs. Strong 3 yr. old plants.

NEW MILLER RASPBERRY

Earlier than Marlboro. Continues a long season. Fruit large, bright red, best quality and exceedingly firm. Canes vigorous and hardy. Order at once as supply is limited.

Send for full particulars and special circulars fully describing the merits of these New Specialties.

Why not put your spare time to profit this winter in selling these specialties and other high-class nursery stock in Fruits and Ornamentals? Liberal inducements. Write for terms.

STONE & WELLINGTON

Fonthill Nurseries, over 800 acres.

TORONTO, ONTARIO

Spray, Spray

Spray your trees for the Codling Moth and all Leaf Eating Insects with the Best and Safest Poison which is

SWIFT'S Arsenate of Lead

it Will Not Burn and It Sticks

MADE ONLY BY THE

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"Truck Farming," an interesting book dealing with practical truck raising and valuable to every truck farmer, will be sent to farmers on request, free of any cost or obligation.

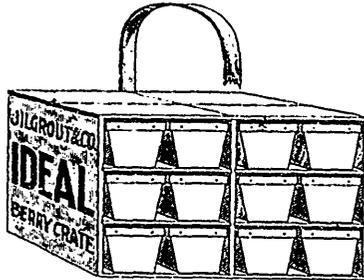
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A limited number of Cardinal plants for sale. Also Victor, Commonwealth, North Shore, Early Hathaway, New Home, Superior, Mrs. Fisher, Wonder, Ben Davis, and 80 others. Young plants, fair prices.
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If You Want Your Fruit
to look well, carry well, and
sell well, you need the best
PACKAGES



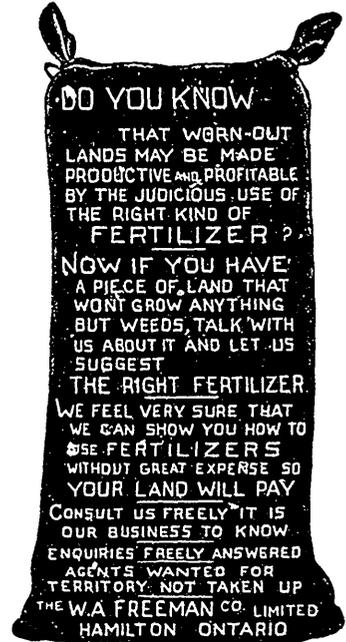
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ELDORADO POTATO

SOLD IN FALL OF 1903 FOR \$1,250.00 A POUND

The most sensational potato in price and produce of all time is the "ELDORADO," introduced in Spring of 1903 by Mr. John Fendlay, Mr. Geo. Massey selling in December of same year 14 pounds for \$7,000.00. In Spring of 1904 Mr. Alfred Dunham paid \$250.00 for one weighing 5 ozs., and smaller ones sold at rate of \$1,250.00 a pound. In February, 1904, Mr. Chas. Neidham, Lincolnshire, paid \$30.00 for an Eldorado weighing only 1/4 an ounce or three times its weight in gold. SO MUCH FOR THE PRICES, NOW FOR THE PRODUCE—

This 1/4 ounce potato raised the first year 361 pounds; 5 roots weighed separately over 12 pounds each, the heaviest being 14 1/2 pounds, 11 roots weighing 110 pounds; one of the largest potatoes weighed 2 pounds, 12 weighed over 16 pounds, and out of the total 100 potatoes weighed 100 pounds.

To those unaware of the history of this potato these statements may sound incredible but they are facts absolutely beyond the shadow of dispute.

The Eldorado is rot and blight proof. It is this feature together with its most wonderful cropping qualities that has built up a record never before dreamed of.

In spring of 1905 we imported direct from the originator some at a cost of \$16.00 a pound, one pound of which under our ordinary field test alongside 26 varieties yielded 148 pounds of the finest potatoes we ever dug. They are in shape an elongated oval, with white, slightly russeted skin, shallow eyes, and finest cooking qualities.

The prodigious cropping qualities of this potato enable us to offer them for the first time in Canada at a price that all can pay. Every sale accompanied by copy of the original bill from Mr. Fendlay. Every pound sent out warranted true Eldorados.

\$1.00 Per Pound (Only a limited quantity)

We also offer Fendlay's Star, cropped 1,500 bushels to acre, sold 5 years ago \$100.00 each, at 50c. pound. Also Gold Coin, Toraton Beauty, Irish Cobbler, etc., 26 varieties, the only registered pedigreed seed potatoes offered in Canada.

Strawberry Plants \$1.50 per 1,000 up

Cardinal, New Home, Commonwealth, Dunlop, Hathaway, 60 others selected pedigreed. RASPBERRIES: King, London, Eaton, Cumberland, etc. BLACKBERRIES: Mersereau, Rathbun, etc. Get our list before ordering.

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MEMBERS CANADIAN SEED GROWERS' ASSOCIATION

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PRATT'S "SCALECIDE" SOLUBLE PETROLEUM
 A POSITIVE REMEDY FOR
SAN JOSE AND COTTONY MAPLE SCALE, PSYLLA, ETC.
 SEE ARTICLE ON NEW METHODS OF KILLING SCALE ON PAGE 70
 B. G. PRATT CO., 11 Broadway, New York, N.Y. THE SPRAMOTOR CO., London, Ont., Canadian Agents

FLOWER POTS
 Now is the time to order them for Spring trade. We have a large stock of all sizes on hand and can make prompt shipments. Drop us a post card for Catalogue and Price List.



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Trees, Roses, Plants and Vines
 Evergreen Trees a Specialty
 Write for Price List
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 WRITE FOR CATALOGUE AND PRICES

FARTHER NORTH. "It is the lightest and strongest house imaginable."
 HALL & ROBINSON, Montreal, P. Q.

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NEW ENGLAND. "No shade in my new house, crop is a record breaker."
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cost but little more than the usual commercial grades - and yet are worth much more. At our own farms in Pennsylvania and New Jersey, as well as in the gardens of planters everywhere. Burpee's Seeds are proved by test to be the **BEST SEEDS THAT GROW.** Consequently we have the largest mail-order seed trade in the world. Our "Silent Salesman," neatly dressed in a coat of many colors, and holding the **plant** with photographic features of the various products of Burpee's "SEEDS THAT GROW" will be mailed FREE if you will write for

1876  1906

Farm Annual for 1906
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This is a handsome book of 168 pages, carefully edited and neatly printed: bound in cover lithographed in nine colors, it shows, *painted from nature*, Seven Superb Specialties in Vegetables of unequalled merit and Six Novelties in Flowers - including **LITTLE BURBANK'S New Floral Wonder**.

This Invitation to write for our New Complete Catalogue and then participate in the Special Celebration of our Thirtieth Anniversary is given to all planters who delight in raising the Choicest Vegetables or most beautiful Flowers.

If you intend to garden this spring you will want to lay your plans, and therefore we urge you to **WRITE TO-DAY!** - the very day you read this advertisement. Mention this paper and address
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Advertisements under this heading will be inserted at the rate of ten cents per line, each insertion; minimum charge fifty cents in advance.

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WHAT INDUCEMENT CAN YOU OFFER us to locate in your town? We expect to handle a large quantity of apples and will give employment to a number of people. Address THE CANADIAN APPLE CO., care of THE CANADIAN HORTICULTURIST, TORONTO.

WANTED—Young man with a few years' practical experience on a Canadian or American nursery. State particulars. THE WEBSTER FLORAL CO., LTD., HAMILTON.

LANDSCAPE designing, plans for parks, cemeteries public and private pleasure grounds made. Drawings made to a scale, so that any gardener may carry them out. Correspondence solicited. CHAS. ERNEST WOOLVERTON, Landscape Designer, GRIMSBY.

A beautiful colored plate of our **New Eaton Red Raspberry** and our strawberry catalog of valuable information about varieties with instructions for beginners. Free to all. THE FLANSBURGH & POTTER CO., Lestie, Michigan.



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Apple, Pear, Plum, Cherry, Peach, Nut and Ornamental Trees, Small Fruits, Roses, Shrubs, cheap. Specialties: Wismer's Desert Apple and Mammoth Prolific Dewberry. Send for Free Catalogue—it tells the whole story. J. H. WISMER, NURSERYMAN PORT ELGIN, ONT.

WENTWORTH POTTERY
Standard Flower Pots, Fern Pans, Hanging Baskets, Cut Flower Jars and all Florists' Supplies. Mail Orders given Prompt Attention. John Cranston & Son HAMILTON, CANADA



Strawberry Plants

I have a fine stock of Plants for Spring planting at reasonable prices.

WILLIAMS—The standard variety in the Niagara district.
SENATOR DUNLOP—Recommended as an excellent all round market berry.
RYCKMAN—Pan American Gold Medal
MATILDA—Introduced by Mr A M Smith, the Veteran strawberry grower, very large, productive, vigorous plant maker.
300 bushels Business Celebrated Gold Corn Potato for seed, \$1 00 per bushel.

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WM. H. BUNTING, St. Catharines, Ont.
"THE CARLETON FRUIT FARM"

Carlson's Spray Mixture For San José Scale

It kills them every time and does not injure the tree. It is thoroughly efficient, is clean and easy to apply and will cover, bulk for bulk, twice as much surface as lime and sulphur. Many prominent growers in St. Catharines district have used it and found it the **BEST YET.** GIVE IT A TRIAL.

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Special Glass for Greenhouses

GOOD QUALITY, FLAT, EVEN THICKNESS AND WELL CUT

— PLATE —
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And all other kinds of Glass used for building purposes

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Yes, It Pays to Buy the Best

This applies to Nursery Stock as well as other things. If you intend planting any fruit or Ornamental Trees, Shrubs or Vines, send for our 1906 Catalogue—just out.

THE DOMINION NURSERIES
ESTABLISHED 1866
The Smith & Reed Co. St. Catharines, Ont.

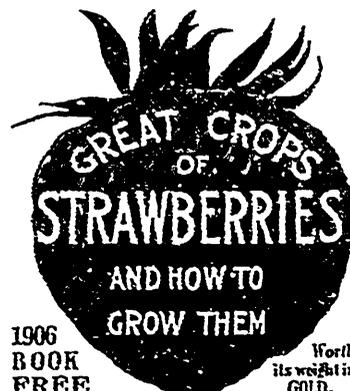
any who have hatched over 100 chicks with hens in one season that would do it again if they could get an incubator. The machine lasts for years, and in the end is far cheaper than buying and fussing with clucking hens.

The cost of feeding, bedding, etc., would be much lessened on a farm, but the above experiences are those of a resident of the city, with a large-sized lot, who had to purchase all necessities at city prices. In the next issue something will be given about the different methods of hatching and how to go about it.

Big Results from Fertilizers.—Messrs. S. & W. H. Collinson, proprietors of the Meadowbrook Fruit and Stock Farm, St. David's, Niagara Township, breeders of pure bred Holstein-Friesian Cattle, have over 70 acres in orchard, divided as follows: 50 acres peaches, mostly young orchards; 10 acres grapes, young vineyard; 6 acres pears; 5 acres plums; cherries and other fruits, upon which they have used several carloads of Freeman's high grade manures. Messrs. Collinson say these Fertilizers have given great satisfaction and they highly recommend them. Grapes cut from Mr. Collinson's young vineyard were as large as plums, and he stated that the bunches were too large to pack advantageously in baskets and had to be cut in three or four parts. By calling upon Mr. William Wiley, the Superintendent of the W. A. Freeman Co. (Ltd.), Hamilton, he will be pleased to point out to fruit growers the orchards upon which Fertilizer was used, the results of which will convince the most sceptical.

Announcement.—At present I am in correspondence with the manufacturers of "Target Brand" Insecticides and Fungicides, and before next issue of THE HORTICULTURIST expect to have arrangements completed for handling these in Canada. Their San José Scale Destroyer and Arsenate of Lead preparations are guaranteed to produce results claimed—kill or keep off San José Scale, and kill all leaf-eating insects without damage to either tree or foliage. Circulars free. W. H. Brand, Jordan Station, Ont.

Could our Canadian vegetable growers raise cauliflower in time for the August markets they could make big money. One firm in New York informed me that they would buy 10 cars a day, if they could get it, during August for use at the summer resorts, and offered a price that would pay our growers well.—(H. Dawson, Commission Merchant, Toronto.



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