

# THE CANADIAN HORTICULTURIST

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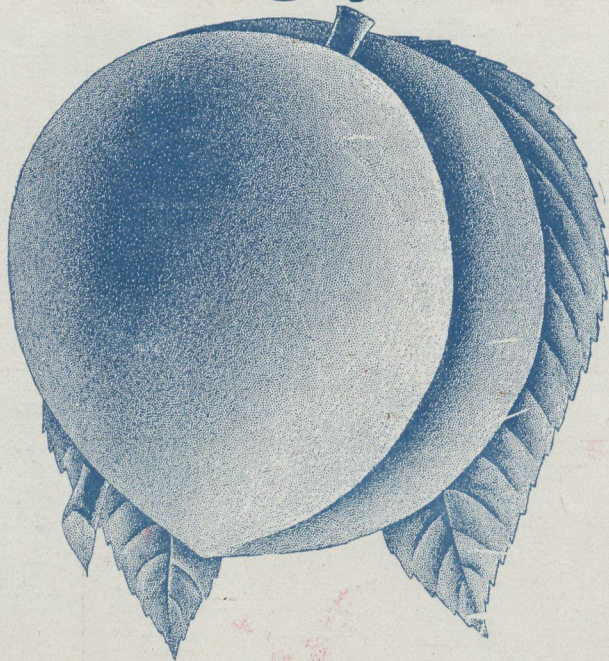
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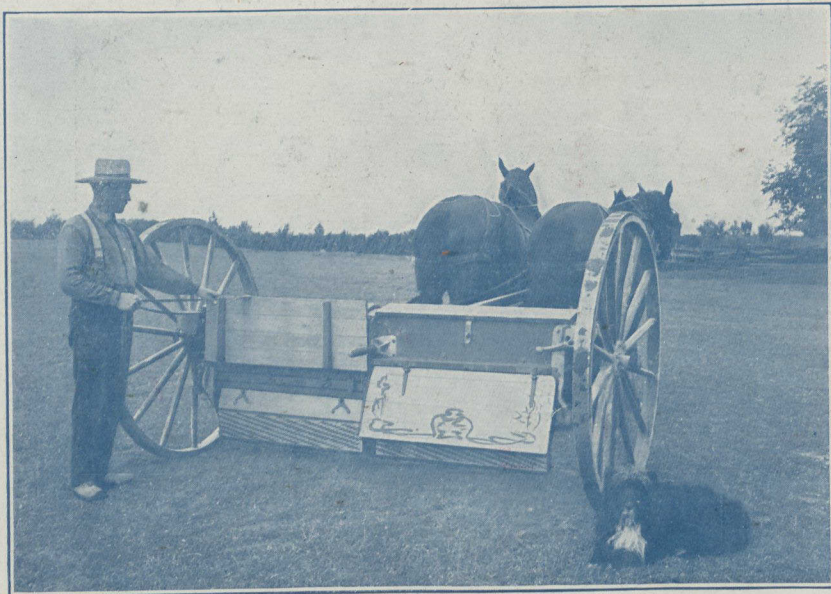
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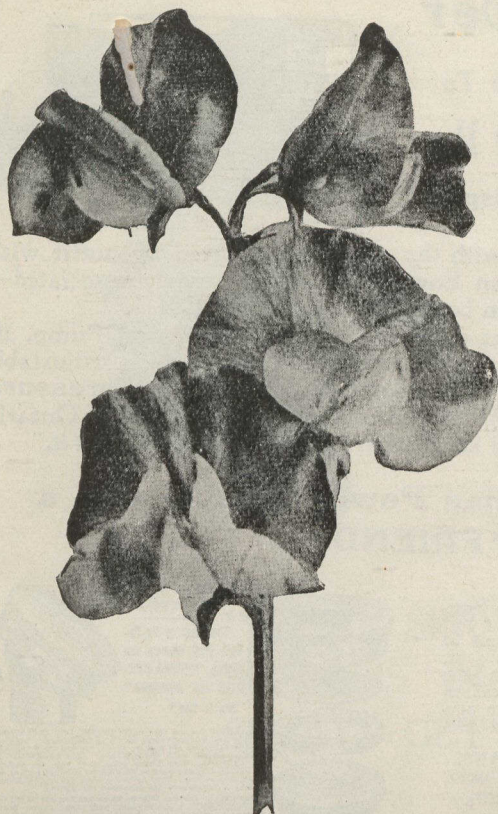
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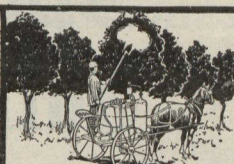
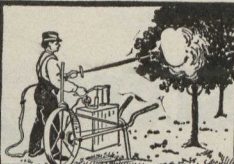
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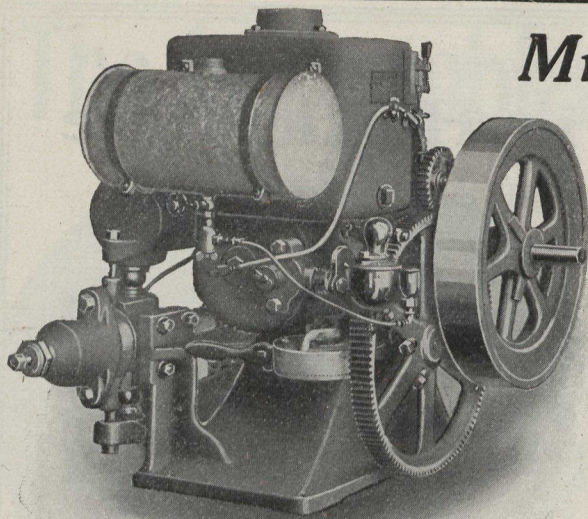
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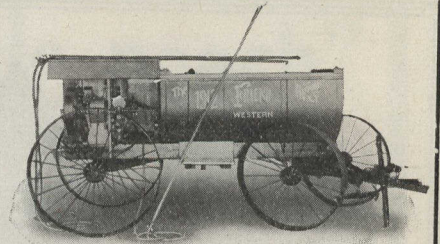
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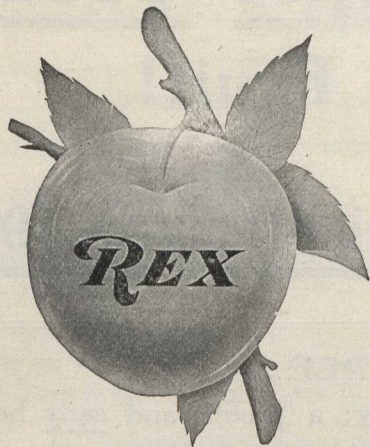
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International Nurseries

Montreal, Quebec



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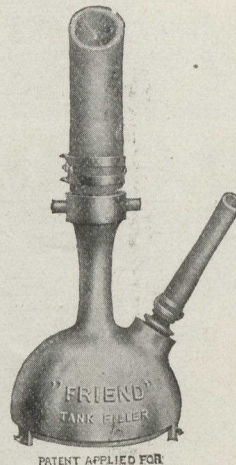
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Starts instantly without priming. No valves to cut.

Perfect in every detail. Always works.

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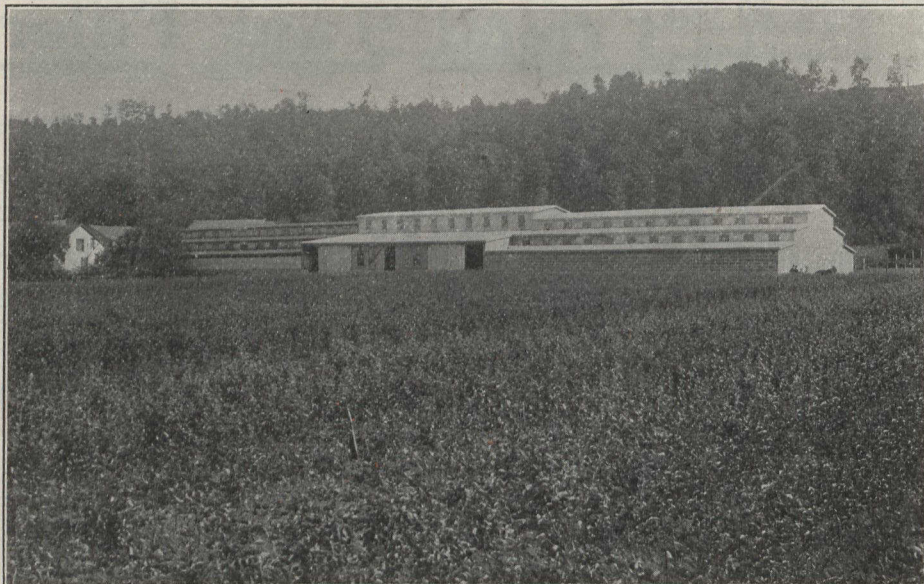
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OFTEN SPELLS

# SUCCESS

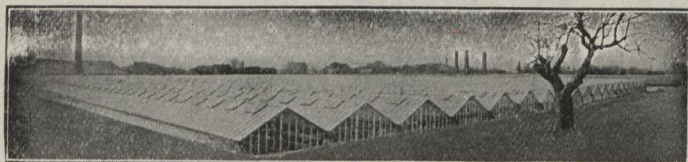
THOSE planters who have had to wait weeks in the spring after their ground was fit to plant, realize what it means to get Trees from the Nursery **EARLY**.

The sheds shown in the illustration have a space of 30,000 square feet. No rain, bad weather, or wind to stop packing or injure the stock by exposure.

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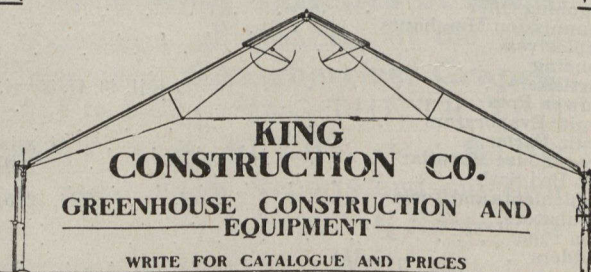
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# The Canadian Horticulturist

Vol. XXXV

FEBRUARY, 1912

No. 2

## Spraying Suggestions for the Apple Grower

S. C. Parker, Secy., Nova Scotia Fruit Growers' Association, Berwick, N.S.

THE necessity of spraying with fungicides and insecticides to insure a crop of marketable apples is almost universally conceded by growers. Occasionally one is found who says he does not spray and yet his apples are as good as his neighbors'; with such as he it is of no use to argue, one can only say "Ephraim is joined to his idols, let him alone."

Admitting that spraying is a necessity to the progressive fruit grower, he is at once compelled to decide on his "poison." Two year ago when the writer of this article was called on to discuss sprays, the well-tried bordeaux mixture was the first and only thing mentioned. Learned discussions as to the merit of four-four-forty as compared with three-three-thirty could be heard in every gathering of apple men. It is often said that the farmer is slow to change his methods. With the up-to-date orchardist such is not the case. Convince him of improved methods and no man will seize the opportunity more quickly.

In the spring of 1910, ninety-five per cent. of the spray used in Nova Scotia was Bordeaux; in 1911 the same per cent. of the growers used lime-sulphur. Why this revolution in methods? Bordeaux had been fairly successful in controlling the fungus, but the tendency to russetting under certain conditions, and bordeaux injury to the foliage and fruit was often very obvious. In 1910 a few careful growers used lime-sulphur, and the results were so marked that everybody went the same way in 1911. Most of the growers used the commercial brands. Two lime-sulphur plants manufactured several thousand barrels and supplied the trade at a fair price. Small growers who want only a few gallons had better buy than to bother with boiling the mixture. However, from

practical experience we found no difficulty in making an article just as good as any commercial product. A boiling plant can be fitted up at a cost of a very few dollars, and a good stock solution that will test twenty-eight degrees to thirty degrees Beaume, can be prepared in a few hours. The commercial product costs us from twenty to twenty-five cents per gallon, while the same quality made in a small way can be turned out by the growers at less than half that price.

Some manufacturers will try to convince the farmer that boiling lime-sulphur is a very intricate process, and that the amateur will meet all kinds of difficulties. This is hardly the case, as any practical man can prepare a couple of

hundred gallons of stock solution in a day, and save fifteen or twenty dollars for his time and trouble.

### GREAT IMPROVEMENTS

Nothing more strongly marks the progress of spraying than the improvement of spraying outfits. About fifteen years ago the writer bought and used his first spray pump. This was purchased on the recommendation of Prof. John Craig, then the Horticulturist at Ottawa. The pump was of cast iron, no brass fittings, had ten feet of hose, with an iron nozzle fit for a small steam engine. Extension rods were unknown, and we used a rake handle tied to the nozzle to get the elevation. One season's experience with this crude

outfit settled the question, and fungus and bugs had possession for the next few years. Then we tried several makes of hand pumps, and found with improved nozzles and bamboo extension rods that satisfactory work could be done, and fungus controlled.

Five years since, we bought a power outfit, used by the Dominion Department of Agriculture in the Annapolis Valley, for demonstration spraying. We supposed we were getting an outfit, tried and proved, as the best obtainable. Fortunately for us, there was a good wagon under the outfit and a good tank, as this is all that we got for our money save vexation and annoyance. The first season saw the pump relegated to the scrap heap; the second, the engine followed suit. People who will build a power pump with two horizontal cylinders on top of the tank, hitch it up to an engine with a chain gear, and expect it to do business, are not practical and should not be in the business.

After this unsatisfactory experience we got together the outfit shown in the illustration. When spraying in large orchards we use three



A Power Sprayer at Work in the Niagara District, Near Burlington, Ont.  
—Photo courtesy Niagara Brand Spray Co., Burlington





A Power Sprayer as Used in Mr. S. C. Parker's Orchard, Berwick, N. S.

lines of hose, two men on the ground and one man on the tank. The men on the ground use hose thirty or forty feet long, allowing them to walk around an ordinary tree, covering all sides, while the man on top of the tank covers the top of the tree. We have practically discarded Vermorel nozzles for those of the Friend type. The latter use more liquid than the Vermorel, but do not clog; and time is worth more than a little extra home-boiled lime-sulphur. A good pair of oxen makes a splendid team for a spraying outfit. Many of our large orchard-

ists are using them, as it leaves the horse team free for ordinary farm work.

To ensure good apples we must spray; and spraying with the appliances of to-day is to the spraying of fifteen years ago as the reaper of to-day is to the sickle of our fathers. About one hundred and twenty-five gasoline spraying outfits were bought by Annapolis Valley orchardists in the spring of 1911. Probably as many more will come in for 1912. Spraying must always be a costly and arduous work; but with the improved appliances and good fungicides it is being freed from much of its terrors.

## Peach Diseases in Ontario

Prof. L. Caesar, O. A. C., Guelph, Ont.

Brown Rot (*Sclerotinia fructigena*) (Pers.) Schroet, is the same disease that is so common on plums and cherries, especially sweet cherries, and that frequently causes a large percentage of these fruits to rot. Fortunately it is not so destructive as a rule in our province to peaches as to cherries and plums or as it is to peaches in some parts of the United States, where it has been known to destroy as high as forty per cent. of the whole crop in a year that was very favorable for the disease. Nevertheless, we sometimes lose a good many peaches from this rot. Triumphs and a few other varieties are much more subject to the disease than Elbertas and some of our other profitable kinds.

Not only is the fruit attacked, but also the twigs and small branches on which diseased fruit is borne. The disease in such cases seems usually to work its way down from the diseased fruit into the twig or branch and gradually girdle it. This, of course, causes the part above, with all its leaves, to die. Some seasons the blossoms are also attacked. I have

noticed this to be quite common in the case of sweet cherries.

Like most diseases there are certain conditions that favor the development of Brown Rot. The chief of these are damp, warm weather, lack of sunlight and of good air circulation, the presence of old mummied fruit on the trees, two or more fruits touching one another on the tree, and injuries from hail or biting insects, like the Plum Curculio.

### MEANS OF CONTROL

The conditions favoring the disease give us hints as to how we may help to ward it off: First, give the trees plenty of sunlight and good air circulation by removing unnecessary wind-breaks and by judicious pruning; second, knock all old mummied peaches and plums off the trees in the fall and either gather and burn them or plough them under early in the spring; third, thin the peaches so that no two will be touching one another; fourth, spray with lime-sulphur for Leaf Curl and this will protect the blossoms from attack; fifth, if the Curculio is troublesome, spray with

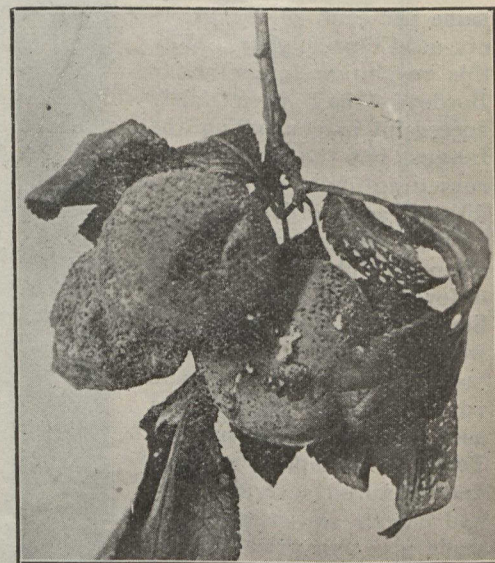
two or three pounds of Arsenate of Lead to forty gallons of water soon after the fruit is set, and remove all rubbish and thickets from around the fence corners, as the beetles winter in such rubbish. Two or three pounds of freshly-slaked lime may be added to each barrel of the spray mixture as a safeguard against burning. Sixth, spray with self-boiled lime-sulphur about a month or five weeks before the fruit is ripe. Bordeaux or commercial lime-sulphur is likely to injure the foliage. For directions for making the self-boiled lime-sulphur, see our spray calendar or lime-sulphur bulletin.

### CANKERS AND GUMMING OF PEACH TREES

In certain localities in the Niagara district, especially at Queenston, Niagara-on-the-Lake, St. Catharines, and in one or two orchards at Winona, it is a common thing to find large black gum-covered cankers, chiefly on the upper side of large branches. These cankers do not heal over, but continue to widen out and enlarge until finally the whole branch dies. The disease is not confined to Ontario, but is quite common in Michigan and in parts of New York State and probably in other states as well.

In Ontario, so far as I know, it was not very troublesome until the spring of 1908, and in that and the next year there was a regular epidemic of it in the above mentioned districts. Since then there seems to have been much fewer new cases, but the old ones are still active and are causing the loss of many branches in otherwise vigorous orchards. The cause of these gummy areas is very doubtful. There is apparently no bacteria present.

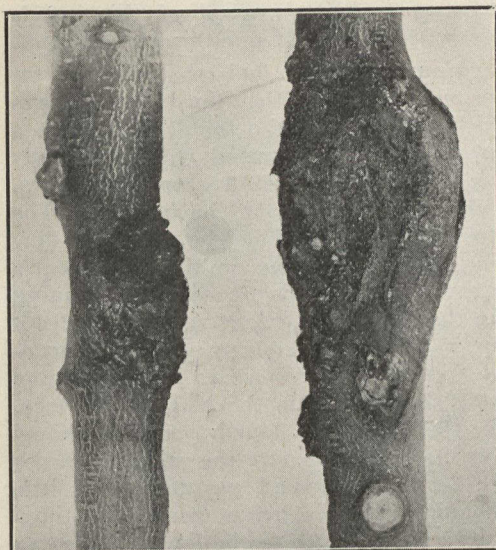
At first, as the result of a number of inoculations which showed that the Brown Rot fungus would, if inserted through the bark, produce very similar gum masses, I was inclined to think that this must be the cause of the disease,



Fruit Attacked by Brown Rot

The same disease attacks peaches, plums and cherries (After Duggar).





**Canker on Peach Branches**

This trouble is due to the so-called Gummosis disease.

but further study and failure to get any fungus whatever in the wood beneath fresh gum masses has made me believe that while Brown Rot may have something to do with preventing the healing of some of these cankers, yet it does not account for the origin of all of them. There is also the difficulty of explaining why some orchards such as those at Grimsby should be almost totally free from the disease, though Brown Rot is frequently quite as destructive or even more so there than in the diseased orchards. It is also hard to explain why in many orchards without any change in methods of spraying there has been almost no new cases. A good instance of this is the large orchard of A. Onslow, near Niagara-on-the-Lake. It is quite possible that very unfavorable weather conditions interfering with the cells of the plants performing their proper function may be the real cause.

Much gumming of trees is, of course, frequently caused by small black beetles, known as Shot-hole Borers, but it is easy to determine whether these are the offenders by removing the gum masses and seeing whether there is a small hole through the bark made by the beetles. Sometimes the fungus *Valsa leucostoma* will produce gumming, but, so far as I can see, it seems usually to be a secondary cause and to enter at some dead area or wound and then gradually kill the living tissues around this area.

#### WHAT TO DO

With our present lack of knowledge as to the cause of the gumming of peach trees it is difficult to recommend any rational method of treatment. It would be wise, however, where a canker threatens to destroy a large and valuable limb to cut out all the dead tissues up to the perfectly healthy bark, disinfect the wound with formalin, one part diluted to about five with water, or with

corrosive sublimate one part to one thousand parts of water (this is a deadly poison), and cover it over well with

white lead paint free from turpentine. A second painting later in the season will usually be necessary.

## Best Varieties of Small Fruits

Grant S. Peart, Burlington, Ont.

Soil adaptation is an important point to consider when selecting varieties of small fruits for cultivation. Certain varieties seem to do better on heavier soils than lighter soils and vice versa. The Williams strawberry, according to my experience, gives better results on a rich soil inclined to be heavier than that recommended for strawberries by some growers. On the other hand Bederwood seems to produce better berries on a well manured, lighter soil. In red currant culture the Fay seems to require a heavier and richer soil than the cherry, while among black varieties the Naples needs a richer and stronger soil than the Lees. The same relationship exists between the Marlboro and Cuthbert raspberries. The former must be fed more liberally with manure to get the best results. The foregoing includes a few of the many examples which may be brought forward as convincing evidence that soil adaptation is an important consideration when setting out a plantation of small fruits.

#### MARKET REQUIREMENTS

What the markets demand in small fruits in Ontario is of little importance to the grower unless he is producing strawberries for the canning factory. Although different qualities are represented among varieties, ordinarily speaking, no discrimination is made by the consumer as to quality. Berries are berries, and like prices are realized on

all varieties, with the exception of gooseberries (the English varieties generally command higher prices than American sorts). It is needless to say that white and purple raspberries, white currants, juneberries, and other extraordinary kinds of bush fruits so far have proven to be unsuccessful in a commercial way.

#### SELECT VIGOROUS STOCK

Very often after a variety has been grown for many years in a certain locality and no new stock of that variety is brought into the locality, the plants or canes become gradually weakened from year to year until that particular strain is unprofitable to grow. Thus the advisability of selecting vigorous stock. An example of this trouble is found in the Burlington district and others, where the Marlboro and Cuthbert raspberries do not yield as profitably or grow as vigorously as they did ten years ago. In fact, in some plantations they are now being entirely supplemented with the Herbert variety. The Herbert is practically a new berry in the district and promises well, but the writer believes that it is not as valuable a variety as the Cuthbert to the grower.

The culture of the Williams strawberry also has been given up by many Burlington growers because its stock has lost vigor. During the past few years it has been almost impossible to obtain good rows with this variety. To use a common phrase, the plants will not "run" sufficiently, and thus a ragged



Spraying With a Spramotor Power Machine in an Ontario Orchard.





**Combatting Insect Pests in California by Fumigating.—No. 1**

This shows a tent being moved from one tree to another. These are navel trees about fifteen feet high. —Photo courtesy E. H. Wartman.

row results. Its place is being largely taken by the Gibson or Parson's Beauty.

#### RED CURRANTS

The Cherry and Fay are the leading varieties; both are very productive. The former does better on the lighter soil than the Fay.

#### GOOSEBERRIES

American—Pearl and Downing.

English—White Smith and Industry.

The English varieties are subject to mildew, but it can be controlled quite well since the lime-sulphur wash came into common use.

### British Columbia Methods

Low-heading of apple trees is practiced generally in the interior valleys of British Columbia, those in the dry belt, at any rate. Clear warm days and sharp night frosts, dropping from snow-clad mountains, are the conditions frequently experienced for a few weeks previous to the trees starting growth—ideal conditions for sunscalding. Low heads have advantages besides protecting the trunks from sunscald; easy picking, pruning and spraying being the greatest. It is easier to make good low-headed trees when one begins with one-year-old stock which is planted by many growers in that section.

The fact that British Columbian apples run (sometimes outrun) those of Washington and Oregon very hard in the matter of bright coloring may be accounted for by that province being so situated geographically that they get more hours of sunshine during the summer season. McIntosh Red and Jonathan are the most largely planted kinds in the interior. Northern Spy, though probably never planted as much as it deserves because of its late bearing habit, does splendidly. These varieties

color so gorgeously under the summer sun at latitudes 50 and 51 that they will always be quick sellers.

### Pruning Peach Trees

Will you please describe how to trim back three or four year old peach trees in the fall, and also how to trim one-year-old trees. In setting out a new peach orchard how far is the standard distance generally allowed between the trees?—J. A. McK., Ontario.

The first few years is a critical period in the life of the young tree, and too much care cannot be given to the pruning and shaping of the peach tree. When the tree is set it should be pruned to whip and cut back to fifteen or eighteen inches from the ground. The roots require very little pruning except to cut off broken or ragged pieces. It is a good plan during June in the first year to go over the young trees and remove all except six or seven shoots coming out from twelve to eighteen inches above the ground.

The following spring the real forming of the head of the tree is done. Three or four well-placed shoots on the whip should be left. These should be evenly placed about the whip and not too close together and no two forming a crotch, which may later give trouble. When these have been selected and the others removed the remaining ones should be cut back nearly two-thirds. This is severe pruning, but will pay in the end, as the tree will make even stronger growth on account of the severe pruning.

The second year's growth needs to be almost as severely dealt with. At this time it is necessary to see that the head is given proper balance so that the tree will be compact and somewhat spreading without being dense or too straight up. There is usually danger in

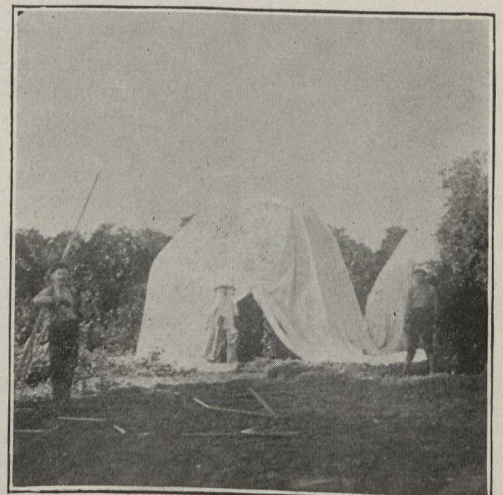
leaving too much wood of this year's growth by at least one-third to one-half.

Many growers find that too severe pruning during the third and fourth years tends to make the tree produce a great quantity of wood with practically no fruit during the fourth and fifth years, when the trees should be bearing. The tree's first crop should be produced during the fourth year on the third year's growth. For this reason the pruning in the third and fourth years should not be so severe. Therefore, while the pruning in the first two years has been more to shape and form the head of the tree, in the third and fourth years it should be more to thin out the wood in order to let in light and air and very little heading back is given except to stiffen and give strength to the limbs. One can do considerable thinning out in this respect without heading back much, and no injurious results will follow.

At the end of the fifth year, when the tree is reaching its most profitable period, it will be necessary to again head back to keep the tree in bounds and the fruit near to the ground. The tree should not be allowed to carry too heavy a crop in the fourth year, but in the fifth year it should carry a full crop. The spring is the best time to do the pruning, especially of bearing trees, as often one can tell the amount of winter injury to buds and wood, and prune accordingly.

In pruning off limbs care should be taken to cut close to a bud or a limb, so that the wound may the better heal over. Also one can do much in shaping the head by watching the position of the buds and pruning to a bud pointing in the direction that it is desired to have the tree grow.

The standard distance for planting in the Niagara District is eighteen to twenty feet each way.—T.G.B.



**A Tent Ready For Use.—No. 2**

The men are preparing to put the cyanide and acid under the tent, where it is allowed to burn for one hour.



# Orchard Spray Calendar for 1912

Prof. Wm. Lochhead, Macdonald College, Que.

Fruit-growers should begin preparations for the spraying of their orchards in early spring. The spraying outfits should be thoroughly overhauled and tested so that there may be no delays in the busy season. Extra lengths of strong hose, capable of withstanding 250 pounds pressure, and supplies of nozzles of the kind that experience has shown to be the best, should be procured for cases of emergency. In addition, the necessary season's supply of chemicals, such as lime-sulphur (or the commercial lime-sulphur, if that is preferred), bluestone, good stone lime, Paris green, or preferably Arsenate of Lead, and White Arsenic, should be purchased and stored in readiness for active operations. If the lime-sulphur wash is to be made on the premises, attention should be given to the construction of a suitable boiling outfit, so that no delay may result at the last moment. There should also be a goodly supply of coal-oil barrels on hand for storing stock solutions of lime-sulphur and Bordeaux.

PLANT	FIRST APPLICATION	SECOND APPLICATION	THIRD APPLICATION	NOTES
Apple	Use 1 (a), or 2 (a) just before the leaf buds open, for hibernating insects such as scales, bud moth, case-bearers, scab, canker and leaf spot.	Use 1 (b), or 2 (b) just before the blossom buds open for curculio, canker worm, tent-caterpillar scab, canker and leaf spot.	Use 1 (c), or 2 (b), or 8 immediately after blossom petals have fallen, and before the closing of the calyx-cup for codling-worm, canker worm, curculio and scab.	Use 1 (c), or 2 (b), or 8 a few weeks later if scab or codling worm threatens; apply whale-oil soap solution if aphids become troublesome; for apple maggot gather promptly and destroy completely all fallen wormy fruits. For twig-blight cut out and burn branches and twigs as soon as observed.
Pear	As for apple, to control scale, scab, blister-mite.	As for apple, to control curculio, tent-caterpillars, scab.	As for apple, to control scab, curculio and others.	Another application of 3 (a) if scab threatens. For Psylla apply whale-oil soap solution when leaf buds open, and again a week later. For slugs spray with 3 (a) or dust with air-slaked lime.
Peach	Use 1 (a), or 2 (a) before buds begin to swell, to control scale, leaf-curl and brown rot.	Use 3 (b) after the fruit is set to control curculio and brown rot.	Use 3 (a) a month later for brown rot and scab.	Another application later, if brown rot is severe: Remove and destroy all trees showing "Yellows," or "Little Peach," or those dying from shot-hole borer. Spray with whale-oil soap solution if aphids appear.
Plum and Cherry	Use 1 (a), or 2 (a) just before the buds burst for scales, brown rot and shot-hole fungus.	Use 1 (c), or 2 (b), or 8 when fruit is fairly set, for curculio, green fruit worms, brown rot and black-knot.	Use 1 (c), or 2 (b), or 8 about two weeks later. Repeat if brown rot threatens. If "slug" appears use 3, or dust with dry, air-slaked lime.	If Black-Knot is present, cut out twigs and burn them. If aphid is abundant, spray with whale-oil soap solution. Mummy plums should be destroyed in autumn.
Grape	Use 7 or 8 or 3 (b) as buds begin to swell, or when third leaf makes its appearance, to control black rot, mildews and flea-beetle.	Use 7 or 8, or 3 (b) before the blossoms open, to control black rot, mildews and flea-beetles.	Use 7 when the fruit is set, about two weeks later, for black rot and mildews.	Use 7 again if black-rot threatens and before rains in moist weather. If "Thrip" makes its appearance, spray with whale-oil soap solution (5) in July. Dusting with sulphur is effective against the Powdery Mildew. Mummy and wormy grapes and prunings should be destroyed by burning.
Currant and Gooseberry	Use 1 (c), or 2 (b) before buds open, to control mildew.	Use 1 (c), or 2 (b) just before blossoms open for mildews and currant-worm.	Use 1 (c), or 2 (b) after fruit is formed for mildew and "worm."	Hellebore is effective against the "worm" when fruit is large. If aphids appear, spray early and thoroughly with whale-oil soap solution (5).
Raspberry and Blackberry	Use 7 before leaf-buds open, against anthracnose, leaf-spot and saw-fly larvae.	Use 8 two weeks later.		If "orange-rust" appears, remove and burn affected plants at once. If anthracnose appears, cut affected canes and burn. Set out no new plants affected with "crown gall."
Strawberry	Use land broken for more than 3 years if white grub is common. Use only healthy plants for setting. If leaf-spot or "rust" is troublesome keep plants covered with Bordeaux throughout first season; in second season spray with Bordeaux before blooming, and after picking mow and burn. Take but two crops. Dig out white grubs as soon as injury is observed.			
Tomato	Spray plants in seed bed with Bordeaux; spray at intervals with Bordeaux if danger of rot or leaf-spot is feared.			

## Spraying Mixtures

- HOME-MADE CONCENTRATED LIME-SULPHUR WASH.**—A combined insecticide and fungicide, hence a very valuable spray.  
FORMULA.—Lime, 50 lbs.; sulphur, 100 lbs. and water, 40 gals.; prepared by boiling for nearly an hour, and afterwards diluted to proper strength. A hydrometer is necessary to get the proper dilutions: 1 (a) in early spraying on dormant wood wash should have a specific gravity of 1.030; 1 (b) for spraying before blossoms burst a sp. gr. of 1.009; and 1 (c) for spraying just after blossoms fall—1.008. (For details see Prof. L. Caesar's Reports.)
- COMMERCIAL LIME-SULPHUR WASH.**—2 (a) used on dormant wood at the rate of 1 gal. to 9 gals. water; 2 (b) on foliage 1 gal. to 40 gals. water.
- ARSENATE OF LEAD.**—A valuable insecticide for biting insects, (a) used alone—2 lbs. to 40 gals. water; (b) with lime-sulphur wash or with Bordeaux mixture—2 lbs. to 40 gals. of the wash.
- PARIS GREEN.**—Used for poisoning biting insects,  $\frac{1}{4}$ - $\frac{1}{2}$  lb. to 40 gals. water; 1-2 lbs. quicklime should be added to prevent burning. Usually applied along with Bordeaux.
- WHALE-OIL SOAP.**—A good contact insecticide for sucking insects such as plant-lice, leaf-hoppers, etc.—1 lb. soap to 5-6 gals. of hot water.
- HELLEBORE.**—(a) 1 oz. steeped in 2 gals. water; or (b) used dry, pure or mixed with 5 parts of cheap dry flour.
- BORDEAUX MIXTURE.**—The standard fungicide.  
FORMULA.—Copper sulphate, 4 lbs.; best stone lime, 4 lbs.; water, 40 gals. Dissolve the copper sulphate in a barrel in warm water, and make up to 20 gallons; slake the lime slowly in a second barrel, and add water to make up 20 gals.; pour the lime mixture into the sulphate solution. If the prepared Bordeaux turns reddish with the addition of a little ferro-cyanide of potash add more lime.
- POISONED BORDEAUX.**—2-3 lbs. of arsenate of lead, or  $\frac{1}{4}$  lb. Paris green, added to Bordeaux, as prepared in 7.



## Spraying the Peach Orchard

W. J. L. Hamilton, South Salt Spring, B. C.

**B**EFORE attempting to spray his orchard, the owner should make a study of the different pests he has to combat and become familiar with their appearance, as it will clearly be impossible for him to attack them intelligently without this knowledge. Where it occurs, the San Jose Scale is probably one of the most injurious insect pests the peach grower has to contend with. If neglected it quickly destroys the tree, spreading with amazing rapidity. It has been estimated that one San Jose Scale insect will produce about three millions at the end of the season.

To control this Scale, one application of the ready-made (factory-made) lime-sulphur wash, strength one to fifteen of water, to which one pound of salt is added to every ten gallons of the dilute solution, should be applied in the spring whilst the tree is fully dormant. If any of the last year's growth is immature it will likely be injured by this application. It is by far the most efficient Scale insecticide, besides which it kills fungous disease spores wintering on the tree.

The curculio is another serious enemy to the peach grower. It can be combated: One, by destroying the trash around the orchard in the winter where the parent beetles shelter; two, by gathering and burning all immature peaches as they drop, since these contain the grubs; and three, best of all, spraying with lead arsenate, two pounds to fifty gallons of water, to which three or four pounds of fresh slaked lime has been added. This must be kept thoroughly stirred. Or the lead arsenate may be added to a solution of lime-sulphur, one to forty or one to fifty in like amount, if leaf curl or other fungous diseases are present. This should be applied after the blossoms fall, and twice afterwards, about ten days apart, if needful.

Some damage may be done to the foliage by this spray, varying with the variety of peach and with the locality. If the damage is excessive, further dilution of the lime-sulphur is recommended. In using lime-sulphur for peach trees, always use salt as before directed. This is important. The peach borer can be partly controlled by piling the earth around the trunk of the tree to the height of about one foot. This should be done during the blooming season, and the mounds may be levelled in October. The stems can also be painted with the following: Two quarts green soap, two ounces paris green, half a pint crude carbolic, to a pailful of water thickened with lime and clay to thin paste.

Killing the worms whilst under the

tree bark in spring and fall is advantageous. Cultivation of the orchard also destroys these enemies. Many a peach tree is injured by the black peach aphid, which attacks both roots and foliage. Before planting nursery stock the roots should be examined to see that they are free of this pest.

Spraying with whale oil soap or kerosene emulsion will remove this pest, and, if it infests the roots, tobacco dust worked round the tree is efficient. If nursery stock is affected, dip the roots in whale oil soap solution before planting.

The peach twig borer, a not very common, but very injurious moth larva, can best be destroyed by winter spraying with strong kerosene emulsion. The bark beetle generally attacks aged and decrepit trees, whence it spreads to others, which it quickly girdles. Cut down trees thus affected and burn them at once to kill the grubs.

Amongst fungous diseases, lime-sulphur (which is rendered fifty per cent. more efficient as a fungicide by the addition of arsenate of lead, as previously directed) is the remedy for leaf curl and lecanium (a sooty deposit on the leaves). Peach yellows, so far as I know, has never yet been affected by any treatment, so its only remedy is to at once dig up and burn all trees suffering from it.

The following sprayings are recommended where the before mentioned diseases are present: One, in dead of winter, on those trees which are very seriously affected with leaf curl, two pounds bluestone to fifty gallons water; two, in spring, whilst trees are dormant, lime-sulphur-salt as directed; three, after blossoms drop (for curculio and other leaf and fruit eating insects), dilute lime-sulphur, salt, and arsenate of lead as directed; also ten and twenty days later if curculio is bad. If there is no bad disease, dilute the lime-sulphur one to fifty, with two pounds arsenate to the barrel of solution; four, for aphid, where necessary, kerosene emulsion or whale oil soap.

### Best Varieties of Fruit to Plant

R. M. Winslow, Victoria, B. C.

The red apples of varieties ripening from October to May have given better results, as a rule, than any other class of fruit under the conditions now existing in British Columbia. The high price of labor militates against the rapid expansion of the small fruits industry, though the market conditions are very favorable, while the same applies to a lesser extent to the sweet cherries, which do well, particularly throughout the interior. Early

plums bring good returns in most districts, for shipment by local express, but late plums and prunes are liable to go on to a declining market, due to the extensive plantings of Southern Idaho, which occupy the field about the same time. Main crop plums, prunes, and Bartlett pears prove a good investment where districts produce enough to make shipments in mixed carloads possible, but are not to be recommended in other districts where the supply is at present equal to the local demand, and where there is no likelihood of mixed car shipments materializing at the time plantings commence to bear.

British Columbia's ability to produce large and heavy crops of high-class red apples of dessert varieties is now so well established as to justify the present demand for nursery stock of these varieties. While the summer fruits may, in some cases, provide a return a little earlier, experience has shown that for stability of market and net returns the winter apple is the best of all fruits.

### Dehorning Peach Trees

If peach trees are old we would not advise dehorning, but if they are middle aged they can be dehorned with profit. The best time to cut the trees back is in the late part of the winter or early spring.

It is best not to dehorn the whole tree at once, but leave a limb or two, and when the young sprouts are a year or two old cut the rest of the old ones off, as cutting the whole tree off at once would be too much of a shock for the tree to recover from.—J. W. Smith & Sons.

Spraying is a disagreeable piece of work at any time, but much can be done to make the work more pleasant, and prevent injury to the hands or eyes from the spray mixture. Have a drip guard just below the nozzle. A circular piece of leather with a hole in the center, makes a good one, or a simple piece of small rope tied around the pipe and allowed to hang down four or five inches, will answer the purpose. Have a shut-off tap that does not leak and make sure that all the joints are tight. Put on a pair of cheap leather gloves, to protect the hands, and cover the horses with a pair of canvas blankets. With reasonable care a man should be able to spray all day with very little annoyance from the corrosive action of the spray mixture.

If San Jose scale is present spray with lime-sulphur while the tree is dormant. It will also control leaf curl on peaches and the scurfy bud louse, the blister mite and oyster shell bark louse of the apple.

Remember when purchasing fertilizers that the finer the ground and the drier the substance, the greater their value.



## A Garden Where Difficulties Were Overcome

F. E. Buck; B.S.A., C.E.F., Ottawa.

**A** ROSE in an Ottawa garden on the twenty-first of October is not a very common sight. Yet it was on that date that Mr. G. A. White, of Ottawa, the owner of the garden described in this article, showed me a beautiful rose which he had picked that morning. It was a Caroline Testout—literally the “last rose of summer,” and a beautiful one at that. About a month earlier, just after a killing frost on September thirteenth, this same garden had impressed me as being particularly interesting for the time of the year. Many of the autumn flowers formed impressive masses of color, and even on October the twenty-first some of them still remained as if loth to leave this snug little garden to the reign of the frost and the snow. Among these cheerful friends of October were the beautiful Japanese anemones, some fall asters, a lingering clematis or two, a few unusually fine chimney bellflowers, and a beautiful little clump of fall chrysanthemums.

This garden was selected for description in this series of special articles in *THE CANADIAN HORTICULTURIST* for at least three reasons: The first, it is one of the smallest of the noted gardens of

Ottawa; the second, its soil and situation are quite ordinary—in fact, I am given to understand that the soil is exceptionally poor; the third, the owner has done all the work in this garden himself. It is not, therefore, an ideal garden which is too ideal for other people to take as an inspiration to their own efforts in gardening.

And it is as well also to state here, perhaps, that Mr. White does not own the lot himself—he rents it only. Consequently he has not been able to carry out all his ideals along gardening lines. In spite of this, the garden is one which brings him great credit both as a gardener and also as a citizen.

The shape of the garden, as will be seen from the sketch, is somewhat peculiar. At the very beginning it offered several problems for solution, and during the twelve years or so that Mr. White has worked at this garden, he has introduced several features which are particularly pleasing. One of these features, the most striking of all, perhaps, is the wonderful rockery at the back. The aim of the article is to emphasize those points of excellence which may be readily copied by others if they so wish. This rockery, therefore, will have to be

passed over in this article in a very brief manner, because it is a piece of gardening which is quite out of the ordinary. Certainly it is unique and demonstrates what may be done with a little ingenuity and work. It is indicated on the plan by the number twelve. When Mr. White first went into the house this rockery, which is now one of the most beautiful sights imaginable during the early spring and part of the summer, was then an eyesore as well as a problem to deal with. It was nothing less than a sandy bank some thirty feet high covered with brush and weeds. By work and patient effort all has been changed. A number of rock-edged terraces and zig-zag paths, built stepping-stone fashion, form ideal spots for growing the many rock loving plants and showy masses of tulips which sparkle in their unique surroundings with wonderful color effect. Many thousands of tulip bulbs are planted on this rockery each year. The main rock loving plants also grown here are given at the end of the article.

### SUCCESSFUL IDEALS

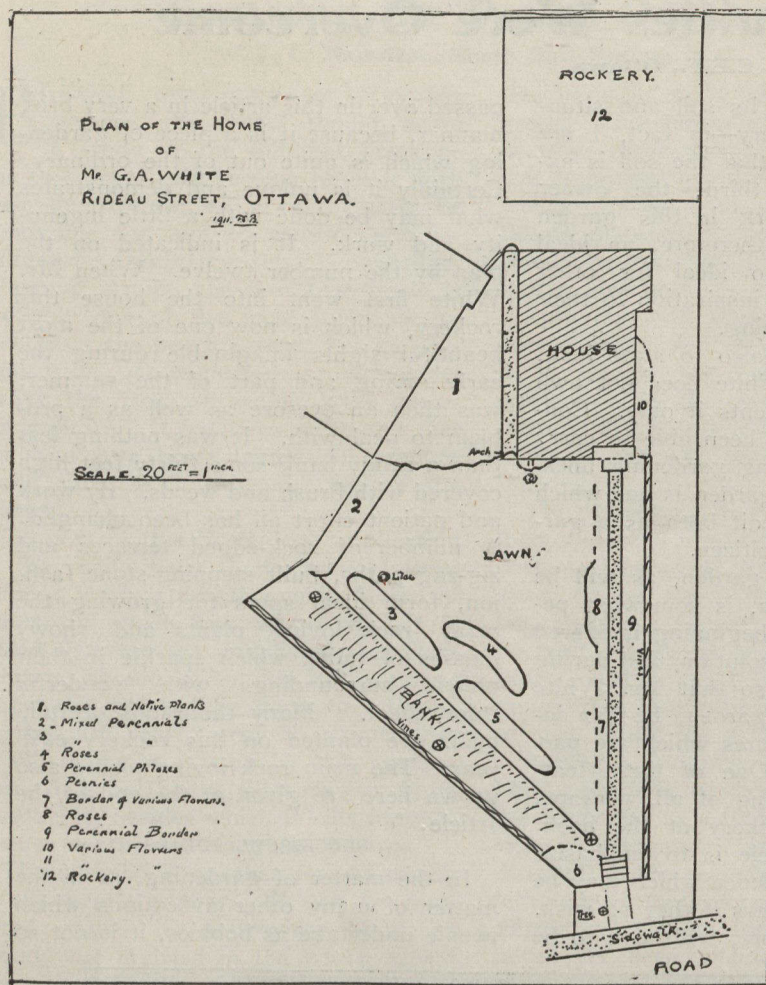
In the matter of gardening, as in the matter of many other avocations which people undertake as hobbies, it is not so



A General View of Mr. G. A. White's Lawn and Garden, with the House in the Background

This view shows the perennial border on the right of the picture and beds of roses and perennial phlox on the left. Notice also how the appearance of the house is improved and its width apparently increased by the judicious placing of a vine-covered arch.





Plan of Mr. White's House and Lot

much the lack of the material or the opportunity which are responsible for frequent failure as it is the lack of some ideal around which to centre effort. In this regard it is well to note that Mr. White has had marked success. Besides his rockery he aimed to have another ideal feature in his garden. This second feature is the growing of native wild plants. In the spot marked "1" on the plan he grows some beautiful specimens of that lovely scarlet flower, the native Cardinal flower, also the Columbines and other native plants. In this same spot, as will be seen from the illustration, there also flourishes to perfection the shade-loving Japanese anemones, together with some varieties of roses. This spot, originally a damp, dismal corner, presented quite a problem at first, but it turned out to be ideal for such things. It now makes as delightful a spot as any in this garden.

#### SUCCESS WITH ROSES

Mr. White is a great lover of that queen of all flowers, the rose. He attributes his success in growing them to very simple methods. Late in the autumn he heaps up a little earth or preferably some turf sods around the roots. He then bends over the vines, placing under them a few leaves to act as a cushion so that the weight of snow above

may not break them. Finally a few more leaves, or what is very much preferred, an evergreen bough, is thrown on the top. This forms a very simple winter treatment, but it has proved quite effective.

Rather late in the spring he uncovers and prunes the vines, giving severe pruning for some varieties, but very light for others. This treatment with a little attention during the summer brings him a succession of roses every month in the flowering season. He advises the use of lime as a simple remedy to keep away the rose slug. The varieties which he has found most satisfactory are as follows:

Climbers—Crimson Rambler and Dorothy Perkins.

Hybrid teas—Caroline Testout, La France, Killarney. Caroline Testout, in his experience, has proved to be the hardiest, and it has always come through the winter safely.

Hybrid perpetuals — Reds — Ulrich Brunner, General Jacqueminot (the best rose for abundance of June bloom), Captain Hayward, Prince Camille de Rohan (a grand rose), and Fisher Holmes.

Pinks—Her Majesty, Mrs. John Laing, Suzanne Marie Rodocanachi.

Whites—Frau Karl Druschki, and the Rugosa rose, Conrad F. Meyer. He has found it very harmful to put manure of any kind around roses for a winter protection. He also objects to fall pruning of roses, except to a little which might be undertaken with success in the vicinity of Ottawa if done in the month of September.

#### PERENNIALS

Most of the flowers grown in this garden are herbaceous perennials. The perennial border, marked nine on the plan, contains some fine display of color at various periods of the flower seasons. Both tall and low growing plants are used. Among the tall plants the Sweet Rocket, hollyhocks, delphiniums, and phloxes predominate. Bulbs, Oriental

poppies, irises, Sweet William, Rock Cress, Adonis, and so forth, also occupy prominent positions.

#### RECOMMENDED PLANTS

Everyone, of course, has favorite flowers, and Mr. White has, but he does not limit his gardening ideals to growing favorite flowers only. The list of flowers which follows will indicate better than anything else the general knowledge which Mr. White possesses of flowers which may be grown with success by the amateur. On the rockery he has found these flowers do well.

#### ROCKERY AND OTHER PLANTS

Arabis alba—rock cress; Aquilegia—columbines in variety; Iris—irises in variety; Primula—in variety; Iris—dwarf, pumila, etc.; Alyssum—madwort; Erysimum—wallflower; Campanula—bellflowers; Anemone sylvestris; Phlox subulata—moss pink; Heuchera—coral bells; Dianthus—pinks, Mrs. Sinkins, etc.; Narcissi—in variety; Aubretia—purple rock cress; Aconitum—monkshood; Epimedium—barrenwort.

A paeony garden is another feature of this garden. It is marked "6" on the plan.

Amongst the shade loving plants the Triliums (Wake-robin), the Globe flowers, and native ferns have done exceptionally well.

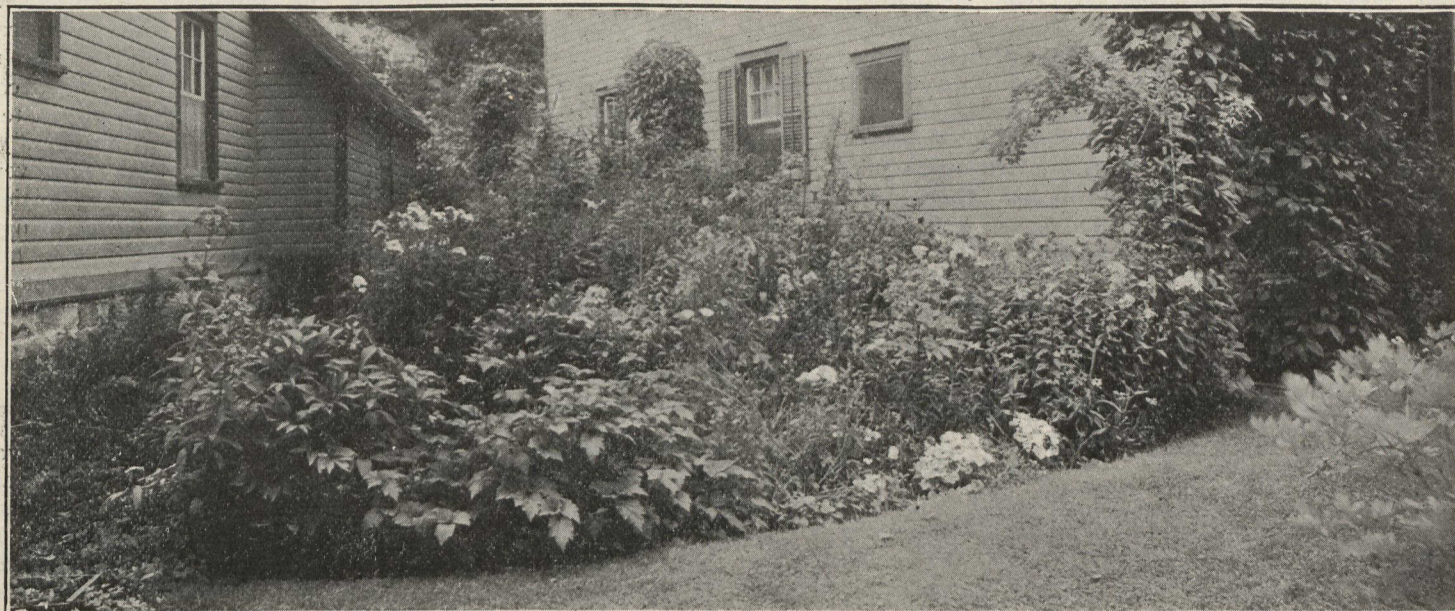
Besides the several thousand bulbs planted on the rockery each year many are also planted in with the roses. This year several quite new varieties of daffodils and narcissi were planted in the rose beds. These Mr. White imported direct from the Old Country. He says that he "never misses a year without trying some new introduction or novelty."

The four facts which Mr. White's success emphasizes are: It pays to specialize in a few plants, to grow the best of everything, to try novelties, and to persist in patient effort. These four points are well worth keeping in mind, especially by anyone who is gardening for pleasure and results.

When transplanting annuals into a flower bed I keep a supply of each kind in reserve in the box. These are used to fill in spaces that may be left through any of the plants failing to grow.—D. W. Marden, Pilot Mound, Man.

Sweet peas require deep spading, at least two feet deep, well enriched, and the peas planted very early in the spring at least one inch deep. If after they are up and ready to climb they are simply left alone and given no support and allowed to sprawl all over the ground, what kind of sweet pea flowers could be expected? Sweet peas require special attention both before and after planting, and if they don't get it you won't have good peas.—D. W. Marden, Pilot Mound, Man.





A Piece of Skilful Gardening in Mr. White's Garden

This damp, sunless corner between two houses in Mr. White's garden was turned into an ideal spot by using suitable native and other shade-loving plants. The native cardinal flower flourishes to perfection here.

## Spraying Plants Indoors

Wm. Hunt. O. A. C., Guelph, Ont.

THE necessity of spraying to keep down insect pests and plant diseases in connection with all outdoor horticultural pursuits becomes more apparent every year. It is even more necessary in connection with indoor plant growing on account of the more unnatural conditions prevailing in the greenhouse and window, such as a dry, arid atmosphere produced by artificial heat and lighting, or possibly an impure atmosphere produced by gas fumes from furnaces, stoves, or from gas jets. No better element to counteract the bad effect of these last-named on plant life can be found than moisture, whether by water applied directly to the plant or as a vapor induced by the process of evaporation.

Not only is a moist atmosphere and moisture necessary for the health of plants from a cultural point of view, but it is just as necessary as a preventive of insect pests, few of which can exist or endure the direct application of water or thrive in an atmosphere heavily impregnated with moisture. The dry and almost super-heated atmosphere out of doors in summer are ideal conditions for the increase and spread of insect pests.

Tropical climates, where a moist, humid atmosphere prevails, are almost immune from many of the insect pests that are common here. Hence the desirability of moisture to counteract the aridity arising from the artificial heat that prevails in our dwellinghouses in winter. At the same time, it is quite possible to go to the other extreme by injudicious spraying, that will induce plant disease in some form, more espe-

cially with the more tender foliated plants.

All greenhouse men know the absolute necessity there is for spraying or syringing in greenhouses. A few words on the main points may be of service to those who have small greenhouses.

The spraying or syringing of plants should be a distinct and separate operation from the watering proper. If the two operations, watering at the roots and spraying, are attempted at the same time, neither of them can be done successfully. Either the plants are soddened with too much water or some are missed altogether. Water the plants as required at the roots first, then do the spraying after.

I have seen batches of small plants and many fine specimen plants badly injured by the careless application of water to the foliage under heavy pressure from the hose. A fine spray, thoroughly applied so as not to miss any part of the plant that requires spraying, is better than a heavy application only partially applied. Thorough, not necessarily heavy, applications are quite as necessary in all spraying operations as the proper mixing of the material if insecticides are applied.

Glaucous or glossy leaved plants can be sprayed very frequently. The rougher or hairy-leaved plants should not be sprayed so frequently or heavily. A few kinds, such as Rex Begonia, gloxinias, tuberous-rooted begonias, having hirsute or hairy foliage, are best not sprayed at all, if it can possibly be dispensed with.

There are very few plants that can be

syringed or spread overhead when in full bloom without danger of injury to the flowers. The tender texture of the petals of most flowers are very easily injured if allowed to remain in a damp condition for any length of time. If the foliage of plants in flower has to be sprayed, it is best to spray from underneath rather than over the top. The moisture will thus reach the part of the foliage where insect pests are usually found, and it will not injure the blooms so much as overhead spraying. An angle nozzle on the syringe or hose that will give an up-cast spray is advisable for greenhouse work.

The temperature of the greenhouse should not be allowed to rise unduly high on flowering plants when they have been syringed or sprayed. A high temperature and a very humid atmosphere will often damage many of the more tender blooms without actual contact with water. Open the ventilators a little to allow the heated humid air to escape after spraying flowering plants, so as to avoid damage to the blooms. The best time to spray flowering plants is in the morning on fine bright days.

### SPRAYING FOLIAGE PLANTS

It is scarcely possible to have a too humid atmosphere for foliage plants. The treatment of these in regard to spraying is directly opposite in many respects to that of flowering plants. Both overhead and underneath spraying can be indulged in freely with all kinds of foliage plants, such as palms, crotons, dracaenas, and similar plants. The best time to syringe or spray these plants is in the afternoon while the sun is still shining a little on the house. By spraying thoroughly at this time of the day and closing the ventilators up tight, a dense humid vapor almost like steam is

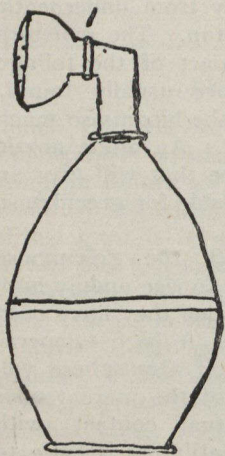


caused that is very beneficial to the plants as well as helping to keep down the insect pests most common and injurious to them, viz., thrip, red spider, and mealy bug. The floors and heating pipes can also be dampened at closing-up time to increase the humidity. If foliage plants are sprayed in the morning, except perhaps in very cold weather in winter, ventilation must be given before the hot sun strikes the house, or the plants must be shaded in some way to prevent "scald" or "burning" of the foliage. Many fine palms and similar plants are often ruined, especially in early spring, for want of shade or ventilation to prevent this scalding or burning of the foliage.

An angle nozzle with a fine spray for attaching to a hose or syringe, is an invaluable adjunct to the equipment of any greenhouse, if judiciously used.

#### LIQUID INSECTICIDES

It becomes necessary to spray plants with liquid insecticides sometimes as a remedy or preventive of insect pests or disease. Spraying has to a very great extent superseded fumigation in greenhouses for this purpose, being more direct in its effect on many insect pests and diseases, more economical to use, and often less injurious to many forms of plant life than fumigation.



Scollay's  
Rubber Sprinkler with  
Nozzle

To fill the sprinkler unscrew the rose or sprinkler at 1. Press the air out of bulb, hold it under the water in an horizontal position and allow the bulb to fill and expand gradually. Clear liquid or water is desirable. One of the best appliances for spraying a small collection of plants.

of water is very beneficial) or sulpho-tobacco soap. This last is sold in seed stores and is also a good insecticide.

The whale oil soap solution applied with a soft brush so as to move the scale, and a spraying with clean water afterwards, is the best remedy for scale insects that infest palms, ferns, rubber plants, oleanders, English ivy, and simi-

lar plants. "Move the scale and it will die" was one of the axioms or rules that used to be, years ago, always impressed on young florists. It applies now with equal force, especially to amateur plant growers.

For mildew and black spot diseases, that attack roses and chrysanthemums, and also for the mycelium or "damp-off," there is no better remedy than finely powdered flowers of sulphur, dusted on when the foliage is damp, not wet.

## Orchid Growing for the Amateur

J. A. Ellis, M.L.A., Ottawa, Ont.

**A** POPULAR impression about orchids is that they are very expensive. This is not entirely correct. It is true that rare orchids are very expensive, but that is generally on account of their rarity and not on account of their beauty. Some of the most beautiful orchids are only a dollar or two. It can be taken as a general rule, that the orchids that we now and again hear have been bought for fabulous prices are no more beautiful, and in most cases not as beautiful, as the common, cheaper ones.

Another popular impression is that orchids are extremely difficult to grow, and that only experts can manage them. This, too, is erroneous to a great extent. The culture of orchids divides them naturally into three classes, viz., stove, intermediate, and cool. The stove varieties require a temperature of sixty-five to eighty degrees in summer, and of sixty to seventy degrees in winter. The intermediate want sixty to seventy degrees in summer, and fifty-five to sixty-five degrees in winter. The cool varieties will do with fifty-five to sixty degrees in summer, and forty-five to seventy-five degrees in winter.

It will easily be seen that the stove orchids require a degree of heat which can only be secured by special greenhouses and constant attention. The amateur, who has other things to attend to besides his plants, should not try to grow this class of orchids.

#### ORCHIDS FOR AMATEURS

Nearly all the cool house orchids and many of the intermediate ones can, however, be grown by an amateur in the same greenhouse most successfully. The elimination of the stove varieties cuts out many lovely flowers, but the intermediate and cool house ones comprise a wide range, and some of the most beautiful. I, therefore, advise the amateur to confine himself to these two latter classes. If he does, he can secure exceedingly beautiful flowers at a low cost for the plants, and he will find that these orchids are the most easily grown of all plants. In fact they are easier to grow than fuchsias, begonias, or even geraniums..

All of the foregoing remarks will apply with more or less force to the care of window and house plants. Due regard should be had to the changed conditions and surroundings, such as temperature and facilities for spraying.

In spraying operations, as with everything else in connection with horticultural operations, do not neglect doing it until it is too late. "An ounce of prevention is better than a pound of cure." And when spraying, spray thoroughly.

They require very little attention, want re-potting only about every third year, are remarkably free from insect pests, do not require pruning or clipping, are always in good form and shape, and even when not in bloom generally have beautiful green leaves. In order to grow them successfully, however, their simple requirements must be understood.

#### ESSENTIALS TO SUCCESS

The first essential is to keep the correct temperature already given. Also absolutely essential are, a plentiful circulation of fresh air, shading from the hot summer sun, and an abundant supply of moisture. These matters will be readily understood when it is remembered that in their native habitat most of them grow on dead trees, where they are in shade, and over swamps from which a constant moisture arises. Other varieties grow on swampy ground.

Fresh air is vital to them, and should be admitted on all possible occasions. There should be both bottom and top ventilators, so that the air can freely circulate throughout the greenhouse and around all the plants.

The greenhouse should be shaded in summer, either with roller blinds, or which is quite as satisfactory, by heavily whitening the glass. Orchids will not stand the direct hot rays of the sun.

Moisture is best supplied by overhead watering with a hose. When the plants though are forming their young flower shoots care must be taken that water does not lodge around these shoots else they will decay. Dipping the plants in water until the pots are submerged does them a lot of good in summer. In winter watering two or three times a week is ample, but in summer during the growing period watering every day, and sometimes twice a day, is necessary. Some liquid fertilizer given during the growing season is beneficial. If the plants are dipped, this is easily done. Whilst plenty of moisture is desirable, the plant should never stand in water.

Orchids are generally potted in peat fibre, with a little fine moss mixed with the fibre, and the compost covered with green growing moss. If this green moss



is in a thriving condition the plant is thriving. The plants are greatly benefited by frequent dampings between the pots, especially in summer. If grown in pots these must be well drained, and about one-third filled with crocks to enable the water to run off freely. Many orchids are grown in cribs or baskets.

#### PLANT CHARACTERISTICS

Most orchids consist of bulbs, with a pair of leaves on each bulb. Every year a new bulb grows from the bottom of the previous year's bulb, and the flower stalk either comes from the base of the bulb or the top of it. Some orchids, such as the cypripediums, throw up the leaves from roots, and the flower stems come from the centre of each cluster of leaves.

#### A SMALL GREENHOUSE

I have a small lean-to greenhouse, with a southern exposure, about twenty feet by fifteen. It has a stone foundation, and a brick wall of about four feet. The end, side and roof are, of course, glass in wooden frames. It has been built many years, but if I were building it now I would use iron frame construction for the end, side and roof. It is heated from my house furnace; and contrary to what is generally supposed, I find no difficulty from this method of heating. It cost me about \$250.00 to build, including heating, but would probably cost rather more now.

I have wooden benches inside, composed of narrow pieces of one-half inch wood, with a space of about an inch between each. This allows the water to run off freely. Under the benches is an earthen floor. This retains some of the moisture which arises from the watering, and thus helps to keep the atmosphere moist.

The greenhouse has a door opening into my back parlor, and another one opening into my kitchen. This enables some air circulation to be obtained even in severe winter weather, when it is altogether too cold to open the ventilators.

Those orchids which in the wild state grow on trees do best when hung near the glass, at a distance of two or three feet away. Those which in a wild state grow in swamps are best suited to growing on the bench. In my greenhouse I have practically two lots of plants—one lot on the benches and the other hung overhead near the glass. I have about one hundred and fifty plants in all and about fifty kinds.

I need scarcely say much about the beauty of orchid blooms. To my mind they are the silks and satins of flowers, the flowers of other plants being the cottons and woollens. The delicacy of coloring is their greatest glory. It is only of late years that florists in Canada have begun to realize that orchid blooms are

easy to grow. They command a good price as cut flowers, and always will, because you cannot get many blooms from a plant, and these only once a year.

The kinds which I grow are, of course, those of the cool house, and those of the intermediate class which will grow in the same house. I do not grow many of those which bloom in summer. I thought

I could get lots of flowers outdoors in summer, and, therefore, I grow mostly those varieties which bloom in the late fall, winter, or early spring. By doing this I always have some flowers for my house all the year round; and I certainly get the most lovely ones from my orchids right in the middle of winter.

(To be continued)

## Spraying and Fumigating in the Greenhouse

E. M. Straight, Macdonald College, Que.

**E**TERNAL vigilance is the price of freedom from disease and insect pests in the greenhouse, as elsewhere. No part of the plant is immune, below ground as well as above; and from the time that the young seedling sends up its two cotyledons until the harvest, it is constantly in danger. It is worth noting that for all greenhouse work an ounce of prevention is worth a pound of cure.

Fungicides, for the most part, are intended for use as preventives rather than cures. To be effectual they should be applied before the disease has any hold upon the plant. The same is true with many of the insecticides. They are most effective before the insects have reached their full development. One reason for the early application of the remedies against both insects and diseases is that they multiply very rapidly. If not checked at the start they may propagate and become so numerous that much harm may be done.

No man can intelligently fight insects or combat disease without knowing the enemies which he must meet. There are men who persistently attempt to poison plant lice, and wonder why Paris green will not kill them. Recently I was asked which I thought better for potatoes—bordeaux mixture or paris

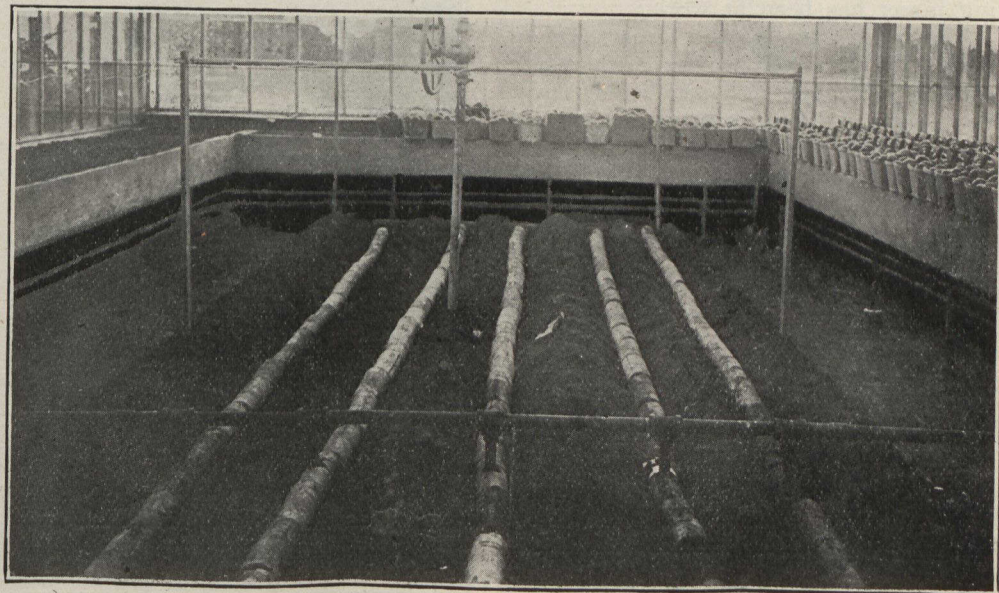
green. If every person could be convinced that bordeaux is a fungicide, that stomach poisons kill only such insects as chew, and that sucking insects, as aphides, are killed by contact, they would have mastered principles of paramount importance. The enemies which every gardener must meet are as follows:

#### VARIETIES OF INSECTS

Perhaps no class of insects take on more form than the aphids. In color, they differ more. Usually the green aphides are most common, but on the chrysanthemum the black aphid is common enough. Red and blue aphides are common on some plants. The antennae are long, the head small, and the abdomen large and much rounded. During the summer these insects are wingless, but in autumn winged forms appear. During the summer aphides bring forth their young alive, but they winter in the egg stage.

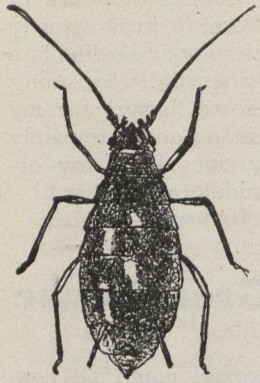
White flies are not flies in the true sense, but close relatives of the aphides. Adult males and females are winged. The wings are outspread. In this they differ from the aphides.

The red spider is also wrongly named, as it is not an insect or spider, but a mite. They are exceedingly small. It is very seldom that you see them unless



Sterilizing with Steam for Nematode, at Macdonald College, Quebec





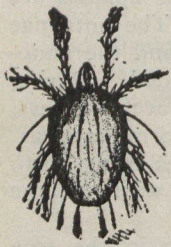
Wingless Aphid, Greatly Enlarged.



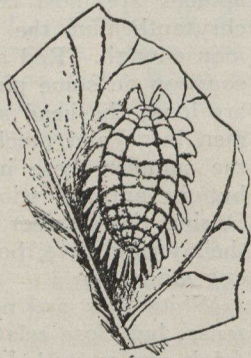
Thrips

you look with great care. Only as adults are they red. While young they are green or yellow. The leaves attacked first turn a light green and later yellow and eventually fall from the plant. If houses are properly ventilated and the correct moisture content maintained, red spider will give little trouble, as it thrives in a hot, dry atmosphere.

The thrips have long slender bodies and four wings. The wings are fringed.



Red Spider



Mealy Bug

The thrips, because of the peculiar formation of their mouth parts, have the power of biting and sucking. It is very difficult to decide from the nature of the injury whether a sucking or chewing insect has been at work.

The mealy bug is one of the scale insects. It is so called because of the white cottony substance with which they cover themselves. When about to lay eggs, a mass of long, cottony particles of wax is secreted, under which the eggs are deposited. The male is somewhat different from the female. It is darker. The wings are long and gray.

In every damp, untidy house slugs, snails and sow bugs are much in evidence. They delight in damp, decaying, unwholesome quarters. Slugs are especially fond of seedling plants, and sometimes give much trouble, but are easily got rid of.

Eel worms have given as much trouble at Macdonald College as any other greenhouse pest. These nematodes work on the roots, and gall-like swellings are produced, which interfere seriously with the normal development of

the plant. When they once get into a bed they are got rid of with much difficulty.

#### FUNGUS DISEASES

The most common diseases caused by fungi in the greenhouse are the following:

Carnation Rust was first noticed in this country about 1890. The plants were attacked some time before any pustules were formed. These are noticed just beneath the surface. Soon the epidermis bursts showing large numbers of brown spores.

The chrysanthemum is subject to a number of forms of fungi, which are commonly called "leaf-spot." Picking off every affected leaf will sometimes hold the disease in check, but the spray pump is essential in many cases.

Lettuce growers are fortunate if they have not seen more or less of the rot, usually more if Boston Head Lettuce is grown. Particular attention must be given to the soil. The disease revels in a wet, heavy soil. Decaying vegetable matter forms an excellent medium for its development, hence manure should be well worked into the soil.

Young seedlings are very subject to "damping off." This fungus is not a refined species, for it attacks the stem close to the ground and almost at once causes the death of the plant, thus depriving itself of further food supply. However, it is not dependent on any one plant. A host of seedlings are subject to its attack. Too much water and sudden change in temperature produce conditions favorable to the growth and rapid development of the fungus. If the "flats" have a large amount of sand in the surface soil, and some care exercised in the watering this disease will give little trouble.

The control of all these difficulties group themselves under three headings, viz., spraying, fumigation and sterilizing. Spraying may be with some arsenical for insects which chew; or some contact poison for insects which suck; or for the various forms of fungi. Fumigation may be used for the control of insect life which cannot be readily controlled by the ordinary spray mixtures, in fact, it is coming into general use, and constantly crowding out the sprays. Sterilizing is used for such forms as occur below ground. It may not be perfect sterilizing in the strict sense of the term, for bacteria are still alive, unless the process is much prolonged. Such a condition would not be desirable, and for all practical purposes is never sought.

Of all the arsenicals, paris green still holds a prominent place. Arsenate of lead probably sticks better than the green, but we think that the old poison is still more extensively used in the greenhouse. One teaspoonful to two or three gallons of water will usually clear out many leaf eaters. A small amount of water-slaked lime will prevent any burning which might occur from the presence of any soluble arsenic. This is effective for thrips; and if added to sweetened bran will clear out slugs, and similar pests. Hellebore is used for a similar purpose, and may be used in any required strength. It seldom or never injures plants.

#### CONTACT POISONS

Contact poisons are not used to the same extent as they once were. The old reliable kerosene emulsion is still sometimes used and most excellent results have been secured, but few growers have used it long without having some injury to the foliage. Plants will not



Fumigating with Tobacco Stems, All Ready to Start The Fire





Fumigating with Tobacco.—A Good Smoke

stand free kerosene, and you are likely to get some. Tobacco decoction, or, better, nicotine, especially put up for greenhouse work, will be found more satisfactory. Hot water kills most insects by contact and may be used to advantage. Water at one hundred and fifty degrees will kill many insects, and will not injure the plants, while cold water sprayed on plants is found the best preventive against red spider, and is much used in every greenhouse.

Bordeaux mixture, four-four-forty, is effective for many kinds of fungi. It is somewhat objectionable because of the unsightly appearance which it gives the plants. Where this is not a serious objection, however, bordeaux is a great aid to the grower.

#### FUMIGATION ..

Fumigation has become the greatest aid of the greenhouse man, hydrocyanic acid gas is the most effective. It is a powerful poison. The fumes of this gas are fatal to all animal life. The gas is produced by the action of sulphuric acid upon cyanide of potassium in the presence of water. The formula used is one ounce of cyanide, two ounces of sulphuric acid and four ounces of water. Much controversy has occurred concerning the amount of space which this should be used in. Much depends upon the kind of plants you have, and the length of time the house is under fumigation.

Most of the commercial houses have only one way of opening the ventilators and that from the inside. Because of this the houses are usually fumigated the last thing at night and not opened until the next morning. Under such conditions the same amount of cyanide cannot be used as there would be with a shorter fumigation. Taking the ordinary house, with an all-night application, one ounce of cyanide to two thousand or twenty-

five hundred cubic feet, is as much as we dare recommend. This will hold white fly in check, and will clear them out if used a few times at intervals of a few days.

Cyanide can not be carelessly handled. Men do handle it, however, without the great amount of trouble which it formerly gave. The first time that we used it, the chemical was tied in a paper bag; a cord fastened to the top; placed over a pulley; and bag and contents lowered into the acid after we had gone out and bolted and barred the door. At present the jars are arranged containing acid and water and the cyanide wrapped in paper. The operator simply throws the material in the jars and rapidly walks out.

For aphides fumigation with tobacco is still the proper thing to do. The poisonous alkaloids found in tobacco are fatal to these lice. The stems may be obtained at any cigar factory. They must not be too dry. What we want is a dense smoke, and this is only obtained when the stems burn slowly. These stem may be burned in many ways. Some gardeners merely pile the required amount upon the floor, and set fire to it by means of shavings. We have found a piece of old stove pipe, arranged as per illustration, a very effective burner. The frequency with which a house should be smoked cannot be definitely stated. Do it as often as you are obliged to. Never allow aphides to get too great a start.

#### THE USE OF SULPHUR

Sulphur is of the greatest service in greenhouse work, especially for mildews. When mixed with water or milk the material is painted on the steam pipes. The fumes of sulphur are thus constantly given off. Other methods of evaporating sulphur are in common use. A common

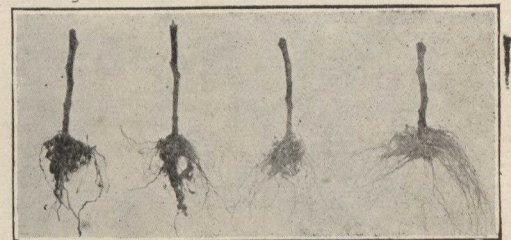
plan is to put the sulphur in a pan and set it over an oil-stove, with the flame turned low.

Sterilization is not necessary in all greenhouses, but is quite necessary if you have a bad attack of nematode. These eel worms, as they are commonly called, are very minute. Seldom are they seen with the naked eye. But their presence is always manifest by the galls or tubercles which occur on the roots of affected plants. They multiply with extreme rapidity and give no end of trouble.

A few tomato roots badly attacked are here shown.

Our common method of control is to arrange three lines of tile with open joints, through the bed, and by couplings, these tiles are connected with the steam pipes. The steam is turned on, and the soil is cooked. This cooking for twelve hours is usually sufficient. As soon as cool the bed may be set, and should give little trouble afterwards.

We are undertaking a series of experiments with formalin and carbon bi-sul-



Tomato Roots Attacked by Nematode

phide as a means of cleaning out nematode. These materials are used for insects attacking below ground, but we have not sufficient data to come to any conclusion.

Coal ashes while not containing any real fertilizing ingredients, will greatly improve the texture of a heavy soil, making it lighter and warmer. Coal ashes will act in the opposite way on a light, sandy soil, by consolidating it and making it more able to retain moisture.

We start the first tomato plants about March first, and we like to pinch them out often. As soon as they have four leaves on we pinch them out again. You get a better looking plant by firming the soil. We transplant three times—often four. We leaf them in shallow flats. Spark's Earliana is grown for the majority. Chalk's Early Jewel is a fine looking tomato, but two weeks late with us.—J. L. Hilburn, Leamington, Ont.

Here in the west I find it necessary to start nearly all annuals in shallow boxes in a hot bed under glass, which can be done very easily if not attempted too early in the spring.—D. W. Marden, Pilot Mound, Man.



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7. Articles and Illustrations for publication will be thankfully received by the editor.

### CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1911. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of the Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1911	8,082
February, 1911	8,260
March, 1911	8,523
April, 1911	9,469
May, 1911	9,783
June, 1911	10,178
July, 1911	10,062
August, 1911	10,043
September, 1911	9,973
October, 1911	9,991
November, 1911	9,988
December, 1911	10,137
Total	114,489

Average each issue in	1907, 6,627
" " " "	1908, 8,695
" " " "	1909, 8,970
" " " "	1910, 9,067
" " " "	1911, 9,541

Sworn detailed statements will be mailed upon application.

### OUR PROTECTIVE POLICY

We want the readers of The Canadian Horticulturist to feel that they can deal with our advertisers with our assurance of the advertisers' reliability. We try to admit to our columns only the most reliable advertisers. Should any subscriber, therefore, have good cause to be dissatisfied with the treatment he receives from any of our advertisers, we will look into the matter and investigate the circumstances fully. Should we find reason, even in the slightest degree, we will discontinue immediately the publication of their advertisements in The Horticulturist. Should the circumstances warrant, we will expose them through the columns of the paper. Thus we will not only protect our readers, but our reputable advertisers as well. All that is necessary to entitle you to the benefit of this Protective Policy is that you include in all your letters to advertisers the words, "I saw your ad. in The Canadian Horticulturist." Complaints should be made to us as soon as possible after reason for dissatisfaction has been found.

Communications should be addressed  
THE CANADIAN HORTICULTURIST,  
PETERBORO, ONT.

## EDITORIAL

### SPRAYING

Great progress has been made during the past ten years in the general adoption by commercial fruit growers of spraying. Nevertheless we may expect to see even more rapid improvement in the future. The past decade has been devoted in a large measure to experimental work. The lack of definite information in regard to the best sprays to use and methods of applying them, as well as of the cost involved and probable returns, caused thousands of growers to hesitate about adopting this practice. These conditions are now largely a matter of the past. While there is considerable experimental work still to be done and we may expect to see further improvements made in our spraying appliances, still the bulk of this work has been accomplished.

Our agricultural colleges and experiment stations now have in pamphlet form and furnish such complete information, on points that even until quite recently were largely a matter of some uncertainty, even a novice can now readily obtain the information required to enable him to make an intelligent and profitable start in spraying. So many thousand fruit growers in all parts of the country have demonstrated conclusively the profitable results that invariably follow where spraying is properly conducted, the value of spraying is no longer a matter of doubt.

No better evidence of the tremendous increase taking place in the practice of spraying need be furnished than is given elsewhere in this issue by Mr. S. C. Parker, the Secretary of the Nova Scotia Fruit Growers' Association, who makes the statement that last spring alone about one hundred and twenty-five gasoline spraying outfits were bought by the fruit growers of the Annapolis Valley alone and that an equal number will probably be purchased this year. This, although an important fruit centre, represents but a small part of the fruit growing area of Canada. It is typical, however, of the progress that is being made elsewhere in the fruit districts of the Dominion. There are still many thousands of farmers who have not adopted the practice of spraying. These will soon see the necessity for doing so, and thus spraying may be expected to make even greater advances in the future than in the past.

### THE EXORBITANT MIDDLEMAN?

As a result of a speech delivered last month by Mr. G. A. Gigault, Deputy Minister of Agriculture for the province of Quebec, at the annual convention of the Quebec Vegetable Growers' Association, in which reference was made to the large part of the final selling price of fruit and vegetables that is taken by the middleman, that association appointed a committee to consider the advisability of forming a joint stock company to handle the products of its members. In other words, the association is hopeful that by some such action some of the profits it is believed now go to the middleman may be retained for the benefit of its members.

We doubt if the middleman deserves one-half of the abuse to which he has been subjected. We venture to say that there is hardly any other line of business in which the proportion of successes to failures is as small as in the commission business. This

of itself is a pretty good indication that the profits derived from the handling of the goods are not nearly as large as a superficial glance at the situation might lead one to suppose. The fact is that the middlemen on the average make only reasonable profits. The difference between the price they obtain for the goods they sell and the price paid to the grower is not all retained by the middleman by any manner of means.

The main reason why the growers do not obtain more for their products is because of the excessive cost of doing business in our large industrial centres like Toronto and Montreal. Land in our cities runs up in value to, in some cases, several million dollars an acre. The commission merchants have to do business on land that is possibly worth \$10,000 an acre. A firm of any considerable size may have to pay six to ten thousand dollars a year in rental alone. But this is not all. Their help also lives on high-priced land and have to pay excessive rentals in consequence. Fifteen to twenty per cent. of the wages paid by commission firms, or thousands of dollars additional of their expenditures, really represents nothing but money that is in turn paid out by their employes to the city landlord.

These firms in turn sell their goods to grocers and fruiterers, who also are taxed in the same way. The indirect taxation, for that is what these rentals represent, forms a large part of the cost of doing business in the city, and when this cost is taken out of the selling price of the goods it helps to explain a large part of the difference between what the grower gets and what the consumer pays. There are other reasons besides this, such as excessive railway rates and express charges. This being the case, we will make more progress in settling the trouble of the middleman when we look into these matters and cease to lay all the blame at the door of the middleman. Taxing land according to its value would help to solve the difficulty.

The Ontario Vegetable Growers' Association is to be congratulated upon its decision to encourage the growing of seed potatoes in Northern Ontario. The great success that has attended the efforts of those growers in the north country who have gone in for the growing of potatoes has demonstrated clearly that the country is ideally adapted for the growing of this product. Under the favorable conditions that exist it should prove an unusually profitable crop for the growers. They have a practically unlimited market in older Ontario for all that they will be able to produce for many years to come. There is nothing to prevent the vegetable growers of Northern Ontario duplicating the great success that has been achieved by the potato growers of Maine and New Brunswick.

The outline given elsewhere in this issue of the splendid work accomplished by the flower guild in the city of Ottawa to arouse a greater interest in the growing of flowers among the young, offers many helpful suggestions to the officers of horticultural societies elsewhere in the province. While not every city is favored by having three such enthusiasts as Messrs. R. B. Whyte, W. T. Macoun and J. A. Ellis, still there are many centres which are fortunate in having thoroughly capable men and women who can duplicate the success that has been achieved in Ottawa if they will but make up their minds to put forth the requisite effort. By doing so they will put the whole community in their debt and accomplish results that will tell for good in the lives of others.



The directors of the Ontario Fruit Growers' Association made three thoroughly satisfactory moves at their recent meeting in Toronto when they decided to push more vigorously the matter of obtaining better treatment from the great transportation companies, determining to urge the provincial government to maintain a market commissioner in the western markets during the summer season, as is done by British Columbia, and in arranging to hold an orchard competition throughout the province. These steps are all in the right direction. Each is likely to be attended by far-reaching results. The provincial government should not hesitate for a moment in acceding to the request for the appointment of a market commissioner.

It is unfortunate that the province of

Ontario is going to lose the services of Prof. J. W. Crow of the Guelph Agricultural College. It is time that the Ontario Department of Agriculture realized a little more clearly than it does that it must pay good salaries if it expects to hold good men. This latest loss draws attention once more to the penny-wise-pound-foolish policy adopted by the department a year ago, when it decided to try and save the salary of a resident director at the Jordan Harbor Experiment Station. The fruit interests of Ontario are of sufficient importance to warrant a more liberal expenditure, and it is to be hoped that the Minister of Agriculture for the province will soon recognize this fact.

## PUBLISHER'S DESK

We hope that you will like this Special Spraying Number of THE CANADIAN HORTICULTURIST with its four-color process illustration on the front cover and its seasonable, instructive articles on spraying and other timely subjects. This is one of the special numbers that we told you last year we were planning to give you this year. While it does not equal our ideal by any means, still we trust it will be taken as a foretaste of still better things to come.

In our March issue the question of fertilizers will be given considerable prominence. Two instructive articles on this subject that will appear will include one entitled "What Tests of Commercial Fertilizers Have Shown," by Professor R. Harcourt, of the Guelph Agricultural College, and another, "Fertilizers for the Fruit Grower," by Mr. A. Bonar Balfour, of Port Dalhousie. There will also be articles dealing with spraying and pruning that will be helpful and practical.

In the floral department we expect to publish an article by Mr. E. I. Mepsted of Ottawa, giving timely, practical suggestions to the flower grower. One article sent in by Mr. Mepsted for our January issue reached us too late for publication. Mr. Mepsted was to have let us have an article for this February issue, but was prevented from sending it by illness. In the March issue we will publish another interesting description of a Canadian garden, which this time we expect will be located in Hamilton. There will be an article also entitled "Flowers for Shady Places," by Mr. Wm. Hunt, of the Guelph Agricultural College, and an article, "Vines for All Purposes," by Mr. F. E. Buck, of the Central Experimental Farm, Ottawa, whose interesting description of Mr. Whyte's garden appears in this issue. The Vegetable Department will also be full of interesting information. As usual, all departments will be profusely illustrated. Watch for our March Number.

Great preparations are being made also for our April issue, which will be our Gardening and Spring Planting Number. It will be crammed full of interesting articles for the amateur flower grower and will appear just at the season when plans for next summer's garden will have reached one of their most interesting stages.

This number of THE CANADIAN HORTICULTURIST is the largest number we have ever published, and while we are not yet able to secure full details, we believe this number sets a new high water mark not only in size but also in point of the value of advertising carried and in the number of paid subscriptions, which now number nearly 11,000. The fact that our January num-

ber showed an increase in value of advertising carried of over 55 per cent. as compared with the January issue of 1911 shows that advertisers are recognizing more than ever before that THE CANADIAN HORTICULTURIST is the one Canadian medium through which to reach fruit growers and others interested in general horticulture.

Our readers will notice the unusually large amount of spray and sprayer advertising appearing in this number of THE CANADIAN HORTICULTURIST. Practically every leading manufacturer of sprays and spray pumps doing business in Canada is represented in this number, there being in all nearly nine pages of this class of advertising. This special spraying number, therefore, contains not only several instructive articles on the subject of spraying, but also acts as a directory of firms who handle goods such as you are apt to require in connection with your spraying operations.

## Vegetable Growers Active

The annual meeting of the Ontario Vegetable Growers' Association was held in the office of the secretary-treasurer, Parliament Buildings, Toronto, on January 9th. All the branches were represented.

The following officers were elected for 1912: President, Thos. Delworth, Weston; first vice-president, C. W. Baker, Tumbings; second vice-president, W. J. Kerr, Ottawa; secretary and editor, J. Lockie Wilson, Toronto; executive: Thos. Delworth, C. W. Baker, W. J. Kerr, J. Lockie Wilson, F. F. Reeves, C. N. Weaver; representative to Canadian National, Jas. Dandridge, Humber Bay; representatives to Horticultural Exhibition: Messrs Jos. Rush, F. F. Reeves, Thos. Delworth and Jas. Dandridge.

Arrangements were made to largely increase the quantity of seed potatoes grown for this association in northern Ontario. For the last two years experiments have been conducted by the vegetable growers, and the seed received from the northern country proved very satisfactory, and will, in the near future, take the place of the seed potatoes purchased from New Brunswick and several states of the Union. A large quantity of Early Ohio seed potatoes have been distributed among the farmers in the northern country.

Seed peas have also been successfully grown in northern Ontario. The price paid by the vegetable growers is now sixteen dollars a bushel. The Pea Weevil and Moth are unknown in the northern country, and peas grow very luxuriantly there. The association has decided to purchase a quantity of seed peas in Germany. These will be forwarded to the farmers in northern Ontario to be grown under contract for the members of the association. The price of these seed peas in Germany is fourteen dollars a bushel. The variety of these peas will be the Gradus.

Hon. Mr. Duff, Minister of Agriculture, attended the meeting and spoke encouragingly of the work that is being done by the association. The question of increased greenhouses at Guelph for vegetable growing was urged upon the minister, and also that fifty acres of the Monteith Demonstration Farm be planted with the different varieties of potatoes and peas and other garden crops. Hon. Mr. Duff agreed to give these matters the fullest consideration.

It pays to buy from firms who advertise in THE CANADIAN HORTICULTURIST. We vouch for their reliability.

## Answers to Your Questions

"What style of sprayer is best suited to my needs?" "Who sells them?" "How much do they cost?" "What sprays should I use to produce the best results?" "When and how should they be applied?" "Where can I buy these preparations?" "How much do they cost?"

Many of you who read this special spraying issue of The Canadian Horticulturist are asking such questions as these. We have tried to answer them as far as possible, in some of the special articles appearing in this issue. These articles, you will notice, are by experts and they are timely, as practically all our articles are. There are a number of questions that, of course, we could not well answer in our reading columns. For answer to these questions, look through our advertising columns. There you will find the announcements of individuals and firms who handle goods such as you will need in connection with your spraying operations, and whom you will find not only ready to sell you their goods, but to give you much useful information on spraying and spraying machines that may be worth many dollars to you during the coming season.

Many of the advertisers in this number of the Canadian Horticulturist publish interesting booklets or catalogues, which not only describe the goods they have to sell, but give much valuable information as well. **THESE BOOKLETS AND CATALOGUES WILL BE GLADLY SENT FREE OF CHARGE** to all who are interested in the subject with which they deal.

Look through the advertisements in this number of the Canadian Horticulturist and write to those advertisers whose announcements interest you. They are using space in our columns because they believe they have something you want, and because **WE BELIEVE THEIR GOODS ARE RELIABLE, AND THAT THEY WILL DO WHAT THEY PROMISE TO DO.** Further than this, you may take advantage of our protective policy, given on the opposite page, if when writing advertisers you say: "I saw your 'ad.' in The Canadian Horticulturist".

*We do not admit Advertisers to our Columns except such as we believe are thoroughly reliable.*



Spraying is an insurance, but differs from an insurance policy on property, in that it is a protection to property, and will return handsome dividends annually upon the money invested, while an insurance policy involves the destruction of property to realize upon the investment.

# Spraying

When You

## NIAGARA LIME-SULPHUR

And

## SPRAY PUMPS THAT

### NIAGARA SPRAYS

NIAGARA LIME-SULPHUR has now been sold in Ontario for four years.

During these four years NIAGARA has never failed to demonstrate its merits, as an insecticide and fungicide.

It is to Niagara Spray and Niagara Spray alone that the increased interest has been taken in Fruit culture in Ontario.

NIAGARA SPRAY has made it possible to grow Apples and Pears free of worm or scab; Cherries and Plums, free of curculio, rot or worms; Grapes and other fruits, free of mildew, fungus, etc.

NIAGARA has made it possible to rid our orchards of San Jose Scale, Oyster Shell, Blister Mite, Aphis, Peach Leaf Curl, etc.

NIAGARA Sprays will not injure fruit or foliage. There is nothing in them to clog nozzles.

NIAGARA was the pioneer on the Pacific Coast, in New York State, and in Canada.

NIAGARA has made good, and because of our success others are following in our wake. Success always had a following.

NIAGARA is not an experiment.

NIAGARA is used and endorsed by the different branches of the Department of Agriculture, and by nearly every Fruit Growers' Association and prominent fruit grower in the Province.

NIAGARA Lime-Sulphur is absolutely clear and uniform, and carries the highest analysis. Every gallon is guaranteed.

Our ARSENATE OF LEAD (Swift's Brand) is the standard. The aim of all manufacturers is to equal the quality of Swift's.

Swift's Arsenate of Lead is packed in 600, 300, 100, 50, 25, and 10 lb. solid oak packages. Smaller sizes in glass.

It is guaranteed to contain 15% Arsenic oxide. It mixes easiest with water, stays mixed, sticks and kills best.

This is the highest grade of Arsenate of Lead in the world.

We are Specialists on Fruit Growers' Supplies. We devote our whole time and attention to this one line. We have Trucks, Hand Pumps, Power Pumps, Tank Fillers, Folding Towers, High Pressure Hose, Sprayers, etc.

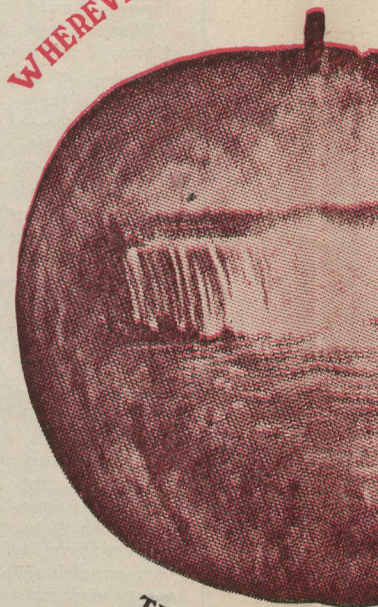
Our Motto Is: Best Quality, Best Treatment

# NIAGARA BRAND SPRAY CO., L

Our Other Factories: { NIAGARA SPRAY CO., of N.S., Kentville, N.S.  
HOOD RIVER SPRAY MFG. CO., Hood River, Ore.

BEAN SPRAY PUMP CO., Cleveland, Ohio  
NIAGARA SPRAYER CO., Middleburg, Ohio

WHEREVER FRUIT EXCELLENCE IS USED



TRADE MARK REGISTERED

FREE BOOK ON SPRAYING

We will send free of cost our interesting and valuable book "How to Use Them." It contains information as you are looking for, no matter how large or small you have a dozen trees or 20 acres. We will pay you to send a post card asking for the book, stating the size of your orchard.



# ng Pays

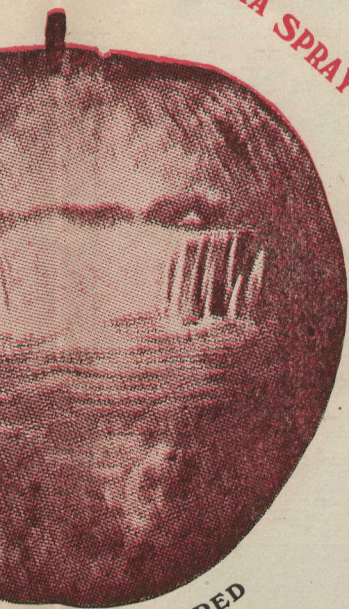
en You Use

**LIME - SULPHUR and ARSENATE OF LEAD**

And **WHAT HAVE POWER**

If you were about to take out an insurance policy, either on your property or your life, you would not insure in a new or untried Company, but would select the old, safe, sure and reliable one. The Company that pays spray dividends or policies quickest, surest and best is NIAGARA.

EXCELS NIAGARA SPRAY  
S USED



MARK REGISTERED

**BOOK ON SPRAYING**  
of cost to any Fruit Grower  
valuable book on "Sprays and  
It contains just such informa-  
ng for, no matter whether you  
20 acres of orchard. It will  
t card asking for this book, and  
ir orchard.

## POWER PUMPS

A good spray outfit is just as essential as good spray. We have given this feature our careful attention for years, and have worked out pumps that will run and with all troubles left out.

**GIANT POWER OUTFIT**—A 3-cylinder pump of great strength, power and capacity. It will spray 9 gallons per minute at 300 lbs. pressure, if desired. It can be operated with either a 2½ or 3½ h.p. engine.

**NIAGARA POWER OUTFIT**—A 3-cylinder pump of slightly less capacity, but the same high pressure. Operated by a 2½ or 3½ h.p. engine.

**DUPLEX POWER OUTFIT**—A 2-cylinder pump, medium priced, but with large capacity and high pressure. Operated with either a 1½ or 2½ h.p. engine.

All our pumps have porcelain-lined cylinders. They are noted for their durability, simplicity, high pressure and large capacity. All parts are interchangeable. Repairs cost practically nothing. Every part fits every other, and they can be immediately supplied.

Our power outfits are all mounted on steel frames—equipped with tank, tank filler, folding tower, and the highest grade of hose, aluminium-lined rods, nozzles, and cut-offs.

We have sold hundreds of power outfits in Ontario, and they have all given excellent satisfaction. We have great confidence in these pumps, and want to demonstrate them to you.

We will pay the Expenses to our Factory of any Fruit Grower in Ontario who intends to purchase a power outfit, and who will inspect our pumps before placing his order. He will be under no obligation to purchase from us. All we ask is that he purchase a power pump of some kind.

## HAND PUMPS

**MAGIC NO. 9**—The largest hand pump made. One man can easily maintain a pressure of 140 lbs.

**LITTLE GIANT NO. 70**—The most powerful barrel sprayer on the market.

**THE PIPPIN NO. 50**—A strong barrel pump, made for smaller orchards.

Write for our Complete Illustrated Catalogue.

We have everything you need. Namely: Lime-Sulphur, Arsenate of Lead, Raw Sulphur, Gasoline Engines, Hose, Spray Rods (Aluminum or Brass Lined), Nozzles, Hydrometers and all Accessories.

reatment, Best Service, Reasonable Prices

**LIMITED - - Burlington, Ontario**

Cleveland, Ohio  
Middleport, N.Y.

OREGON SPRAY CO., Portland, Ore.  
MEDFORD SPRAY CO., Medford, Ore.

NIAGARA BRAND SPRAY CO. Ltd., Trenton, Ont.



## SOCIETY NOTES

We invite the officers of Horticultural Societies to send in short, pithy reports of work that would interest members of other Horticultural Societies.

### St. Thomas

"Our aim—to boost and beautify the city," is reported by the local paper to be the motto that has been adopted by the St. Thomas Horticultural Society. The receipts last year were \$372.94 and the expenditures \$358.08. The principal expenditures included: Prizes, \$24; civic improvement, \$98.28; lectures, \$14.53; periodicals, \$67.50; seeds and plants, \$84.70; working expenses, \$34.07; secretary, \$35. The president is Dr. F. E. Bennett, and the secretary-treasurer, Col. E. H. Caughell. An effort is to be made this year to double the membership. A day will be named by the executive committee, when each member will be detailed a block or small district in which to canvass for members.

#### THE DOG NUISANCE

The dog nuisance was discussed at length and a committee was appointed to wait on the city council and request it to raise the fee on dogs to two and five dollars and, if they issue a by-law to that effect, to wait on the police commissioners and ask them to empower the police to slaughter all curs found on the street without their number and address. During the discussion of this subject Mr. A. W. Graham expressed the sentiments of a good many others when he said that he couldn't see why a "just plain dog" should have a greater privilege than a human being. "If a man or child should destroy, wholly or only partially, a flower

bed, the owner would find redress in court, but a dog can commit the vilest depredations and there is no redress whatever. It is all right to keep a pet dog, but keep him on his own premises. He has no more right to run at large over a citizen's lot than has another man's chickens. If I had my way I would have every dog at the end of a chain, on the street or at home, where he belongs. He has no right to destroy property and should not be allowed to hinder the society in its work."

#### A NOVEL LEASE

Ald. Edgar Sanders said a new form of lease containing a clause to compel tenants to keep the grass cut, destroy weeds and keep their premises beautiful, horticulturally, would help the society materially in their work. He said the owners were in favor of such an idea and he could see no reason why the scheme could not be carried out. The matter was referred to the executive committee to act upon.

### Weston

The Weston Horticultural Society last year, the first of its existence, did good work. In the spring it gave fifty cents' worth of gladioli bulbs to each member free. It also gave in May free to each member a copy of THE CANADIAN HORTICULTURIST till December. It held its first flower show in September. It was quite a success. The Society also awarded good prizes for the best gardens, lawns and flower beds. These prizes were keenly competed for. In October the society gave a free gift of fifty-one tulip bulbs to each member. There is a regular monthly meeting of the directors at which the welfare of the society and matters bearing upon horticulture are freely discussed. All the members who wish can attend these meetings. In October a special meeting was convened by the president, at which the High Park Rate-payers' Asso-

ciation affiliated with this society, thereby giving it a membership of five hundred and six, which will give the Weston Horticultural Society a great impetus for good.

### Stratford

The Stratford society has decided to continue the policy introduced last year of making flower beds in various parts of the city. The society will also co-operate with the Extension Club and the Teachers' Association in securing Miss Miller, superintendent of the school gardens of Cleveland, to address a meeting in Stratford in March.

The city has been divided into districts and allotted to the various directors, who will make a canvass of the city for members for 1912. THE CANADIAN HORTICULTURIST is given free to each member.

### Hanover

A new horticultural society has been organized in Hanover, Ont., with Daniel Luesing as president and John Mills as secretary-treasurer. The aim of the society is to beautify Hanover. Special attention will be devoted by the society for some time to improving the public grounds. Already the society has a membership of about seventy-five.

### A Town Flower

At the last regular meeting of the Goderich Horticultural Society the pansy was chosen as the floral emblems of the town. A set of questions was formulated also for the use of members in the cultivation next season of dahlias with the intention of obtaining reliable data concerning this species in the vicinity of Goderich.

The Woodstock Society this year is giving its members premiums worth seventy-five cents. The members are being given their choice of a large number of premiums worth up to that amount in value.

## Ornamentals for Home Improvement

When planning improvements for your home for next spring, think of how it would increase its beauty as well as its value to add a few more ornamental or shade trees, some flowering shrubs, or a perennial border.

We have this year a large assortment of ornamental stock of all kinds for you to choose from. Just now our list of varieties is practically complete. You who order early may be practically sure of getting just what you want. This stock is all in fine condition, and will please you when you get it. Our catalogue gives a detailed list of varieties with prices.

### Plant Some Paeonies.

We have an unusually large supply of Paeonies, covering a wide range of varieties. A few of these lovely plants which do so well in almost any soil or locality will be welcome additions to your flower garden. Let us quote you special prices.

### Fruit Trees.

We still have a good assortment of the leading hardy varieties of fruit trees, but they are going rapidly. Some varieties will soon be sold out. Orders should be sent promptly to ensure against disappointment.

### Free Information.

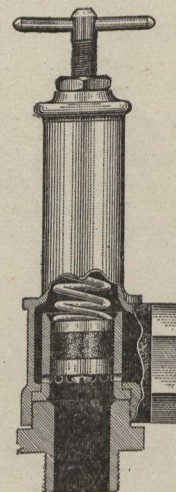
Our Landscape Department will be pleased to advise you free of cost in regard to laying out and planting your grounds, selection of varieties suitable to your soil and location, planning your perennial border, etc. Our booklet, "More Beautiful Homes and How to Get Them," tells more about this department. Get a copy. It is free.

**THE CANADIAN NURSERY CO.**  
LIMITED  
10 PHILLIPS PLACE, MONTREAL, QUE.

Designed Along  
New Lines

An End to  
Relief Valve  
Troubles

Removes the  
Greatest Source  
of Spraying  
Difficulties



Fits Any  
Sprayer

Permits Any  
Desired Pressure  
to be Carried

Wearing Parts  
Easily and  
Cheaply  
Renewed

THE "NATIONAL" RELIEF VALVE will at once appeal to all connected with the power sprayer business. It is a well known fact that the ordinary relief valve is the source of more trouble than everything else about the machine. The above cut shows how these difficulties are avoided in our new valve. Our descriptive circular will give you full information. Write for it and prices. Costs no more than the poor kind and attaches where other goes.

**NATIONAL MACHINE CO.**  
BRIGHTON, ONTARIO



## Quebec Vegetable Growers' Convention

The third annual meeting of the Quebec Vegetable Growers' Association was held at Cartierville, Que., January 17th. The delegates present were from some of the most progressive sections of the province, and represented some of the most successful market growers from their various localities.

The following officers were elected: Hon. presidents: Hon. F. D. Monk, Hon. J. E. Caron, J. W. Leverque, M.P.P. Hon. vice-presidents: G. A. Gigault, G. E. Dubord, Paul Wattiez, President, Anatole Decarie. First vice-president, Jack McEvoy. Second vice-president, James Clark. Directors: Prof. W. S. Blair, Camille Legare, Albert Monethe, Paul Wattiez, Joseph Decarie. Auditors: D. McMeekin, Father Atkanase.

Mr. William Dreber, sent by the Quebec Association to visit the Ontario Vegetable Growers' Convention, read his report. This report was instructive and thorough. It brought home to the association the work attempted and accomplished in their sister province. It drew out a discussion concerning the Skinner system of irrigation. This system is new and fast coming to the forefront as the most successful system of artificial irrigation yet undertaken. The pressure is maintained by gasoline engine. From large pipes running across the head of the field, other leads of pipe are carried. At every four feet in the latter nozzles are placed, through which the water is projected. This water, falling back on the soil, imitates very effectually a rain storm, and thus robs the irrigation system of many undesirable features.

### CELERY CULTURE

Culture of celery was the subject of M. D. McMeekin's paper. In this he outlined his method of caring for the plant from the time the seed is placed in the "flat"

until ready for the field. Sturdy plants are what is sought, and what must be obtained if success with celery is reached. Successive transplanting develops the root system and this always goes hand in hand with stalwartness in the seedling. This system of transplanting is to be advised.

Mr. Thos. Delworth, representing the Ontario Vegetable Growers' Association, was in favor of the same method, repeated transplanting, with tomatoes. For early tomatoes three or four transplantings are not too many. Before going into the field he recommended that each plant should be placed in a berry box, one plant to the box. The rootlets are not disturbed when finally placed in the field. They thus recover from the shock of transplanting much sooner. Any fruit on the plant when "set" should be removed. It exhausts the plant in ripening the seed and discourages the formation of other fruit clusters. It is important to get the plant first and fruit later.

### GOOD SEED NECESSARY

Mr. T. G. Bunting, of the Central Experimental Farm, Ottawa, was convinced that there were better methods which gardeners might follow if they would. Better seeds were very important. Seeds true to name, free of fungi and of a high germinating power must be obtained. The gardener may economize in fertilizers, in implements, in nearly everything if he must, but in seeds never. The best is the cheapest and none too good. He instanced several cases of seed obtained at a high price, which was not true to type. It is difficult in such cases to fix the responsibility. Whenever the thing is possible the home selection of seed is to be recommended.

Mr. A. F. Charron, M.A., of the Central Experimental Farm, Ottawa, both after-

## Douglas Gardens

Oakville, Ontario

OUR 1912

## Spring Planting List

NOW READY

describes and offers, amongst other good things:

ANEMONE JAPONICA, 4 varieties, at 15c. per plant.

CLEMATIS RECTA, at 20c.

DICENTRA (Bleeding Heart), at 15c.

GYPSOPHILA (Baby's Breath), at 15c.

HARDY GARDEN PINKS, 4 varieties, at 15c. per plant.

HEMEROCALLIS (Day Lily), 4 varieties, at 15c. per plant.

KNIPHOFIA (Flame Flower), at 20c.

SPIREAS, 8 varieties, at from 15c. to 35c. per plant.

TROLLIUS JAPONICUS fl. pl (Globe Flower), at 15c.

YUCCA FILAMENTOSA, at 25c.

SHASTA DAISIES, 3 varieties, at 25c. per plant.

GLADIOLUS, 14 named varieties, at from 4c. to 30c. per corm.

GLADIOLUS, Groff's Hybrids, unnamed, at 10 for 25c.

GLADIOLUS, Groff's Hybrids, a very fine light colored section, at 25 for 75c.

GLADIOLUS, Groff's Hybrids, red and scarlet section, at 25 for 60c.

ISMENE CALATHINA GRANDI (Peruvian Daffodil), at 20c. per bulb.

These prices include carriage to destination.

Also a fine assortment of China Asters, Antirrhinum (Snapdragon), Salvia. Stocks, &c., for Bedding purposes.

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OUR Trees are the high-class kind, produced on the finest fruit land in the Niagara Peninsula. We are ourselves extensive growers of Fruits and we know what the orchardist requires—stock true to name, of thrifty growth, carefully graded, well rooted, and last but not least, delivered in good shape. We grow and offer you this kind of stock, and are always glad to assist in selecting suitable varieties, etc. It will pay you to deal with a nursery that is thoroughly conversant with your needs.

**AUBURN NURSERIES**  
QUEENSTON, ONT.

## GOOD CROPS

ARE OBTAINED BY USING

## THE BEST MANURE

AS SUPPLIED TO

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makes poor land fertile, and keeps fertile land most productive. Supplied by

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**YEARLY RAINFALL 45 INCHES**



noon and evening spoke on the soil and its relation to crops, from the physical, chemical and bacteriological standpoints. He said in part, "The work of the market gardener is to produce quality and abundance. Quality is dependent upon size, succulence, aroma, absence of fibre and bitterness. To obtain these growth must be continuous, and this growth is possible only when the plant has room, air, heat and moisture. These conditions are best met on a deep, sandy, well drained loam. These physical conditions are not sufficient, however, for there must be an abundance of plant food in soil and available for plant use. Bacterial life plays a more important part in plant nutrition than many suppose. Lastly, and most important of all, is the soil moisture. Plants thrive almost in proportion to the soil moisture. They do not only need it in large quantities, but by bringing plant food in solution it makes possible its absorption by the plant."

Rev. Father Leopold spoke of the methods employed by French gardeners in the northern part of France. Under adverse circumstances and by hand labor all alone these gardeners have brought the culture of vegetables to a high state of perfection.

### AVOID THE MIDDLEMAN

Mr. G. A. Gigault, representing the Department of Agriculture, Quebec, was much in favor of cooperation in this branch of labor as in all others. He pointed out that the producer obtained from 35 to 50 per cent of the selling price of his production, while the middlemen take the rest. This should not be. Every gardener should reap the full price of his labor. Cooperation would solve the problem. He was of the opinion that if a stock company was formed with a capital stock of seventy-five thousand dollars and warehouses rented or purchased in the large cities, in charge of a very capable man, that farmers would realize a very handsome profit by disposing of their produce through such an agency. He quoted much evidence to show that the proposition was workable, and capable of being made a great success. A committee was appointed to look into the matter. Messrs Jack McEvoy, Jos. Deguire and James Clark were appointed members of the committee. The name, "Agricultural Cooperative Society for the Province of Quebec," was suggested as a fitting name for the company.

The market growers in the vicinity of Montreal are among the best in the province. They only need to be convinced that the convention of vegetable growers is their own, and that it requires their presence, their enthusiasm and their help to make future meetings a still greater success. — E. M. S.

### Ontario Fruit Growers' Association

A meeting of the directors of the Ontario Fruit Growers' Association was held in Toronto January 11th. The following officers were elected: President, D. Johnson, Forest; vice-president, J. W. Smith, Winona; secretary-treasurer, P. W. Hodgetts. The officers, with W. L. Hamilton, Lorne Park, and W. H. Dempsey, of Trenton, will constitute the executive committee for 1912.

The number of members on the transportation Committee was reduced, and the following appointed: W. L. Hamilton, Lorne Park; A. Onslow, Niagara-on-the-Lake; W. J. Bragg, Bowmanville; George French, Sarnia. This committee was instructed to engage a competent man to look after the collection of claims and to otherwise watch the fruit-growers' interests with the express and freight companies. It was felt

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The new hardy **Hydrangea HILL of SNOW**, a Beauty; the **New Snow Queen Rose**; **Baby Rambler**, in bloom all summer, by mail, 35c. each.

Apple, Pear, Plum, Peach and Ornamental Trees.  
 Roses, Shrubs, Asparagus Roots, etc.

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**No. 4 Planet Jr Combined Hill and Drill Seeder, Wheel Hoe, Cultivator, and Plow** does the work of almost all garden tools combined. It sows accurately all garden seeds, cultivates, hoes, furrows, and plows. Indestructible *steel frame*.

**No. 8 Planet Jr Horse Hoe and Cultivator** does more kinds of work better, quicker, and easier than any other cultivator. Indispensable on the up-to-date farm.

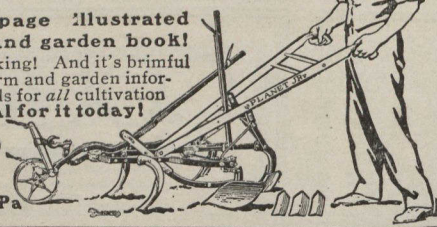
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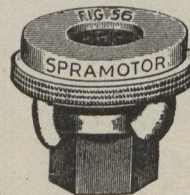
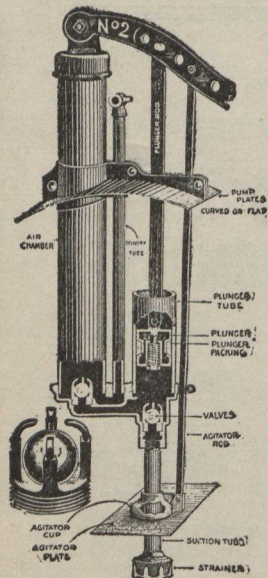
Mr. Leigh, Supt. of the N. Y. C. R. R. had 40 tons of cold water paint applied to the stock yards at Buffalo, using SPRAMOTORS.

This fact is more conclusive in favor of the SPRAMOTOR than columns of argument.

*All Spramotors Guaranteed*

SPRAMOTORS as shown in cut are hand operated, and can be used for Orchards, Potatoes, Painting, Whitewashing, Vineyards, or Weed Destruction. Two Gold Medals at National Horticultural Congress are Two Good Reasons. Ask for our free treatise on crop diseases, stating facts worth money to you.

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To introduce our high grade quality we will securely pack and deliver **PREPAID** to any express office in **Ontario** the following 25 two and three-year-old Nursery grown **ROSES AND FLOWERING SHRUBS**:

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- 1 Crimson Rambler.
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- 1 Gruss An Teplitz, bright red.
- 1 Kaiserin Victoria, white.
- 1 Madame Testout, silvery rose.
- 1 Mamon Cochet, pink.
- 1 Le Progress, Golden Yellow.

### 5 Hybrid Perpetual Roses, value \$1.25

- 1 Frau Karl Druschkki, white.
- 1 General Jacqueminot, brilliant red.
- 1 Magna Charta, bright pink.
- 1 Ulrich Brunner, cherry red.
- 1 Julius Margottin, glossy pink.

### 5 Baby Ramblers, value \$1.25.

- 1 Madam N. Levavasseur, Pink B. Ramb.
- 1 White Pet, White Baby Rambler.
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- 1 Perle des Rouges, Velvety Crimson.
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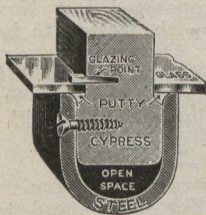
- 1 Hydrangea Paniculata Grand.
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- 1 Spirea Van Houttii.

The above splendid collection delivered to you direct from our Nurseries at less than a third of Tree Agent's prices. Catalogue on application.

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# "Send It"

## That's All You Need To Write



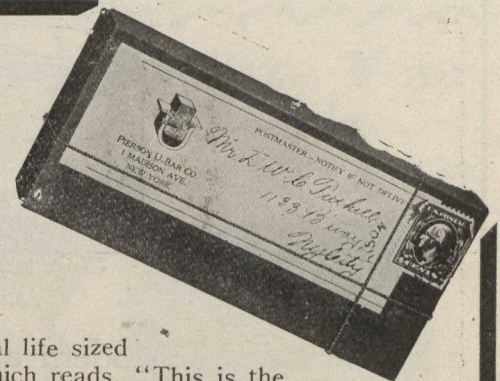
WE will mail you this green box.

Inside you will find a piece of the U-Bar—an actual life sized piece. Fast to it will be a tag, on one side of which reads, "This is the U-Bar, the bar that makes U-Bar Greenhouses the famous greenhouses they are," on the other side are the boiled down, straight from the shoulder reasons, why this U-Bar makes U-Bar greenhouses the famous greenhouses they are.

The reason we are offering to send you this is because last spring when we were at the Boston Show exhibiting one of our houses, it surprised us every day to find the number of gardeners and superintendents who came to look at that house who hadn't the vaguest kind of an idea how the U-Bar was made. We determined right then and there, that we would cut up a thousand feet of U-Bars in short lengths and mail them out all over this country and Canada.

All you need to do to get one, is to mail us a postal with the words "Send It"—then sign your name and address and give the name of your employer.

We will know what you mean and straight way the green box, containing the U-Bar will be mailed to you.

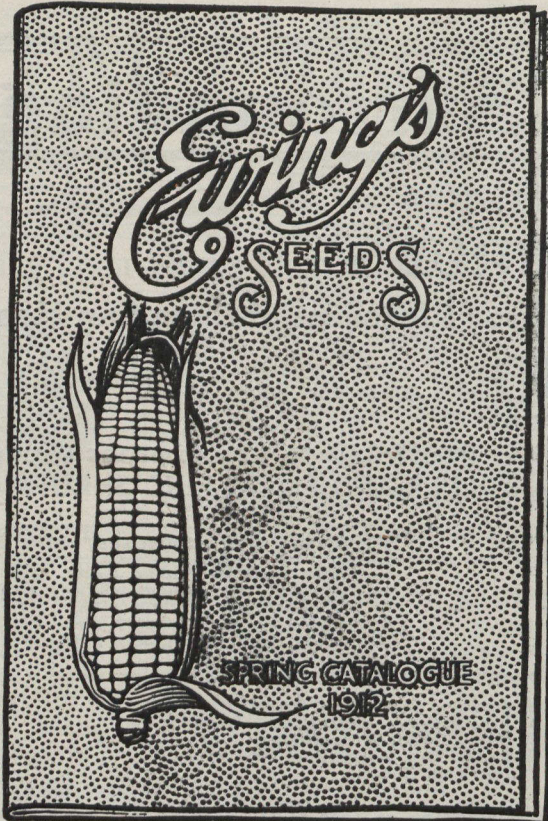


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vegetable—flower—field  
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**WM. EWING & CO.,**  
 Seedsmen, 20  
 MCGILL ST., - Montreal.

that fruit-growers had not secured the advantages from the decisions of the Railway Commission that were coming to them, and many thought this was due to the transportation committee not following up the decisions of the commission closely enough. The other committees were re-elected, with practically no change.

**WESTERN REPRESENTATIVE**

Hon. J. S. Duff, Minister of Agriculture, was present and was asked to give his attention to appoint a travelling representative for Ontario fruit-growers in the western market. British Columbia has such a representative and thus has an advantage over the eastern provinces. The Minister promised to give the matter consideration.

**ORCHARD COMPETITION**

It was decided to conduct an orchard competition for the coming season, the province to be divided into districts, and suitable awards to be given for the best orchards in each district. This competition will be carried out for four years, awards, however, to be made yearly, with final awards for the orchard making the best showing for the full period, at the end of the fourth year.

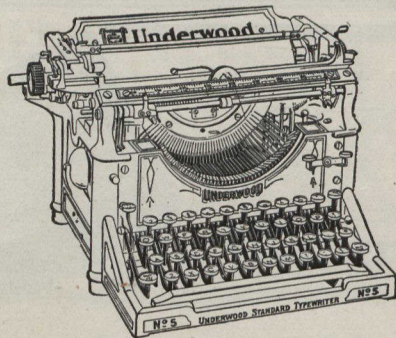
Many changes were made in the prize list for the apple show to be held next November. Prizes will be offered for half carloads and 50-box lots of Spy, Baldwin and McIntosh. Some of the varieties now on

**Numerous Inquiries**

"As it must be gratifying to you as well as to us, we wish to mention that we are receiving numerous inquiries from our advertisements in THE CANADIAN HORTICULTURIST." — German Potash Syndicate, Toronto.

The above firm has used large space regularly in THE CANADIAN HORTICULTURIST for several years to advertise their fertilizers to fruit growers. They find it pays. Perhaps you have something that fruit growers want.

**Some History  
 about Typewriters**



**Modern and Ancient**

**CHAPTER 7**

**I**N buying a Typewriter the price should be the last consideration.

**Y**OU can buy cheaper typewriters than the Underwood, but if you pay less, you get less—a great deal less.

**A**N Underwood is worth what you pay for it—generally more. Its value depends not merely upon what it is, but what it does.

**W**HEN you buy an Underwood, you get more than the machine.

**T**HERE is something which goes with the Underwood—included in every sale but not figured in the price—it is service.

**I**N a great many cases the time and labor saved by a specially devised Underwood system pays for the machine in a few months.

**United Typewriter Co.**  
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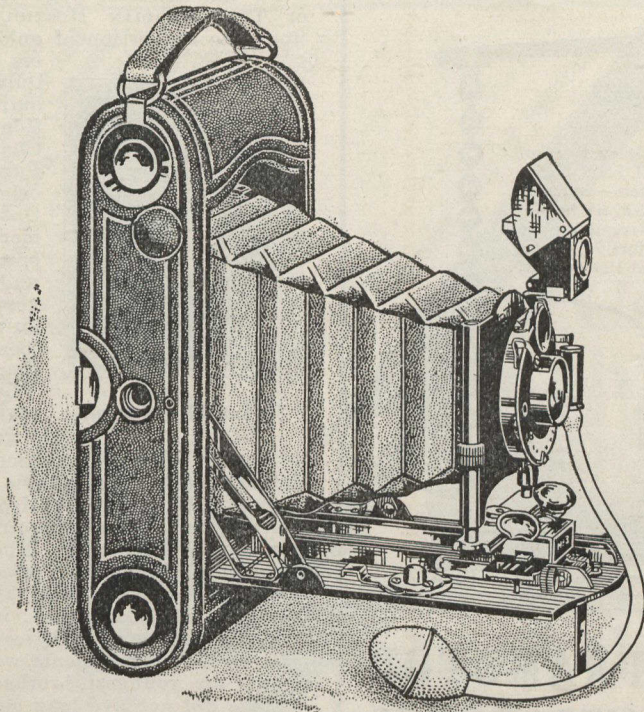
the list will be eliminated, so as to still further reduce the list of kinds that are recommended for Ontario planting. This is in accordance with modern orchard practice.

At the close of the directors' meeting, the representatives of the Dominion Conference, who were appointed last November, met and decided on the action to be taken in connection with the various resolutions which were forwarded to Ottawa. Certain of the committee were allotted to bring forward each resolution, and will secure the necessary data.

About fifteen years ago the fruit men of the Annapolis Valley commenced to build apple warehouses on the railway line. There are now over ninety of these in the Valley with a total capacity of perhaps eight hundred thousand barrels. Counting a couple of large additions, equivalent to new ones, twelve of these were erected during the past year.

The Kootenay Fruit Growers' Union has been shipping single boxes of apples to points in various parts of the world. One box was shipped to Switzerland, two to New York, one to Paris containing four different varieties of apples, Cox Orange Pippin, Yellow Newton, Spitzenberg and Northern Spy. This is being sent as a result of a visit paid to the warehouse of the union recently by a Parisian banker who was astonished at the perfect color and quality of the Kootenay apples.





There's a profit side as well as a pleasure side in the use of a

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Pictures of stock that you have to sell, pictures showing the development of animals at a certain age, of crops at a certain stage of growth, of buildings, and of ditches and fences and roads—all these can be used to advantage in systematizing and making your farm profitable.

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# Strawberry and Raspberry PLANTS

All the Leading Varieties  
HOME GROWN

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DO YOU KNOW

THAT WORN-OUT  
LANDS MAY BE MADE  
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BY THE JUDICIOUS USE OF  
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FERTILIZER?

NOW IF YOU HAVE  
A PIECE OF LAND THAT  
WONT GROW ANYTHING  
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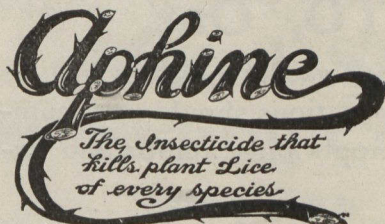
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USE FERTILIZERS  
WITHOUT GREAT EXPENSE SO  
YOUR LAND WILL PAY  
CONSULT US FREELY IT IS  
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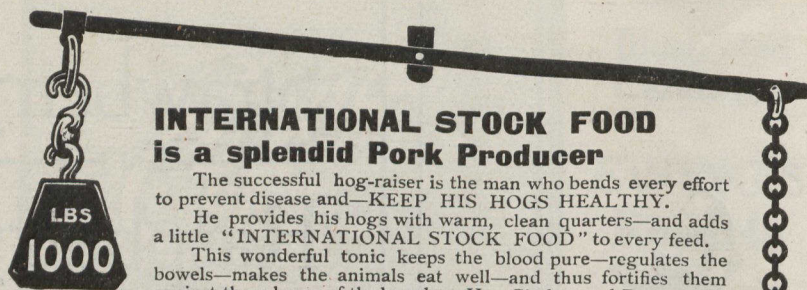
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He provides his hogs with warm, clean quarters—and adds a little "INTERNATIONAL STOCK FOOD" to every feed.

This wonderful tonic keeps the blood pure—regulates the bowels—makes the animals eat well—and thus fortifies them against those banes of the breeder—Hog Cholera and Pneumonia.

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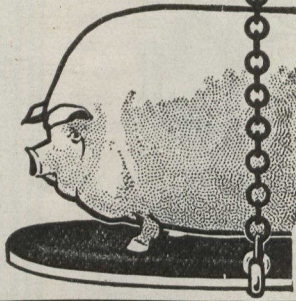
You can easily raise "Fall Pigs" and have them fine and fat for the market in May or June, if you feed "INTERNATIONAL STOCK FOOD."

Your sows will raise TWO GOOD LITTERS of strong healthy pigs EACH YEAR if you feed INTERNATIONAL STOCK FOOD. For fattening pigs for market, at the rate of 2 to 3 pounds extra a day, there is nothing in the world to compare with it.

The big hogs—prize winners, weighing from 500 to 600 pounds—are regularly fed "INTERNATIONAL STOCK FOOD." Why don't you feed it, and make more money out of your hogs? 3 Feeds for one cent. For sale at all Dealers.

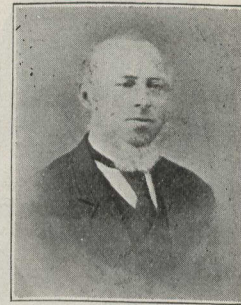
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International Stock Food Co., Limited, Toronto



### The Late Charles Arnold

On the editorial page of the July issue of THE CANADIAN HORTICULTURIST, acting upon the suggestion of one of our subscribers in British Columbia, we inquired for information about the late Charles Arnold, of Paris, Ont., the originator of the Ontario apple, the merits of which are becoming better understood as the years pass. The inquiry led to our locating one of his daughters, Mrs. E. W. Moyle of Langstaff, who has kindly furnished us



The Late Charles Arnold

with the following particulars about her father's work. Mrs. Moyle writes:

It is with a great deal of pleasure, after thirty years, to have inquiries made regarding my father's work. The late Mr. Chas. Arnold of Paris, spent many years hybridizing and I can safely say he was among the first, if not the first, in Ontario to put some of his own varieties on the market. His earliest experiments were with roses, in which my youngest brother was interested, but he did not live long enough to continue the work, so father carried on the work alone. Some of his varieties of grapes are still grown in France, their hardiness enabling them to withstand the ravages of the Phloxera better than the native stock. Among these are the Othello, Cornucopia, Autuchon, Brant and Canada.

A few varieties of raspberries were also originated, among them a white one considered pretty good, but, as Dr. Beadle said in a late article, "it was apt to revert to the original Antwerp." In 1872 Mr. Arnold gained the gold medal at the Hamilton Exposition for a new hardy wheat.

A gentleman living near Paris told me a few weeks ago that he grew some of this wheat for seed for father. One of his most successful ventures was a hybrid pea known now as "Bliss' American Wonder." The statement has been made that he received \$2,000 for it, but this is a mistake, as Mr. Bliss gave father \$1,000 for a bushel, and then wrote him a very kind letter saying he thought he had not paid enough and forwarded a beautiful gold watch. At the time of his death he was working on a new pea which was never put on the market but grown by members of his own family.

His apples, of which there were four, were shown at the Royal Horticultural Society of London, England, and for these he received a bronze medal and certificate of honor, highly prized by the family. The apples were "Arnold's Beauty," "Ella," "Dora" and "Ontario." The last one was chosen by the Ontario Fruit Growers' Association for distribution among the members, Mr. Arnold being a life-long worker in the association.

This apple was a cross between the Spy and Wagner and is still grown in Canada. This was not his favorite, as he considered Arnolds Beauty a much finer dessert apple, but not so showy as the Ontario or as good a shipper. The "Ella" and "Dora" are little known, but Arnold's Beauty are still grown in several orchards around Paris. This is but a short sketch of my father's special work, but if this is not sufficient Dr. Wm. Saunders of Ottawa, who was a life-long friend and knew more about his work than almost any other might give additional information.

I remember hearing father say once that



## SPRAMOTOR SAVES TREES

Two carloads of the Traction Spramotors were shipped to Waterdown and Burlington last year.

The farmers there prefer them to all others for general purposes

They are well adapted to spraying fruit trees of any size, and by a simple change of spray pipes, are equally suitable for vineyards, row crops and weed destruction.

The greatest care is taken in their manufacture, as they are most difficult machines to manufacture

They have all the features of the large power machines, and in addition, have a Nozzle Protector, Patented Nozzle Adjuster, 12 gal. Air Tank and a motor of the largest capacity: yet owing to the control, one nozzle can be used as effectively as 12 (the limit) and yet maintain an equal pressure of from 80 to 200 lbs., or any pressure you desire.

All of the highest grade throughout.

Everything in its construction made in the Spramotor Factory.

## HEARD SPRAMOTOR CO.

1388 King Street, London, Canada

## Park Commissioner For TORONTO, Ont.

Applications for the above-named vacant position will be received by the undersigned. Applications should be accompanied with full particulars as to applicant's ability and experience, with testimonials, etc.

**G. R. GEARY (Mayor), Chairman Board of Control**  
CITY HALL, TORONTO



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Each improvement in metal shingles has made even the cheapest of other kinds of roofing material costly by comparison. Now comes the Preston Specification, the improved Preston Shingles, the perfect way to put them in place, and thus you can have the ONE really COMPLETE roof. You certainly should learn all about it at once—and the FREE book the coupon will bring you informs you fully on roofing facts worth money to you. Use the coupon, and let us send you the book right away.

The improved Preston Specification assures you the ONLY roofing which is actually COMPLETE as a protection against ALL the elements. Not only weatherproof, waterproof, windproof, rustproof, fireproof, BUT — actually LIGHTNING PROOF. Your buildings will never suffer damage from the electric blast that causes so much destruction. They will be safe if roofed with Preston Shingles as we tell you how.

Make Your House, Your Barn Really Safe Against Lightning.

Adopt Preston Shingles and have no fear of the weather. Once on, they need no paint, for the thick galvanizing on the heavy metal withstands even the British Government acid test. They won't work loose in heavy winds, for the four-sided Preston Safe Lock holds every shingle rigidly in place. Fire nor water can't damage them. And with the new improvement, LIGHTNING WILL NOT HARM ANY BUILDING THEY COVER

Learn About our Guarantee Against Lightning Damage.

The edition of 'TRUTH ABOUT ROOFING' is limited. You need to act now to be sure of getting a copy. Use the coupon now.

The FREE book we ask the privilege of sending you explains NEW roof-facts of much importance to you, whether you intend to erect new buildings or repair and improve old ones. You will be speedily convinced that Preston Shingles are the roofing you can best afford.

**Edolph**

MANAGER

**Metal Shingle and Siding Co., Ltd.,** Preston Ontario

Branch Office and Factory: Montreal, Que.



## Are You Setting Out Your Trees as Economically as Possible and are the Trees when Planted Giving The Best Results Obtainable ?

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USED FOR

**Planting Trees**  
**Cultivating and Rejuvenating Orchards**  
**Breaking Hard Pan, Shale and Clay Sub-Soils**  
**Removing Stumps and Boulders**  
**Digging Wells and Ditches, Etc., Etc.**

Write us in regard to arranging  
**FREE DEMONSTRATION**

**CANADIAN EXPLOSIVES, Limited**  
**MONTREAL, P. Q.**

out of one hundred varieties of strawberries he had grown he rejected all but one, showing how uncertain the returns were for his labors. Page twenty-eight in the report of the Ontario Fruit Growers' Association for 1881 gives an account of father's opinion on apples, in which he speaks of his favorite "Arnold's Beauty."

That there is a wide field for this class of work in Canada is very evident, and if some person thoroughly in love with hybridizing were to take it up with patient, persistent effort I am convinced it would not only bring him some degree of fame but substantial monetary returns also.—Mrs. E. W. Moyle.

### A Boom in Norfolk

A great boom is taking place in the fruit lands in Norfolk county, Ontario. The Ontario Fruit Lands, Limited, a Toronto company organized by G. R. Cottrelle, manager of the real estate department of the Union Trust Company, bought a tract of one thousand acres last April. This land, which is now known as the Lynndale Farms, is to have all its inside fences removed, leaving the large block with only a boundary fence. Mr. Paul E. Angle, who gained a reputation in his work as district representative in Simcoe of the Department of Agriculture, has been appointed manager.

The land was bought purely for investment purposes. It will be planted with fruit, principally apple and peach trees. Since taking possession of the land last summer, seventy-five acres of apples and peaches have been planted and the ground prepared for planting four hundred acres more next spring.

The nursery stock for the spring planting has been purchased and comprises the varieties of apple and peach trees that have been proven to produce most abundantly in that district and command a good price. It is the intention of the company to have the entire thousand acres planted in fruit trees as soon as the ground can be put in shape and the stock procured. The young trees will be cared for until they commence to bear profitably, when it is believed the land may be sold to settlers from other fruit-growing parts. The planting is all to be done in such a way that at a future time any sized parcel may be disposed of.

The "Norfolk Publicity and Development Board" has been formed in Norfolk county, Ontario, to advance the agricultural and industrial interests of the county. It is composed of leading residents of the county. The officers are: President, H. H. Groff; vice-president, H. P. Innes, ex-M.P.P.; secretary-treasurer, J. E. Johnson, manager of the Norfolk Fruit Growers' Association; committee, G. J. McKie and J. E. Smith. The formation of this organization indicates that old Ontario is beginning to awake and to join in the effort to catch some of the attention of the busy world.

The prospectus of a new company, the Dominion Western Bonds Corporation, is being advertised in London, England. It has a capital of \$1,000,000. Four British M.P.'s are on the board, Col. Hickman, Sir Gilbert Parker, Hon. E. S. Montague and J. L. Baird. The object is to acquire and develop farm and fruit estates in the Dominion, especially in the Kootenay and Okanagan, Cassiar and Cariboo districts, British Columbia.

I recommend THE CANADIAN HORTICULTURIST to my friends, as the pictures are fine, the print readable, the plans are practicable, and the advertisements O.K.—W. T. Winchester, Winona, Ont.

## The ONTARIO FRUIT SPRAYER BUILT FOR BUSINESS

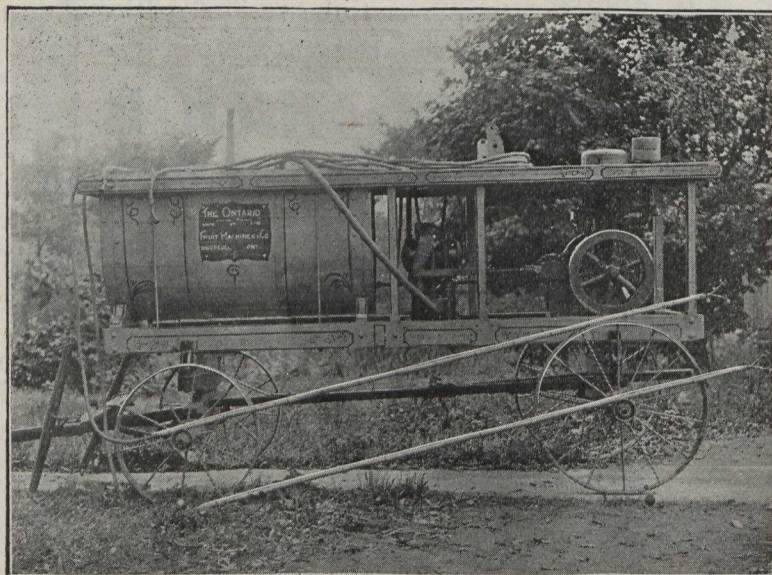


Fig. 73 No. 1 A, 1912 Model

This cut illustrates our **1912 MODEL FRUIT SPRAYER**, a marvel of simplicity, strength and durability,  $2\frac{1}{2}$  H. P. engine, water cooled and always ready; can be quickly cut off from pump jack and used for other purposes. This outfit represents all that first-class machinery, material and skill can produce at a moderate price. Write for detailed description and price. We manufacture a full line of Apple Evaporating Machinery.

Installing Power Evaporators a Specialty

**FRUIT MACHINERY CO. - Ingersoll, Ont.**



# Grasselli Spray Products

## LIME - SULPHUR SOLUTION

## ARSENATE OF LEAD PASTE

Grasselli Lime-Sulphur Solution contains the maximum amount of Sulphur in Solution as Calcium Polysulphides. It is a clear solution, free from sediment. By its use nozzle troubles are eliminated and maximum distribution is attained, which in a word means efficiency. It puts money in the pocket of the Fruit Grower who uses it.

Grasselli Arsenate of Lead Paste, an even balanced product, contains 15 % of Arsenic Oxide combined with the maximum amount of Lead consistent with good mixing properties.

**Kills All Leaf-Eating Insects  
Sticks to the Foliage**

**Mixes Easily with Water  
Does Not Injure the Foliage**

Grasselli Spray Products are manufactured under rigid guarantee. Complete analysis on each package.

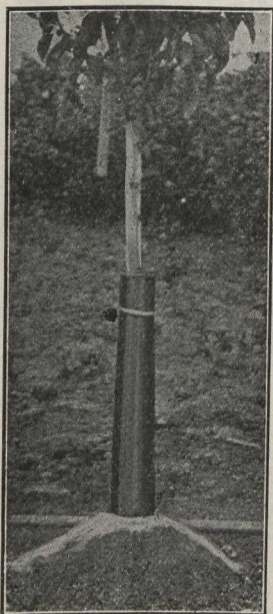
Distributors wanted in unoccupied territory

Send Inquiries to the Toronto Office

## THE GRASSELLI CHEMICAL CO., LIMITED

Head Office and Works:  
HAMILTON, ONT.

Warehouse and Office:  
131 Eastern Ave., TORONTO, ONT.



Tree Protected by Wooden Veneer and banked up with earth to prevent entrance of pests at bottom.

## PROTECT YOUR TREES

Against Rabbits, Mice and other Vermin

Many young orchards are greatly injured each year by these pests. Wrap the trunks with

## WOODEN VENEERS

and damage will be prevented. These veneers will protect also against sun-scald.

Send At Once to

**The Oakville Basket Co.**

OAKVILLE, ONTARIO

## THE Weekly Fruit Grower

MARKET GARDENER AND POULTRYMAN

*Published at Grimsby, Ontario*

The only weekly paper in Canada devoted entirely to Fruit Growing, Market Gardening and Poultry Raising.

It deals in its season with every phase of **COMMERCIAL FRUIT GROWING** and **MARKET GARDENING**.

Pruning, Spraying, Thinning, Fertilizing, Cultivating, Picking, Packing, Shipping, Marketing and Storing discussed by men of experience and writers of ability.

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### SPECIAL CLUBBING PRICE

Clubbed with The Canadian Horticulturist only **\$1.20 a year** for both papers. Regular price \$1.60.

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ONTARIO



## Gladioli

GLADIOLI are now the most popular of summer flowers, nothing being equal to them for table decoration. We have a large stock of the best varieties and most valuable mixtures.

Groff Hybrids are still the best we can find and they are making their way all over the world, seven or eight acres now being grown at Simcoe, largely for export. Also Cannas, Dahlias, Paeonies and General Nursery Stock.

CATALOGUE on application to  
Campbell Bros. Simcoe, Ont.

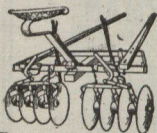
## Strawberry Plants FOR SALE

We have a fine lot of plants for spring delivery. Best varieties for home, garden and commercial growers. List will be ready early in January. Send for it now.

Place your order early as  
PLANTS ARE SCARCE

ONTARIO NURSERY CO.  
Wellington, Ont.

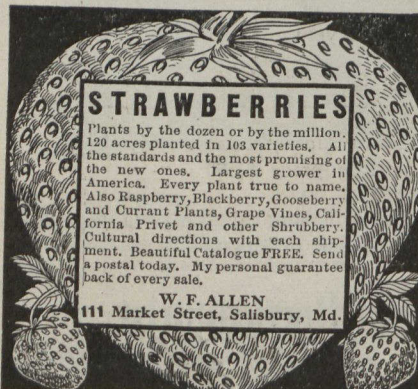
## The Bissell GARDEN HARROW



By adding wings to the Bissell Garden Disc harrow it extends over 10 ft. wide. With wings detached it is 4 feet wide. Adjustable—single horse, or light two-horse harrow. Low or high seat. Reversible—In-throw to Out-throw. Cuts clean, even furrow and is a strong, durable Harrow. Call on local dealer or write Dept. N for catalogue.

T. E. Bissell Co., Ltd., Elora, Ont.

See ad. of Orchard Disc on page 56



**STRAWBERRIES**  
Plants by the dozen or by the million. 120 acres planted in 103 varieties. All the standards and the most promising of the new ones. Largest grower in America. Every plant true to name. Also Raspberry, Blackberry, Gooseberry and Currant Plants, Grape Vines, California Privet and other Shrubbery. Cultural directions with each shipment. Beautiful Catalogue FREE. Send a postal today. My personal guarantee back of every sale.

W. F. ALLEN  
111 Market Street, Salisbury, Md.

## Montreal's New Suburb

When the work planned by the Canadian Northern Railway is completed a model town will have risen behind Mount Royal. The company has secured the services of Mr. Frederick G. Todd, landscape architect, to prepare plans for a new suburb on a part of the railway property, which embodies an area of about five thousand acres. At present not more than three thousand acres will be developed in this manner. The balance will be retained for future developments and yards.

The project is of particular interest to Montreal since it is the first time in Canada that a large suburban area has been designed on the thoroughly scientific lines of modern city planning. In addition it is a most ambitious program, for the site which will be prepared is over twice as large as Westmount. The southern lines of the "Garden City" will adjoin Outremont.

When the work is completed the Canadian Northern Railway will enter the Island of Montreal a little to the west of the C.P.R. entrance. At this point the use of steam as a motive power for its engines will end and big electric motors of the most modern type will be provided, the third rail system being adopted. The line into the city will run from the Black River to the rear of Mount Royal, then, through a tunnel beneath the mountain, to its downtown terminal. A suburban service similar to that of New York will be provided, so that anyone may reach the centre of the city from the centre of the new suburb in from six to eight minutes. The tracks will be elevated and stations established at frequent intervals.

Mr. Darling, the Montreal manager of the Land Department of the railway, and Mr. Todd have studied the property carefully. They feel confident that the new suburb will be the model city of Canada, and will prove a financial success for its owners.

## Items of Interest

Mr. Frederick G. Todd, landscape architect, of Montreal, Canada, has severed his connection with the Canadian Nursery Company, Limited.

Prof. J. W. Crow, B.S.A., of the Ontario Agricultural College, Guelph, where he has done good work, has accepted a position as superintendent of the Dominion Experiment Station instituted last year at Kentville, Nova Scotia, by the Dominion Government, where he will remove at an early date. The new institution is devoted to investigation and demonstration in the problems of fruit culture. The site was procured last year, and some initial work done under direction of the Dominion Horticulturist, Prof. W. T. Maccoun, but plans will now be fully matured and pushed under the superintendence of Prof. Crow.

Prof. Taft of Michigan states that they are having trouble there with Little Peach, which has been unusually prevalent with them this season. He states that it has obtained such a foothold in Michigan that he fears it will be difficult to control it. It is just possible that the season we have experienced has been such as to bring out the worst features of the disease and that an ordinary season will be not quite so bad. This we cannot count on, however, and we must do everything possible in our power to fight it without counting on the seasons.

## Imperial Bank

Established OF CANADA 1875  
HEAD OFFICE TORONTO

Capital Paid-up. . . 6,000,000.00  
Reserve Fund . . . 6,000,000.00  
Total Assets . . . 72,000,000.00

D. R. WILKIE, President and General Manager  
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Letters of Credit, Drafts and Money Orders  
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### Fruit and Ornamental Trees

Everything for the garden and lawn. Get my catalog and prices before you order.

IT WILL PAY YOU  
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16 Margaret Street  
St. Thomas, - Ontario

# FERRY'S

Plant breeding and selecting has been our business for years. We market the results in the shape of thoroughbred vegetable and flower seeds. They grow good crops.

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FREE ON REQUEST

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# SEEDS

## HOW TO GET BETTER LIGHT

### From COAL OIL (Kerosene)

Recent test by Prof. McKergow, McGill University Montreal, on leading oil-burning lamps show the Aladdin Mantle Lamp gives over twice as much light as the Rayo and other lamps tested, and burns less than one half as much oil. It is odorless, safe, clean, noiseless. Better light than gas or electric. Every Aladdin Lamp fully guaranteed and protected by patents in nearly every country on earth. Our burners fit your old lamps.

To introduce the Aladdin, we will give  
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in each neighborhood. Send postal with name and address, ask for cat. **AGENTS** Ball sold over 1000 on money back alogue M. guarantee; not one returned. Bruner sold \$800 in 15 days. Ask for liberal agency proposition. Sample lamp furnished.  
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# Gerhard Heintzman Pianos Pianos of Prestige

## NO NEED TO WORRY

To worry about your purchase of a piano is needless.

Someone else has taken the worry from the piano question for thousands of buyers as eager to buy rightly as yourself.

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### CANADA'S GREATEST PIANO

have eliminated risk and accentuated the possible enjoyment from the possession of a piano. A generation is a long time — but a generation has proven the supremacy of this really great piano.

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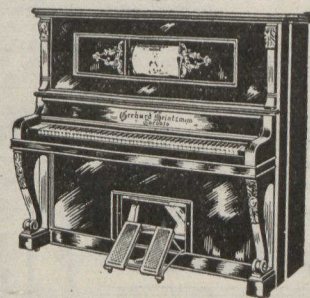
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Peerless Wire Fence is built to give absolute fence satisfaction and makes good. Best quality wire galvanized to prevent rust and securely held at each intersection by the Peerless Lock combined with fence experience compose the Peerless Fence.

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That is the kind you should use on your farm and save expense and worry.

**Write for Our Catalog Today** Peerless Poultry fencing and Farm Gates are unequalled. Try them.

Agencies almost everywhere. Agents wanted in unassigned territory.

**Banwell Hoxie Wire Fence Co., Ltd.,**      **Winnipeg, Man., Hamilton, Ont.**

## PROVINCIAL NOTES

### Eastern Annapolis Valley

Eunice Buchanan

During the month of September, from Berwick alone, thirty-one thousand barrels of apples were shipped. They are reported to have made good prices in England. Mr. S. B. Chute, manager of the United Co-operative Fruit Companies of the Annapolis Valley, chartered three steamers, one, the S. S. Taunton, carried ten thousand six hundred and sixty barrels to London; another, the Salvators De Giorgis, sailed for Glasgow with ten thousand barrels, while the Michigan took the same number to Liverpool. Fruit growers are rejoicing over their new independence.

Many orchardists greatly underestimated their crops, and barrels could only be obtained by waiting. Coopers were imported with staves and hoops from Ontario, thus introducing the flat-hooped barrel, whereas before they were made of split birch saplings. The evaporator at Middleton was burned down. Fall plowing has been going on up to date. Nov. 13. The plowing of one land and leaving the next is coming into favor, and the tendency is not to cultivate so near to the trees.

### Nova Scotia Awakening

The past year has shown some wonderful developments in the fruit industry in this province. The production of apples last fall was much the greatest on record, amounting to almost one and a half million barrels. Some extremely interesting information regarding our production of apples was published recently in local papers from the pen of one of our most successful growers, Mr. R. J. Messenger, one of the well known contributors from this province to the columns of THE CANADIAN HORTICULTURIST. Speaking about the quality of the fruit grown, Mr. Messenger says: "Our great crop did not consist of poor, wormy, third-class apples. They were as good, both in quality and appearance, as could be raised under the same circumstances in any part of God's earth."

The increase in our production of apples is well shown by the following table of exports prepared by Mr. R. S. Eaton and showing the average number of barrels exported each year for five-year periods:

Year	Barrels
1880-1885	23,930
1885-1890	83,249
1890-1895	118,552
1895-1900	259,200
1900-1905	330,406
1905-1910	482,298

By 1920 we expect to produce three or four million barrels a year.

A thousand-barrel crop this year in Nova Scotia was a common occurrence. There were many five thousand-barrel yields and some climbed to nearly ten thousand. Men who, twenty years ago, the great majority of people in the Province, thought crazy for planting over twenty-five acres of orchard, to-day are smiling blandly as they pocket from two thousand to ten thousand dollars as the year's orchard income.

One of the most encouraging facts in this year's business has been the successful trade with the West. We have thought that we could never compete with Ontario and British Columbia in sending fruit to the West, but this year has been a pleasant surprise in that about 100,000 barrels have

# Planet Jr.

Two million workers the world over testify to the durability, economy, labor and time saving advantages of all Planet Jr tools. They bring

**Lighter work—  
Heavier Pocket-book**

Wherever you are, whatever you grow, Planet Jrs are scientific aids to bigger profits. Made by a practical farmer and manufacturer; every tool guaranteed.

**No. 25 Planet Jr Combined Hill and Drill Seeder, Double Wheel Hoe, Cultivator, and Plow,** capital for large-scale gardening especially, has automatic feed-stopper, seed index, and complete cultivating attachments. *Indestructible steel frame.*

**No. 16 Planet Jr Single Wheel Hoe, Cultivator, Rake, and Plow** is light, handy, and adapted to almost every garden use. Has leaf guard for close work and lasting *steel frame.*

**FREE! A 64-page illustrated farm and garden book!**

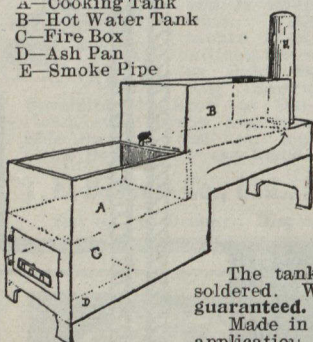
It's brimful of valuable farm and garden hints, besides showing 55 tools for all kinds of cultivation. **Send postal for it today!**

**SL Allen & Co**

Box 1106G  
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Write for name of our nearest agency.

- A—Cooking Tank
- B—Hot Water Tank
- C—Fire Box
- D—Ash Pan
- E—Smoke Pipe



## Make Your Own Spray

Home Boiled Lime Sulphur is being used in increasing quantities by leading fruit growers and fruit growers' associations. They find that by making their own spray they can effect a considerable money saving, and at the same time produce a preparation that will do the work thoroughly.

It is an easy matter to make home boiled lime sulphur. The chief essential is a proper spray cooker. We manufacture two kinds of cookers, one with a single tank, and one with a double tank. (See illustration.) They are designed especially for this purpose, and will give the greatest efficiency with the greatest saving of fuel. They can be used for either wood or soft coal.

The tanks are made of heavily galvanized steel, thoroughly rivetted and soldered. Will not leak. They are built to give satisfaction, and are guaranteed.

Made in five sizes, capacity 30 to 75 gals. Prices and full particulars on application. Get your outfit now. Write us to-day.

**STEEL TROUGH AND MACHINE CO., Ltd., TWEED, Ont.**

## SPECIAL GUARANTEED Lime-Sulphur Hydrometer

Both specific gravity and Beaume readings; submitted to Mr. Caesar O. A. C., Guelph, and reported "quite satisfactory."

**Sent Postpaid on receipt of 80 cts.**  
**PARKE & PARKE** Wholesale Druggists  
HAMILTON, ONT.

## STRAW RASP BERRY BLACK B PLANTS

GIBRALTAR BLACK CAP  
Greatest Yields at Experimental Farm, Ottawa.  
Address originator: N. E. MALLORY, BLENHEIM, ONT.

**BOOKS** WRITE for our list of books on Fruit Growing, Irrigation, Pruning, Spraying, Fertilizing, etc.



# Feed Your Fruit Trees and Gardens

Practical Fruit Growers and Vegetable Gardeners realize that to obtain the largest profits from their land **it is just as necessary to fertilize their trees as it is to spray them.** We manufacture brands of Animal Fertilizer especially designed for the use of Fruit Growers and Market Gardeners. Some of our brands that are specially suitable for these purposes and their guaranteed analyses are :

BRAND	GUARANTEED ANALYSIS		
	Nitrogen	Phos. Acid	Potash
Potato Special .....	3.30	8	8
General Vegetable and Market Garden .....	4.11	9	5
Early Vegetable Manure .....	4.93	9	5
General Crop Fertilizer .....	2.47	10	2
Fine Steamed Bone .....	4.93	22	—
Sol. Bone and Potash .....	1.64	10	5
Tobacco Grower .....	4.11	9	6
Greenhouse Special .....	4.11	5.5	5

**Remember** our brands are based on materials of animal origin and are not purely chemical fertilizers. The effect is therefore more permanent and the plant foods not so liable to loss through leaching, etc. The advantages are all outlined in our **Fertilizer Booklet. Send for one.**

Our Fertilizer Department is under the management of a graduate of the Ontario Agricultural College and of Macdonald College, Que., who is well qualified to advise you regarding fertilizers suitable for your soil and the crop for which it is required. He will be pleased to give any information possible on this subject.

Write for literature and quotations. We have agents in some sections and want men for others. Easy terms and satisfaction guaranteed to our patrons. Orders by mail promptly filled—no extra cost. Write:

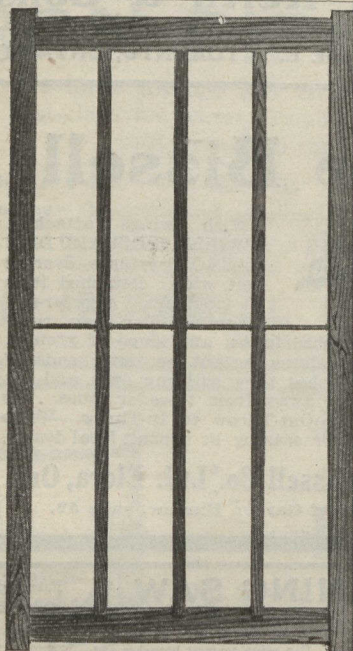
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Limited.

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### PROFIT AND PLEASURE IN GROWING EARLY VEGETABLES AND FLOWERS IN HOT-BEDS

The money saved in growing your own vegetables and flowers saves the cost of the beds the first year. Our Hot Bed Sash are built to last. All the joints are tight fitting, blind mortised and white leaded before being put together. A 1/2 inch oak rod runs through the bars and into the stiles. A metal pin is driven into each of the bars and styles through the rod. In this way each bar is held in its proper position and prevented from sagging.

A trial order will convince you that our sash possess the greatest possible strength and durability.

Hot bed folder mailed on request.

SIZE :--3 ft. 2 ins. wide by 6 ft. long for 4 Rows of 8 inch Glass For Butted or Lapped Glass

PRICE :--Norway Pine 95c., Clear Red Cypress \$1.20.

MAIL YOUR ORDER TO-ADY

**BATTS LIMITED — 374 PACIFIC AVE. — WEST TORONTO**





### Hardy Small Fruits

Conditions of soil and climate make it possible for us to produce stock that is hardy, vigorous, and that will give good satisfaction in almost any locality. We exercise great care in the cultivation and handling of our stock, give personal supervision to packing and shipping, and **warrant all stock absolutely true to name.** This explains why we have built up a large list of satisfied customers.

We specialize on small fruits—Raspberries, Gooseberries and Currants -- also Garden Roots, including **Rhubarb, Asparagus, etc.**

**List of Varieties:—**

**RASPBERRIES**

Herbert Cuthbert  
Marlboro Brinckle's Orange  
Golden Queen

**GOOSEBERRIES**

Josselyn Red Jacket  
Downing Pearl  
Houghton

**CURRANTS**

Perfection Fay  
Ruby Cherry  
White Grape Lee's Prolific  
Champion Black Naples  
Black Victoria

Order now while the list of varieties is complete. Send post card for catalogue and price list.

**WM. FLEMING**

OWEN SOUND Box 54 Ontario, Can.

## Strawberry Plants

### That are Great Yielders

Buy your strawberry plants from one that has made a success of growing berries for the market for many years.

I grow the Williams Improved, Parsons Beauty, Splendid and Michel's Early.

Last year the yield from 2-3-4 acres was 31,500 boxes, and in 1910 the yield from 11-5 acres of Williams Improved was 16,770 boxes.

I have for sale a fine lot of plants of above varieties. Prices: 75 cts. per 100; \$5.00 per 1,000.

**W. WALKER**

Port Burwell, Ont.  
Elgin Co.

## Strawberry Plants That Grow

Great crops are obtained by setting our plants Strawberry, Raspberry, Blackberry and all small fruit, Apple, Pear, Plum, Cherry and Ornamental Trees. Best Varieties. Lowest Prices. For large crops, and quick returns plant our **NORTHERN GROWN STOCK.**

We guarantee our Plants to be first-class and true-to-name, packed to reach you in growing condition, or your money back. Write for price-list and free delivery offer. Discount for early orders.

**Brookside Nurseries** Petittodiac N. B.

been placed in this market at a good price, and only the lack of properly constructed cars has hindered the continuance of the trade all winter. When we learn from good authority that the west is increasing in population at the rate of almost half a million a year and that the west will take settlers at this rate for half a century, we have a right to feel that our market there is safe.

Some of the methods our growers are adopting to ensure the delivery of their fruit in the west in good condition is shown by the fact that recently six refrigerator cars, transformed into "warm cars" by the means of oil heaters and containing one thousand two hundred barrels of apples, Vandeveres and Spys, passed through Kentville, en route to Winnipeg. The consignment was in charge of Mr. F. M. Chute, manager of the Waterville Fruit Company. Mr. Chute intended to attend to their transit and safe delivery in the western city.

### British Columbia

A vast amount of valuable educational work is being conducted this winter by the provincial department of agriculture in the line of improving the methods followed by the fruit growers and others interested in horticultural pursuits. In all likelihood, we will have very close to fifty packing schools this winter, with a total attendance of over six hundred pupils. During the past few months we have seen a great deal of improvement in many districts, due to the packing schools. If this work is continued conscientiously for the next two or three years, we will, as a province, outstrip Washington, or even Oregon, in the general character of our fruit pack. A comparison of the class of instruction furnished here with that of Oregon and Washington, has demonstrated its efficiency for the purposes of meeting all modern competition in fruit packing.

The policy of placing the local administration of the packing schools in the hands of a responsible local body, such as the Farmers' Institute, the Fruit-Growers' Association, or the Board of Trade, has proved entirely satisfactory, and is being continued this year.

The department provides the instructor, and pays his expenses. The department also bears the cost of the packing paper, the fruit, and all other legitimate expenses, except that of the secretarial work and of the hall rent, which it has been found most satisfactory to leave to local arrangement.

The responsible organization in each case is required to guarantee a minimum of twelve pupils, but not more than fifteen, with the proper qualifications, at a fee of three dollars each, to take the twelve lessons of two and a half hours a lesson, the school extending over one week. The department, as far as possible, uses local fruit, paying for the same the legitimate market price. About three boxes per pupil are used. The harder varieties, such as Ben Davis and Gano, are preferred. The fruit has to be in good condition, but need not be graded, and none runs under two and a quarter inches in diameter.

It is hoped that by means of these classes the invasion of Japanese and Chinese packers, so successful in California, will be largely prevented in this province. Another advantage is the development of a uniformly good pack from all districts.

**INSTRUCTIVE MEETINGS**

The Department of Agriculture is holding a series of short courses in fruit and vegetable growing conducted by the officers of the horticultural branch. They are be-

## It Is Safe and Easy to Order Your Seeds By Mail

**Safe Arrival is Guaranteed**, and if for any reason you are not thoroughly satisfied your "say-so" alone is sufficient to get your **money back without question** or quibble. We will not knowingly have a single dissatisfied customer.

In the "KEITH'S SELECTED STRAINS" will be found what we consider to be the best varieties of every prominent vegetable family. The varieties are not necessarily "novelties," but are what we consider after long years of experience the best varieties in each respective class that it is possible to produce. They are not only the finest type in themselves, but the seed is of the freshest and best obtainable.

Select from the Following List: 3 pkts. for 15c.; 12 for 50c. Postpaid.

Early Beet	Lettuce (Head)	Early Peas
Late Beet	Musk Melon	Pumpkins
Butter Beans	Water Melon	Radish
Early Cabbage	Citron	Summer
Late Cabbage	Golden Globe	Squash
Cress	Onion	Winter
Carrot	Pickling Onion	Squash
Celery	Parsley	Early
Early Corn	Parsnip	Tomato
Cucumber	Lettuce (Curled)	Turnip

Oz. pkts. of any of the above, 15c each. Postpaid.

Select from the Following List of Flower Seeds, 3 pkts., 15c.; 12 for 50c. Postpaid.

Aster (Red, White, Blue or Mixed)	Pink
Alyssum	Larkspur
Balsam	Morning Glory
Candytuft	Marigold
Cosmos	Mignonette
Carnation	Nicotiana
Daisy	Pansy
Hollyhock	Petunia
	Zinnia
	Poppy
	Portulacca
	Salvia
	Summer Cypress
	Sweet Peas
	Verbena
	Zinnia

Oz. pkts. of the following, 15c each. Postpaid.

Morning Glory, Scarlet Runner Beans, Sweet Peas, Nasturtiums Tall, Nasturtiums Dwarf. Oz. pkts. any of the following, 35c each. Aster, Alyssum, Candytuft, Poppy, Mignonette, Lawn Grasses, 30c per lb. Postpaid.

Send for Catalogue

## Geo. Keith & Sons

Seed Merchants Since 1866

124 King St. E. TORONTO, ONTARIO

## The Bissell



With wings attached, **BISSELL ORCHARD DISC HARROW** extends over 12 feet wide. Detached it is a compact, regular-size Harrow. You can regulate

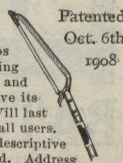
late gangs to follow any slope of ground. You can throw weight on outer ends of gangs so that they will run even and cut tough sod away from trees or vines. It's reversible—Out-Throw to In-Throw. Write Dept. N for catalog or consult local dealer.

**T. E. Bissell Co. Ltd. Elora, Ont.**

See ad. of Garden Harrow, page 52.

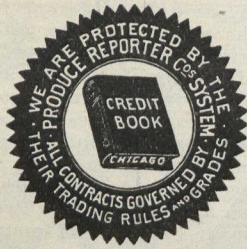
## PRUNING SAW

Operates from ground. No breaking of limbs by climbing. No moving of ladders. No sawing of wrong limbs. Can reach topmost branches and shape tree better than by old methods. Will save its cost in one day. Nothing to get out of order. Will last for years. Thousands in use. Recommended by all users. If your dealer can't furnish it, write for full descriptive circular and prices. Satisfaction guaranteed. Address



**FRUITGROWERS' SAW CO., Scottsville, N. Y.**  
Representative for Ontario, Jas. E. Johnson, Simcoe, Ont.





# Good Prices Always



## For Your Fruit and Vegetables

OUR facilities enable us to realize top prices at all times for your fruit, vegetables or general produce. Aside from our large connection on the Toronto market, we have established branch warehouses with competent men in charge at **Sudbury, North Bay, Cobalt, Cochrane and Porcupine.** In time of congestion on the Toronto market we have a ready outlet through these branches. We never have to sacrifice your interests.

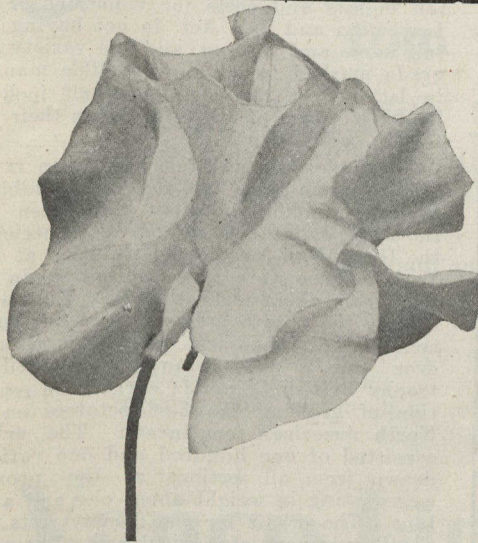
We Solicit Your Consignments

Send for Shipping Stamp

Branch Warehouses: Sudbury, North Bay, Cobalt, Cochrane and Porcupine

**H. PETERS**  
88 Front St. East, Toronto

References: The Canadian Bank of Commerce, (Market Branch) and Commercial Agencies.



## Regal New Sweet Peas

### New Duplex Spencer

The best of all Pink Sweet Peas for bouquets. In color both the standard and wings are a rich cream-pink, and practically all the plants give flowers with double or triple standards.

The beautiful lemon keel, in addition to the double standard, materially enhances the effectiveness of these flowers when bunched. Of strong, vigorous growth, the vines bear the grand flowers most profusely upon long, stiff stems. Pkt. 15c.

### New Vermilion Brilliant

The most brilliant, iridescent scarlet Spencer yet produced. The flowers are of perfect form. The bold, erect standard is well waved and fluted, of large size, beautifully rounded and finishing well below the keel. The wings are of the same intense pure scar-

let as the standard, making a uniform self-color throughout and absolutely sunproof. Pkt. 15c.

### New Irish Belle or Dream

The coloring is uniform in both standard and wings, a lovely rich lilac, flushed with pink, which gives a very distinct and soft tone throughout the entire flower. Of finest Spencer type, waved in both standard and wings, the flowers are of large size and well placed on long stems. Pkt. 15c.

### New Pearl Grey Spencer

It is certainly a most lovely and distinct shade that might be described as a pearl or dove-gray, suffused with light rose, showing a trifle more of the delicate rose shading in the standard. The flowers, borne in clusters of three and four, are of the largest size and uniformly waved in both standard and wings. Pkt. 15c.

**FREE**

Write for our handsomely illustrated 112 page Catalogue of Vegetable, Farm and Flower Seeds, Bulbs, Plants, Poultry Supplies, Garden Implements, etc., now ready.

**JOHN A. BRUCE & CO., Ltd.,** Seed Merchants, Established 1850

**HAMILTON, ONT.**

## IRON PIPE BARGAINS

We have 300,000 feet of slightly used Piping, as good as new; first-class for water, steam, heating greenhouses, etc., at 50 per cent. less than regular value. Our Prices are—

3-4 in.—2 1-2c. 1 in.—3c. 1 1-4 in.—4c. 1 1-2 in.—5c per foot including new threading and couplings. Special lengths included at very little extra charge

Also large quantities of Belting, Fencing, Pulleys, Shafting, Rails, Saws, Forges, etc., at 25 to 50 per cent. less than regular cost.

**THE IMPERIAL WASTE & METAL CO.**

99 QUEEN ST., MONTREAL



## CHILDS' RESPLENDENT TOMATO

Fruit of all colors, green, white, lemon, pink, orange, yellow, to deep ruby-red, borne on the same plant in wonderful abundance. Showy and attractive beyond description. Plant dwarf, stout, upright with novel foliage. Fruit large with more solid flesh and less seed cavity than any other. Also less acid and by all odds the richest, meatiest and finest flavored Tomato.

We are introducing **Resplendent** as the best and most beautiful Tomato, novel and distinct in every way, at only 10c. per pkt., 3 pkts. for 25c.

With each packet of seed we mail a booklet which tells how to grow and use Tomatoes. 100 Receipts for cooking and using the fruit are given, many entirely new. Also Catalogue with large water-color reproduction of a Resplendent plant in full bearing.

Our Catalogue of Flower and Vegetable Seeds, Bulbs, Plants, Shrubs and rare new Fruits mailed free to all who apply. We offer many startling Novelties, including the most beautiful and unique Rose, Dahlia, Aster, Celosia, Sweet Corn, Melons, Cannas and Gladiolus yet seen. Liberal premiums, discounts and Universal Coupons given. Address

**JOHN LEWIS CHILDS, Floral Park, N.Y.**

## JUST THE THING!

FOR MAKING

Home Boiled Lime Sulphur

## ERIE BOILER

Cast Iron Caldron and Steel Jacket

No. 20---15 Imp. Gals.---	\$12.00	No. 60---48 Imp. Gals.---	\$16.00
No. 29---28 " " "	13.00	No. 75---60 " " "	22.00
No. 40---36 " " "	15.00	No. 90---75 " " "	25.00

No. 120---100 Imp. Gals---\$36.00



Grates for burning coal supplied for No. 20, 30, 40, and 60 for \$3.50 in addition to above prices.

Made by **Erie Iron Works, Ltd., St. Thomas, Ont., Can.**

"Saw Your Ad. in Canadian Horticulturist."





## You Must Use a Good Spray Pump

If you cannot spray thoroughly and get results. Spraying is a whole lot easier when the pump works right, the nozzles spread right and don't clog, and the agitators keep the solution well mixed. Cheap, inefficient sprayers are not easy to work, will not last, and can't give results because they are not built to meet these conditions. When you have so much at stake, why risk it on the small difference between a cheap outfit and a

## GOULDS Reliable SPRAYER

Our 60 years' experience has taught us how to make spray pumps so they will stand up under long use.

All working parts are of brass to withstand chemical action. Castings are properly proportioned and valves are of the best type.

Goulds Sprayers work easily, rapidly and make your spraying efficient. It is false economy to use any other.

### Send for our Booklet

**"How to Spray,  
When to Spray,  
Which Sprayer to Use"**

It is full of reliable, interesting spraying facts and is a guide in the selection of an outfit that will give you the best results. Contains complete formulas for preparing spray mixtures. A copy free on request to

**THE GOULDS MFG. CO.**

17 W. Fall Street  
Seneca Falls, N.Y.

Largest Manufacturers  
of Pumps  
for Every Service



ing conducted mainly under the auspices of the Farmers' Institute. In general character these meetings are quite different from and superior to the usual institute gatherings. The majority of the addresses are given by officials of the horticultural branch, who are thoroughly conversant with conditions. The meetings extend over two days—morning, afternoon and evening. Special features are practical demonstrations and study of soils. Lectures are given by the Deputy Minister of Agriculture, the Prairie Market Commissioner and by prominent fruit growers. Spraying, growing or small fruits, judging and exhibition standards, practical cooperation and buying and selling, economy in production, simple book-keeping, marketing commercial productions of potatoes and profitable onion growing are some of the topics being discussed.

Convictions were registered in the Vancouver police court recently against several firms, who pled guilty and were each fined ten dollars and costs for violations of the Inspection and Sale Act, in not having the full name and address, and the variety and grade marked in a plain indelible manner, in letters not less than one-half inch in length on boxes of apples found in their possession, and offered for sale.

Great pleasure was felt here when it was learned some time ago that our exhibit of British Columbia potatoes had taken the thousand dollar cup against all America in the Great Pan-American Exhibition at New York. There were sixty-one entries in this class from all important states. Eugene H. Grubb, the potato judge, said of our collection: "It is the most marvellous thing I ever saw." By winning the Stillwell trophy British Columbia earned the reputation of growing the best potatoes on the North American continent. The exhibit consisted of one hundred and one varieties drawn from all sections of the province aggregating in weight about one and a half tons. The credit for the display rests with the Department of Agriculture. The entire province was scoured to secure the finest specimens. Mr. W. E. Scott, Deputy Minister of Agriculture, and those who assisted him in the task are being given the highest praise for the honor which they won for the province.

There is at present on exhibition in the Canadian Northern Railway Company's offices in London a handsome collection of fruit from the Okanagan Valley, consisting of apples of the Northern Spy, Spitzenburg, Winter Banana, and Newtown Pippin varieties. The exhibition is attracting much attention and is a capital advertisement for British Columbia.

A most valuable circular (No. 8), entitled "Apple Packs and Packing," by R. M. Winslow, provincial horticulturist, is being distributed by the Department of Agriculture. It is profusely illustrated by diagrams and deals fully with such subjects as wrapping, the packing table, essentials of a good pack, the standard packs and the marking of packages. It will be used as a standard by many of our packers.

Much useful information on the question of spraying and fruit growing generally is contained in the catalogues published by a number of the advertisers in this number of THE CANADIAN HORTICULTURIST. These catalogues are free to those who are interested. Write for them.

The plates for the colored illustration of sprayed russet apples appearing on the front cover of this number are the property of the Flanders Mfg. Co. of Pontiac, Mich.





**SPRAY CHEMICALS**

Lime Sulphur  
Lead Arsenate

**FERTILIZERS**

Nitrate of Soda  
Muriate of Potash  
Sulphate of Potash  
Acid Phosphate

**When the Buds on Your Fruit Trees are Swelling, Spray the trees from top to bottom with Vanco Lime Sulphur Solution**

Clean Trees Mean Sound Fruit

“VANCO” LIME SULPHUR SOLUTION is the spray to use if you want your fruit trees to show a profit. It kills San Jose Scale, Fire Blight, Scab, Mildew and other Parasites and Fungi that destroy the fruit buds.

It does away with all guess-work—saves the trouble of home-boiling. It is ready for use after mixing with water—has no sediment—sprays easily—and does not clog the nozzle.

Spring Spraying Means Fall Profits

One spraying before the leaf buds burst, and another just before the blossoms come out—with perhaps a third when most of the blossoms have fallen—will mean hundreds of dollars profit when the fruit is ready for packilng.

“VANCO” LIME SULPHUR SOLUTION is a true chemical solution of uniform strength and efficiency. It is prepared by scientific men in a scientific way—with the specific gravity on every barrel.

**Vanco Lime Sulphur Solution**

**is Strong, Uniform, Clear and Efficient**

**‘Vanco’ Arsenate of Lead**

**Will Destroy Every Kind of Leaf-Eating Insect**

Every kind—mind you. Codling Moth, Potato Bugs, Cabbage Worms, Asparagus Beetles, Canker Worms—anything that eats the leaves or destroys fruit.

**Fertilizers**

FERTILIZERS—We are the only house in Canada selling only the straight Fertilizing Chemicals—Nitrate of Soda, Muriate of Potash, Sulphate of Potash and Acid Phosphate.

**YOU CAN SAVE FREIGHT by buying your Fertilizers and Spray Chemicals together, and have all come in one shipment**

THE “VANCO” BOOK will tell you a lot of things about Sprays and how to use them, that you will find helpful all summer. Write for a free copy—glad to send you one.

**CHEMICAL LABORATORIES, LTD.**

**148-158 Van Horne Street, Toronto**



Any little girl can do the churning with

# MAXWELL'S

**Favorite Churn.**

It makes the smoothest, richest, most delicious butter you ever tasted.

The roller bearings—and hand and foot levers—make churning an easy task, even for a child.

All sizes from 1/2 to 30 gallons.

Write for catalogue if your dealer does not handle this churn and Maxwell's "Champion" Washer.

**David Maxwell & Sons, St. Mary's, Ont.**



93

## POULTRY DEPT.

### Hen vs. Brooder

J. H. Callander, Peterboro, Ont.

Even the poultry breeder, who is paying more particular attention to the utility end of the business, wants to get some chicks out as early as possible, either for broilers, or, perhaps, to get some well-developed stock in time for the fall fairs. Not every one feels like affording an incubator, and, perhaps, many would not be successful in using one. However, there's the hen, always available, and never so reliable as in cold weather before the danger of mites makes her steadfastness a matter of conjecture. A healthy flock, properly fed, will be laying good hatchable eggs in January and February, and naturally there will be an occasional broody biddy. A plan that the writer tried one season with remarkable success was to make hens do the incubating in the cold months, and when spring came the season's hatching was all done, chicks growing finely, and hens at their proper business of laying again.

A quiet hatching room, as comfortable as possible, where the hens must stay, and others cannot get in to bother them, is the first necessity. Nests are best arranged around the floor and not opening towards the light. They should have several inches of earth as a foundation, to hold the heat, and any nesting material that's handy. Give each hen only as many eggs as she can easily cover, as nine chicks from nine eggs is better than five or six from twelve or thirteen eggs, and that is a likely result in either case, because of the danger of the outer eggs in the larger nestful getting alternately chilled, and warmed as the hen moves them around. Set as many hens at one time as you can beg, borrow or buy so as to have the chicks near the same age, and the hens will willingly take a second lot of eggs without doing her any harm at this season. My plan was to have a one hundred chick brooder ready to take the chicks as fast as the hens hatched them, and reset the hens for a second period of incubation.

Those chicks thrived astonishingly, and there was not one per cent loss. Born strong, they grew stronger, and, later on, no matter how many broody hens I had, there was never any temptation to give them eggs, because I had enough chicks to tax the room I had to its utmost capacity, and that was a very profitable year.

### Items of Interest

The Wentworth Fruit Growers' Association held their annual meeting on January 11th, 1912. A number of new members were added to the list of last season, which numbered thirty-six, and others signified their intention of joining. This will probably double the present membership by April first next. This association last season handled four thousand six hundred barrels and sold them at three dollars and ten cents a barrel F.O.B. cars. The entire season was very satisfactory. The new Executive will be composed of Messrs. Wm. Drummond, H. Drummond, Kenneth Cummings, Roland Cummings, James McKay, Tom Connell and Charles Newell.

There may be an advertisement in this issue of THE CANADIAN HORTICULTURIST that is as important to you as though the announcement came in the form of a personal telegram. Read the "ads."

# THE STRATFORD EXTENSION LADDER

It is the safest and best on the market. Fitted with automatic hooks that lock at every rung and unlock between the rungs

It is

## LIGHT, STRONG EASILY OPERATED AND DURABLE

IF Interested write for Catalogue F

THE **Stratford Mfg. Co.** Limited

**STRATFORD, CANADA**

Makers of Ladders for every conceivable purpose



## A Science

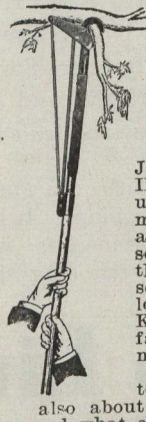
Tree Trimming is a science and the man intelligent enough to do this work properly is too good a man to have his arms pulled off, his back broken or his head smashed by a fall when all this can be avoided. HOW? Just by using the KANSAS PRUNING KNIFE, improved, the most up-to-date knife made. It is automatic, no levers to work by hand, any length of handle can be used so all the work can be done from the ground, where the operator can see what to take out and what to leave. The KANSAS PRUNING KNIFE does heavy work and does it fast. It is made of the very finest material and made to last.

May we send you our circulars telling more about this knife and also about our HAPPY THOUGHT KNIFE and what owners say about them.

Made by the Taylor-Forbes Co., Guelph, Ont.

**INTERNATIONAL TOOL COMPANY**

49-51 Porter Street, Detroit, Mich. - an



Made by the Taylor-Forbes Co., Guelph, Ont. INTERNATIONAL TOOL COMPANY 49-51 Porter Street, Detroit, Mich. - an

## Fruitland Nurseries

are offering choice Fruit and Ornamental Trees, etc. at 5 per cent. off for cash

**FERTILIZERS**

Orders also taken for Stock Yards and Toronto Manure. Send for Price List

**G. M. HILL - - Fruitland, Ont.**

## 125 Egg Incubator and Brooder BOTH FOR \$10

If ordered together.

Freight paid east of Rockies. Hot water, copper tanks, double walls, double glass doors. Free catalog describes them. Send for it today.

**Wiaconsin Incubator Co., Racine, Wis.**



## \$1.90 ALBERTA INCUBATOR


METAL COVERED SIZE 125 EGG

Raise more Poultry—it pays well by using our improved, time-tested, safe hatcher which insures big results. Save half by buying direct from manufacturer, no middle profit. None better at any price. The one high-grade hatcher built of many years' experience by a Canadian and successfully operated and specially adapted for Canadian climate owing to its heavy construction. Entire lumber walls covered with felt, asbestos and heavy galvanized iron. Holds even temperature. Heavy copper hot-water tank, easy to heat, self-regulator, simple to operate. Safety lamp requiring little oil, high nursery, metal legs, tested thermometer, complete for use. You risk nothing under our Guarantee and two hatch free trial.

Before you buy get our free catalog on incubators, brooders poultry and supplies. 250 Egg Size \$15.95.

**ALBERTA INCUBATOR CO., Box 861 MANKATO, MINN.**

We Ship Quick from Warehouse Duty Paid.



# Go South Sir!

## Farm Land \$10 an acre

up can be purchased in the Southeast along the Southern Railway, Mobile & Ohio R.R. Ga. So. & Fla. Ry. supporting good churches, schools, stores and improved highways.

**LIVE STOCK, POULTRY AND DAIRYING** business pays big, and is conducted at smaller cost than in other sections of the country. Luxuriant pasturage and green fields the whole year round make this possible.

**ALFALFA GROWS** abundantly in nearly all parts of the Southeast. Many acres produce 4 to 6 tons, selling locally from \$14 per ton up.

**APPLES, FRUIT, TRUCK AND COTTON** are other big paying crops. Apple orchards net \$100 to \$500 an acre, and truck gardening \$200 up.

**CLIMATE UNSURPASSED**—Every day in the year one can work in his fields. These long seasons allow raising two and three crops from the same soil each year.

Subscription to "Southern Field" and booklets on States of Va., N. & S. Car., Ga., Fla., Ala., Miss., Tenn. and Ky. sent FREE.

**M. V. RICHARDS, L. and I. Agent, Southern Railway, Room 13, Washington, D.C.**

# and Grow Rich

## FLOWER POTTS

Hanging Baskets, Ferns Pans, Etc.

We have a large stock of all sizes on hand, and can ship orders without delay.

**Order Now Before the Rush**

Our pots are smooth and well burnt. We have our reputation to keep up.

Send for Catalogue & Price List

**The Foster Pottery Company, Ltd.**

Main St., West Hamilton





**A Leading Nurseryman**

A nurseryman who has been coming to the front in Canada rapidly during the past few years is Mr. Charles H. K. Baillie, who, on the first of the



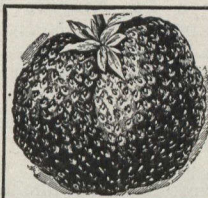
Charles H. K. Baillie

year, severed his connection with the firm of E. D. Smith to take charge of the nurseries and offices of the Canadian Nursery Co. at Montreal, as their general manager. Mr. Baillie entered into the nursery business in 1894. It was his father's wish to give him a thorough practical training, and in that year he was apprenticed to the Royal Nurseries at Newton and Upton, England. His father (the late Edmund J. Baillie, F.L.S) was chairman and managing director of these nurseries up to the time of his death, and Mr. Baillie's eldest brother, Edmund Baillie, is still associated with these nurseries, and has charge of their branch office in Ireland. These nurseries are now run under the name of Dicksons, Limited, and they have still a world-wide reputation for their roses and ornamental stock. The main nurseries are situated a few miles outside the historic old town of Chester, and the grounds are still counted as the largest of their kind in Great Britain. They cover about five hundred acres. The business was conducted on departmental lines, and Mr. Baillie's experience there included a programme of work set down by his father, which covered over five years in

the ornamental and forest trees, fruit trees, herbaceous and alpine plants, and the landscape gardening departments. Later he was taken into the office, where he remained until shortly after the death of his father. He then left the nursery business for a short period, and during part of this time studied some branches of entomology at the Grosvenor Museum and decoration and design as applied to the laying out of gardens at the School of Science and Art at Chester. Nine years ago he came to Canada and was engaged by Mr. E. D. Smith, of Winona, as an assistant in his nursery department, and a few years later was given entire charge of this department.

The Canadian Nursery, with which Mr. Baillie is now associated, has a most up-to-date nursery on the Island of Montreal at Pointe Claire, and the location in which their trees are grown leaves little doubt in one's mind as to their hardiness. In 1904 Mr. Baillie became known to the readers of THE CANADIAN HORTICULTURIST by a series of articles that he contributed to this magazine.

The opportunity you are looking for to make or to save money may be embodied in one of the advertisements in this number of THE CANADIAN HORTICULTURIST.



**Fall Bearing Strawberries**

Wonderful Fall Bearing Strawberries are a great success. Bear fruit fall and spring, three crops in two years. Have yielded as high as 10,000 qts. to acre in Aug., Sept. and Oct. of first year, with us. We cannot get enough fruit to supply demand at 25c per qt. wholesale. I know of nothing in the fruit line quite so profitable. We are also headquarters for Plum Farmer, Idaho and Royal Purple Raspberries, Early Ozark Strawberry, Watt Blackberry, Hastings Potato. Catalogue of all kinds of Berry Plants free. Address **L. J. FARMER, Box 296, Pulaski, N. Y.**



**SANITARY, ARTISTIC and FIREPROOF is the verdict of the critic concerning**

**Metallic Ceilings and Walls**

and they are moderately priced and so easily laid. A splendid range of new and standard designs to select from.  
*"Metallic Ceilings and Walls are a great protection against fire—also do away with the dust and falling bits of plaster."*  
*—The Philosopher of Metal Town.*

Write us for artistic booklet telling all about them, Phone Park. 800.

MANUFACTURERS



1712

**"The High Pressure Line" Power Sprayers**

Lightest Weight 3 h.p. Sprayer Made. (Less than 1000 lbs.)

**\$1000 Car Load Prize**

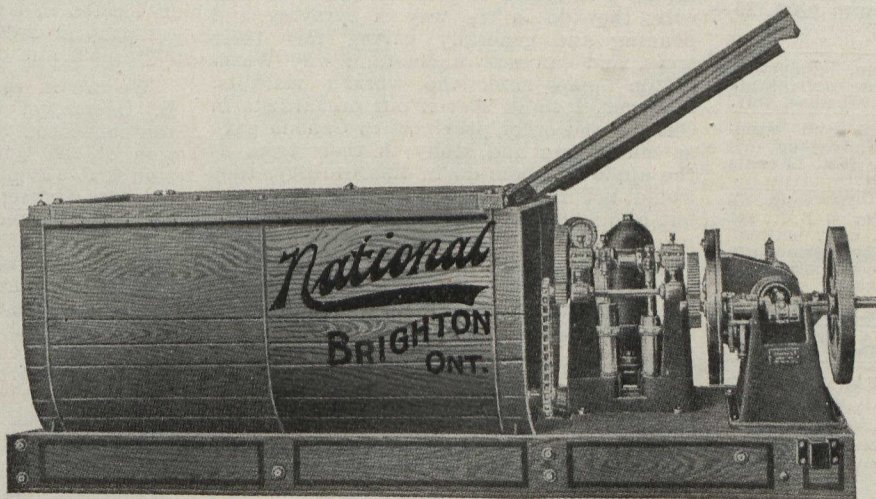
of 650 boxes, at National Fruit Show, were sprayed with the

**HIGH PRESSURE POWER SPRAYER**

200 lbs. to 300 lbs. constantly all day long does the work.

**OUR BECK PUMP**

has been conceded the HIGHEST AWARD by The American Society of Agricultural Engineers for efficiency and durability.



**We Have An Engine**

that has given for several years the most perfect results in a gasoline engine, one that is easiest to start and always keeps going. Besides the light weight (less than 300 lbs.) and economy of fuel, it is easily removed from sprayer and can be used for work as power plant for light machinery by taking off four nuts only.

All equipped with STEEL FRAME instead of wood (as cut shows). All Steel Truck if wanted.

With the high grade construction throughout our outfit, it will last for years, when ordinary outfits play out after first season at most.

OUR HIGH PRESSURE HOSE has a guarantee of 600 pounds pressure while at work spraying.

Send for Catalogue and Prices—as low as the ordinary kind sell at.

**NATIONAL MACHINE CO., Brighton, Ont.**



# Half a Million

Canadian Grown

## Strawberry Plants

For Sale

Pure, vigorous stock of the popular Williams and 30 other choicest kinds.

Here on the north shore of Lake Erie the drought of last summer was not felt. Consequently the plants we offer are of best quality.

Also the famous Plum Farmer, and Cumberland and other leading Black Caps.

SEND FOR CATALOG.

LAKE VIEW FRUIT FARM,

H. L. McConnell,

Grovesend, Ont.



### This Book Grows Dollars

It's an honest guide to better profits through the use of

## McDONALD'S SEEDS

# FREE

Send for your copy to-day to Dept.



Kenneth McDonald & Sons, Ltd.

Ottawa - - Ontario

Absolutely the most vigorous and reliable on the market. Also complete stock of farm and garden necessities.

## FOR SALE AND WANTED

Advertisements in this department inserted at rate of two cents a word for each insertion, each figure, sign or single letter to count as one word, minimum cost, 25 cents, strictly cash in advance.

**GARDENER WANTED**—Single man, competent to run small greenhouse and grow early plants and vegetables.—J. B. Potts, St. Thomas, Ont.

**NORWAY SPRUCE FOR HEDGES** and wind-breaks, from four dollars per hundred up. All sizes in stock. Scotch Pine four feet, 12 cents up.—Campbell Bros., Simcoe, Ont.

**MAN (MARRIED PREFERRED)**—To work 35 acres apple orchard in Grand Forks, B.C., set out in 1912, and raise potatoes, etc., between trees. Give experience, and if ever done any irrigation. Good wages and commission on crop. Permanent to right man. Address F. S. B., Canadian Horticulturist.

## FARMS FOR SALE

**NIAGARA DISTRICT FRUIT FARMS.**—Before buying it will pay you to consult me. I make a specialty of fruit and grain farms.—Melvin Gayman, St. Catharines.

**100 ACRES ADJOINING LIVE TOWN** with Collegiate Institute, good shipping facilities, sixty-five acres apple orchard in splendid condition; soil well adapted to fruit growing; large house with furnace, bath and electric light, two good barns. Would subdivide into two parts if desired. Price, twenty thousand.—F. J. Watson, 1275 Queen W., Toronto.

**SALMON ARM, Shuswap Lake, B.C.,** has the finest fruit and dairy land in B.C. No irrigation necessary; mild winters, moderate summers, no blizzards, or high winds; delightful climate; enormous yields of fruit, vegetables and hay; good fishing; fine boating amidst the most beautiful scenery, and the Salmon Arm fruit has realized 25 cents per box more than other fruit in B.C. Prices of land moderate, and terms to suit. Apply to F. C. Haydock, Salmon Arm, B.C.

## Experimental Work with Fruit

For several years the Ontario Agricultural and Experimental Union has been neglecting experimental work along horticultural lines. A new committee has now been appointed to look after the horticultural work. In his report at the last annual meeting, held at the Ontario Agricultural College, January 9-10, Prof. Harcourt, chairman of the committee, stated that while they had no results to report this year a series of experiments had been decided upon to be worked out through a series of years starting with 1912. These experiments include trials with fertilizers on peach orchards in the Niagara Peninsula and with apple orchards in Norfolk and Durham counties to decide the efficiency of various kinds of cover crops and fertilizers on young orchards.

Seven acres of apple orchard will be planted on the Government Forestry farm in Norfolk county. This orchard will be divided into two sections. On one section only leguminous plants will be used for cover crops and on the other section cereals. Fertilizer plots will cross divide these two. Experiments with fertilizers on vegetables are to be conducted in the vegetable garden at the Ontario Agricultural College, consisting of six or seven acres. In this garden the rows all run one way. Nine fertilizer plots will cross these rows at right angles.

It will be some time before any definite results can be announced as a result of the experiments conducted by this branch of the Experimental Union.

## Why the West Succeeds

Mr. W. H. Bunting, of St. Catharines, Ont., the special representative of the Dominion Department of Agriculture, while visiting fruit growing conditions in the Pacific coast states recently, was a guest of the trustees of the Spokane Chamber of Commerce and the National Apple Show during his stay of four days in Spokane.

"I have visited the best orchards in America," he said, "but never have I seen cleaner or better apples anywhere. I have talked with scores of growers and have seen what they do in the way of spraying and pruning and generally caring for their trees, and can now understand why Washington apples enter the world's markets. However, I think that if our orchardists in Ontario and other provinces in Canada gave as much time and study to their trees as the apple ranchers do in this country, they would not only rejuvenate their orchards, but also grow better fruit and receive more money from their products."

Mr. Bunting visited the Spokane valley, where he saw every known method of irrigation practiced in America.

## Shipments to China

The Canadian commercial agent in Shanghai, China, reports that last November a small shipment of Baldwin apples was sent to a well known firm in Shanghai from British Columbia, Canada. It did not arrive in a very satisfactory condition. In a number of the cases, some twenty apples were bad in each case. The apples did not seem able to stand the voyage from Vancouver to Shanghai. Those that did arrive in good condition were nice show ap-

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ples, but they do not keep any length of time.

Some three hundred boxes of November Pippins that arrived in Shanghai from a well-known British Columbian firm on November 13th, from Vancouver, arrived in excellent condition and were a credit to the Canadian firm who sent them. They sold readily and were considered much better than the United States apples.

Last fall five kinds of Canadian apples were sent to Shanghai—Pippins, Spitzbergs, Ben Davis, Northern Spy and Baldwins. Out of this collection the Pippins more than held their own and were easily chosen as the best apple for the trade.

## Items of Interest

The following is a list of the delegates from the Ontario Fruit-Growers' Association to the Dominion Fruit Conference to be held at Ottawa, Feb. 14, 15 and 16: Harold Jones, Maitland; W. H. Bunting, St. Catharines; R. W. Grierson, Oshawa; Walter Dempsey, Trenton; J. E. Johnson, Simcoe; E. D. Smith, Winona and D. Johnson, Forest.

An effort is being made in the Niagara district to induce the Ontario and Dominion Governments to establish a pre-cooling system in the vicinity of Winona. This is the system which has proved so successful in California and in other sections of the States. By it the use of ice in cold storage cars, which often results in the deterioration of the fruit in transit, is done away with. It is reported that the fruit growers are ready to contribute \$25,000 towards the construction of a station if the two governments between them will put up \$50,000.

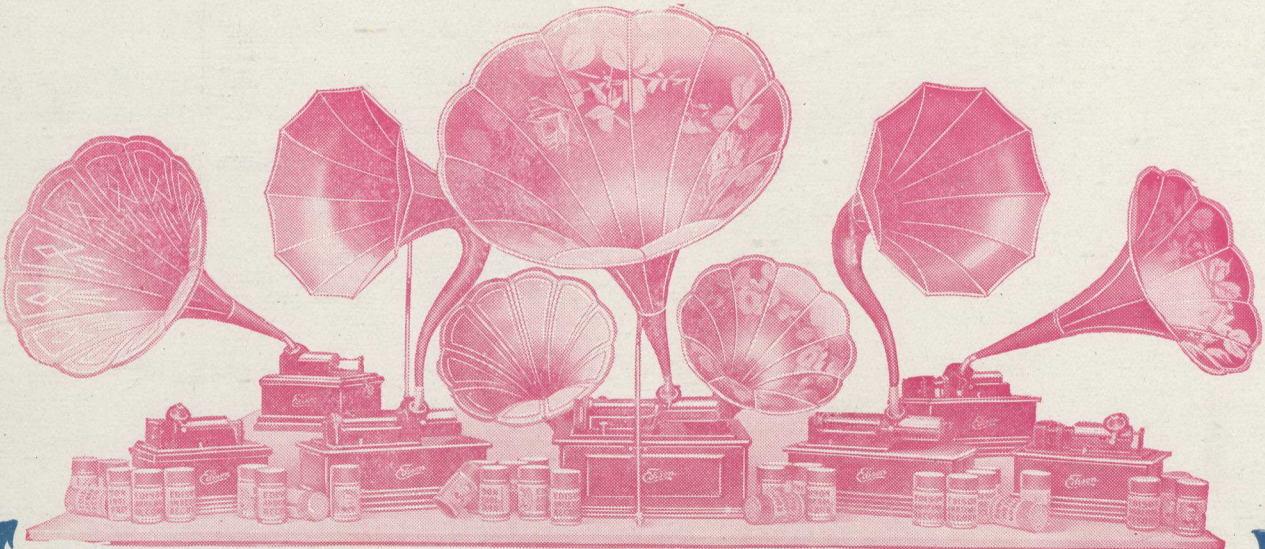
The British Canadian Cannery, Limited, is the name of a new canning company that has been organized with an authorized capital of \$1,000,000 and a bond issue of \$1,000,000. The company is reported to have purchased five sites for the erection of five modern canning factories, and that it expects to pack about five hundred thousand cases of assorted canned goods the first year. The head office of the company will be located in Hamilton. It is said that the company intends to manufacture only a very high class line of fruit and vegetables.

We are in receipt of a letter from Prof. L. Caesar, of Guelph, who states that in the condensed report of the annual convention of the Quebec Fruit-Growers Association that was published in the January issue of THE CANADIAN HORTICULTURIST he was not quite correctly reported in his description of the new formula for the lime-sulphur wash or the methods of dilution to use. Readers of THE CANADIAN HORTICULTURIST are advised that full directions for the making and the applying of the wash will be found in a new spray calendar which will be issued shortly by the Department of Agriculture, Toronto, and also in a new bulletin in the Lime-sulphur Wash which is now on the press.

Farmers and fruit growers in the vicinity of Welland, Ontario, are applying to the Ontario Government for incorporation under the Ontario Companies Act. They seek to co-operate in the purchasing of supplies and the marketing of their products.

Are you thinking of getting a spraying machine this spring? Now is the time to do it. Send for the catalogues of the different machines advertised in this number, compare the merits of the different styles and makes, and then place your order early before the rush season commences.





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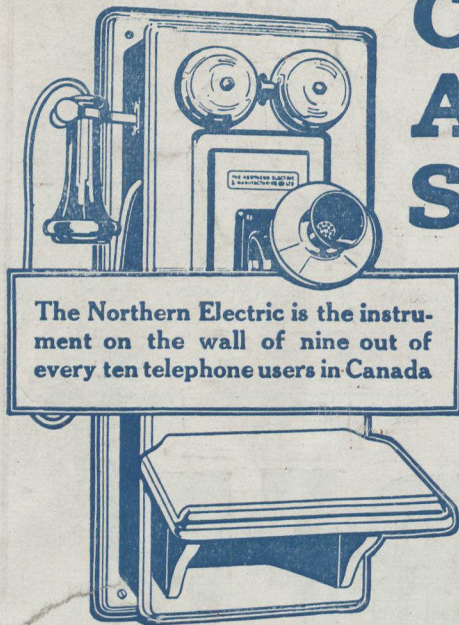
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