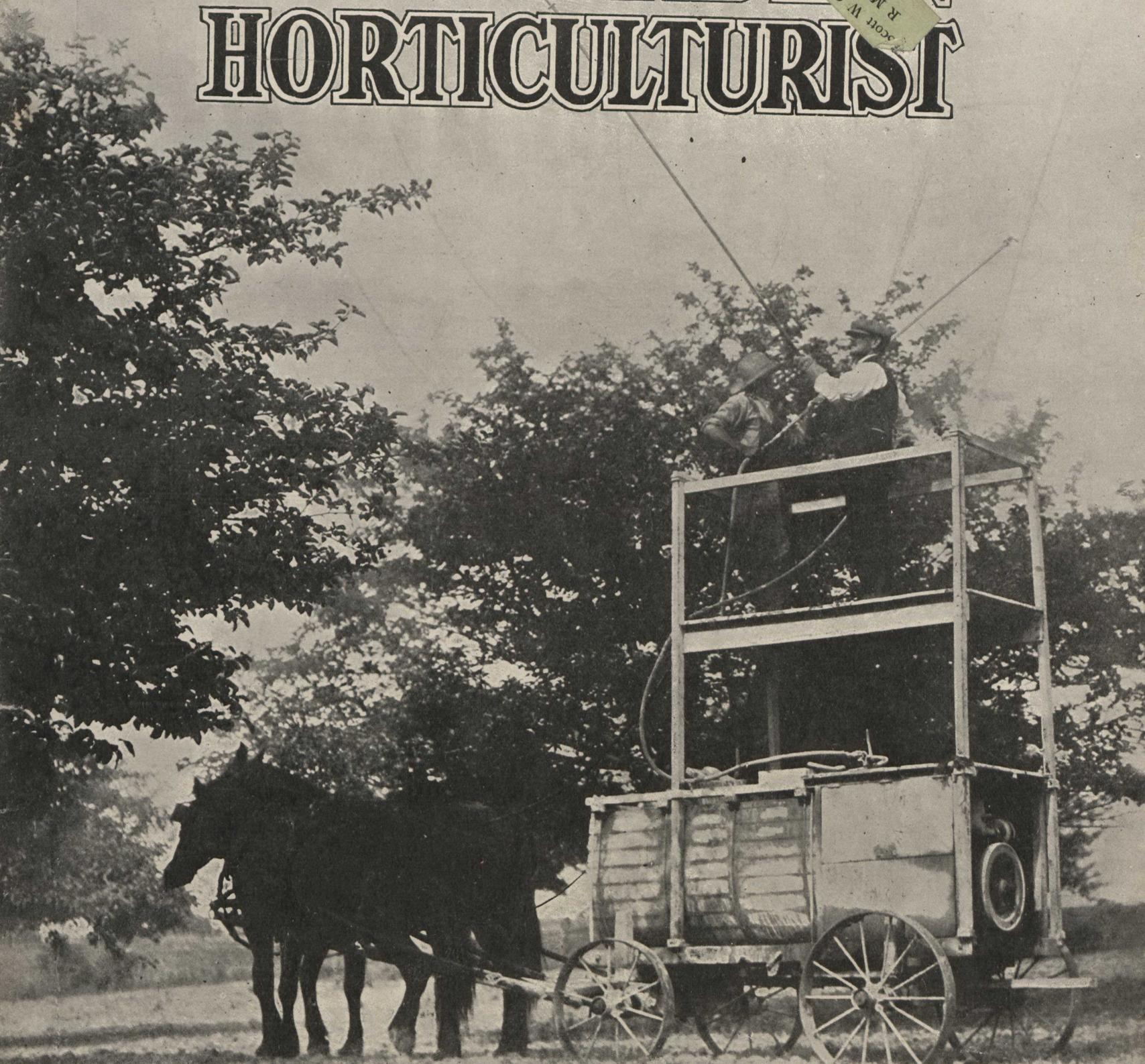


D-243-2-4

Third Annual Spraying Number

THE CANADIAN HORTICULTURIST

SCOTT W. G.
R. M. D. No. 3
PERTH ONT.
MAR 14



FEBRUARY 1914

Volume 37 - Number 2

The Horticultural Publishing Company Limited, Peterboro, Ontario



An Ideal Conservatory Treatment

IN calling this conservatory "ideal," we have particularly in mind three things:

First—there's its attractiveness—its charming simplicity.

Second—there's the idea itself—the delightful placing of the conservatory on the sunny end of breakfast room.

Imagine the keen pleasure it must be to sip one's coffee and crunch crackley toast on a winter's morning midst a flood of sunshine and surrounded by cheering blooms.

Anyone who cannot enthuse over such ideal breakfasting conditions is indeed stolid.

The **third reason** for this conservatory being "ideal" is the construction.

It's the U-Bar.

No other construction is constructed like it.

U-BAR GREENHOUSES

PIERSON U-BAR CO

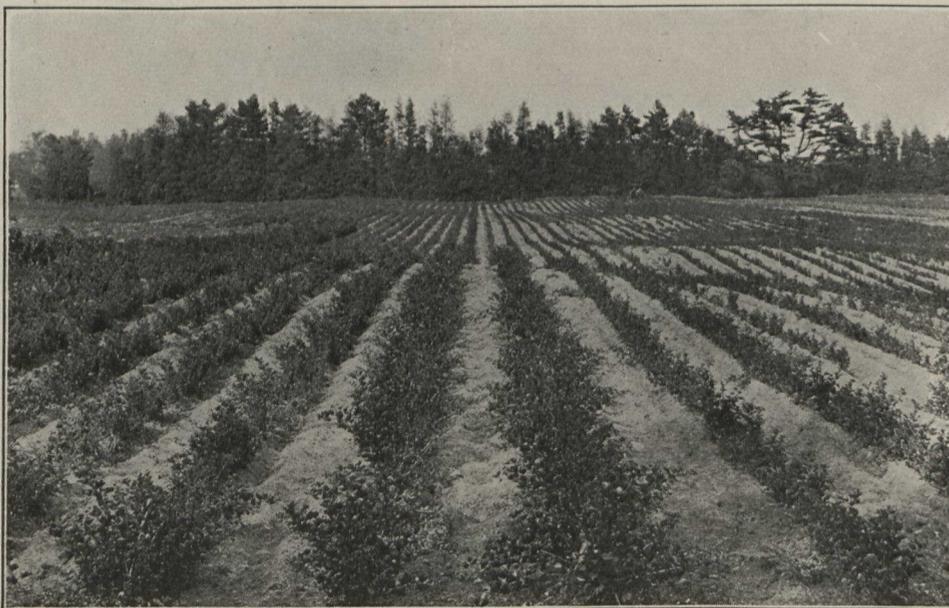
ONE MADISON AVE. NEW YORK
CANADIAN OFFICE, 10 PHILLIPS PLACE, MONTREAL

Being airy and free from heavy framework, it is particularly adaptable for conservatory treatments.

It may cost a bit more than other constructions—but it's worth it. In comparing it with other constructions you will readily recognize the worth of the difference.

Our catalog both explains and shows why the U-Bar is the ideal construction for either greenhouses or conservatories. Send for it.

SMALL FRUITS PAY BIG PROFITS



A Block of our Two Year Transplanted Berry Plants. Note the Strong Growth

For SPRING PLANTING
— we offer —

THE KING

A NEW Early RED Raspberry
of Great Merit.

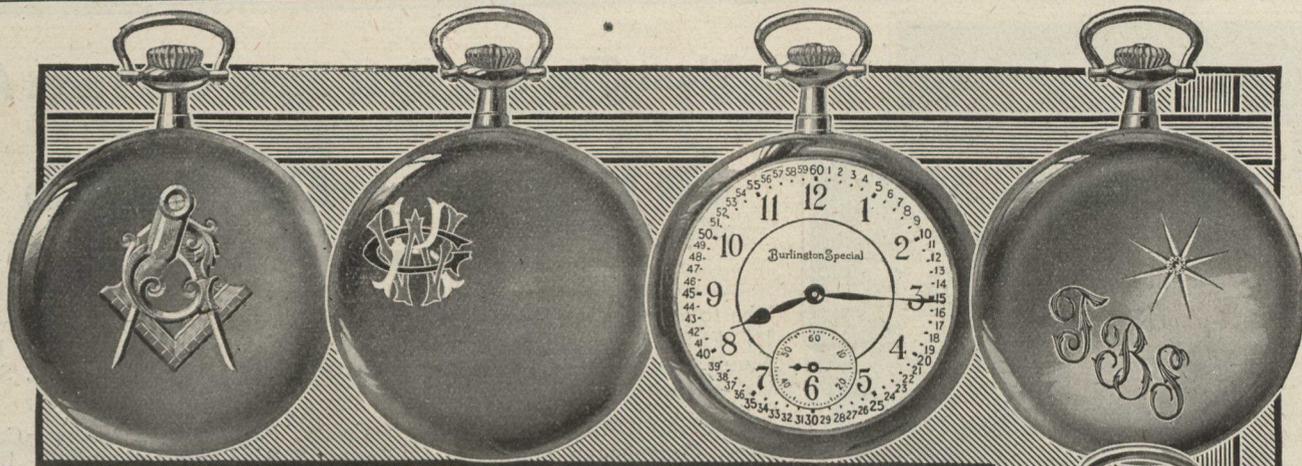
Special Prices to Growers
Setting Out Berry Patches

Write for Description and Prices
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PROFITS IN SMALL FRUITS

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Just Out! Superb New Ideas In Watch Cases!

The latest products of the craft. Exquisitely beautiful. Your own initials handsomely engraved on this superb gold strata case. Your choice of *Inlay Enamel Monograms, Block and Ribbon Monograms, Diamond Set, Lodge, French Art, Dragon Designs.* Open face or hunting cases, ladies' or gentlemen's 12 and 16 sizes. A watch to suit every taste. And—DIRECT—at the rock-bottom price.

The masterpiece of watch manufacture—19 jewels—adjusted to the second—adjusted to positions—adjusted to temperatures—adjusted to isochronism.

Special

A Remarkable Special Offer

For reasons explained in our letter to you (special trade reasons) you can now get *direct* the Superb Burlington Watch at the rock-bottom price—the same price that **even the wholesale jeweler must pay**—and in order to encourage everybody to secure this watch at once, purchasers may pay this rock-bottom price *direct* from us either for cash or \$2.50 a month on this great special offer! We send the watch on approval, *prepaid*.

Sent—No Money Down—Prepaid. Remember, the highest grade watch *direct* (for special reasons, now) at the same price that even the wholesale jeweler must pay! You risk absolutely nothing—you pay nothing—not one cent—unless you want this *exceptional* offer after seeing and thoroughly inspecting the watch.

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Learn the inside facts about watch prices and the many superior points of the Burlington over double-priced products. Also illustrations of all the newest up-to-date ideas in exquisite watches, and our letter to you sending the rock-bottom price *direct*. Just send the coupon, or a letter, or a postal.

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Exquisite New Designs

in watch cases. Are winning favor everywhere. And wherever the great Burlington Special has been introduced it is noted for its wonderful time keeping qualities. Ask any railroad man what he thinks of the Burlington Special. Ranchmen, engineers and men in all walks of life whose duties require them to put a watch to the hardest test prefer the Burlington because they know they can depend upon it.

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Every fighting vessel has the Burlington Watch aboard. The S. S. Connecticut alone has over 200 Burlingtons aboard; the Battleship Georgia has 159 Burlingtons; the new dreadnought Wyoming already has over 100 Watches. Many other battleships, such as the New Hampshire, North Carolina, Minnesota, have over 100 Burlingtons aboard.

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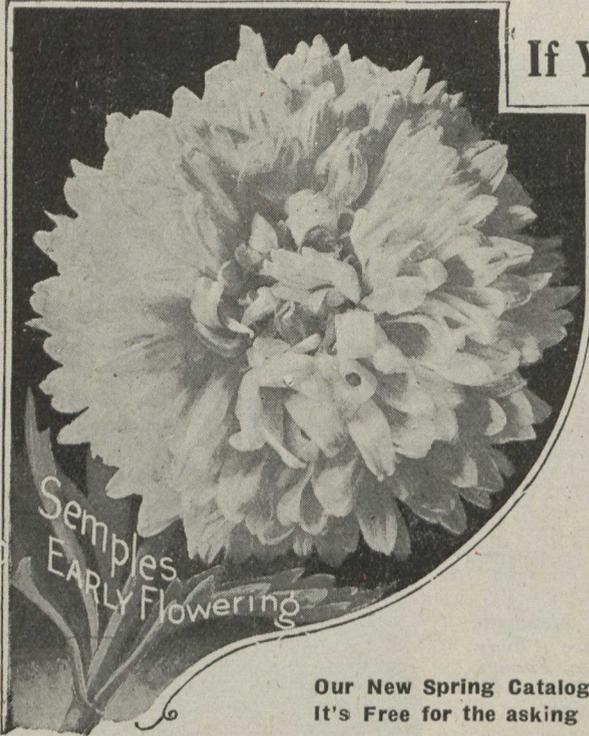
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Please send me (without obligations, postpaid,) your free book on watches, showing the new designs, including monograms, with full explanation of your cash, or \$2.50 a month offer on the Burlington Watch.

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The following are a few varieties we would suggest your planting now:
IN FLOWER SEEDS—Asters, Alyssum, Candytuft, Asparagus, Pl. Nanus, Centaurea, Cyclamen, Mignonette, Lobelia, Pansy, Petunia, Salvia, Verbenas, and others.

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If you are a Market Gardener or Florist, and have not already received our Special Price List, **Write for one to-day.** We shall be glad to mail you a copy.

All Seeds we send out are thoroughly tested for Purity and Germination, and we know they are right.

Our New Spring Catalogue is now ready. Send us a postcard for a copy. It's Free for the asking

STEELE, BRIGGS SEED CO. LIMITED

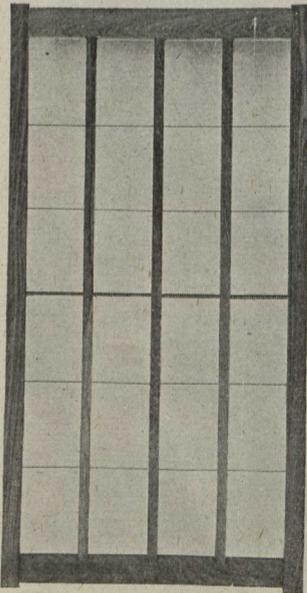
"CANADA'S GREATEST SEED HOUSE"

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RED CYPRESS HOT BED SASH



Size 3 ft. 2 in. by 6 ft. for 4 rows of 8 in. butted glass.

Price, \$1.20 in Clear Cypress.

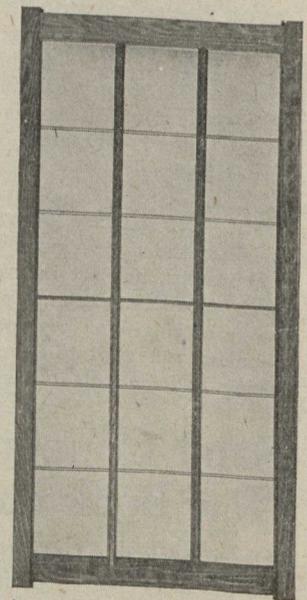
What a pleasure to have home-grown vegetables and flowers weeks ahead of the regular season. A hot bed fitted with our superior Hot Bed Sash will ensure this.

DURABLE

Our Hot Bed Sash are made of the very best material, put together to withstand the most severe usage, and are guaranteed to last for years.

All the joints are tight fitting, blind mortised and white leaded before being put together. A half-inch oak rod runs through the bars and into the stiles. A metal pin is driven into each of the bars and stiles through the rod. In this way each bar is held in the proper place and prevented from sagging.

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A PROSPEROUS NEW YEAR TO ALL

Kelway's Wholesale Seed Catalogue for 1914 has now been posted to all Seedsmen and Nurserymen known to us. Will other members of the Canadian Seed and Nursery Trade, or those who wish to receive more than one copy, please let us hear from them.

In Forward Orders for 1914 season we have broken the record for 1913. Help us to make another record FOR SPRING TRADE. It is in your interest to do so.

Orders from our net price, "real price" Wholesale Seed Catalogue. Hardly ever "sold out"; the same low Catalogue prices practically right into the Summer, and quick despatch, with Invoice.

Not a new firm, but with 63 years' world-wide reputation, and able to cope with all your requirements in a straightforward manner.

Kelway's reliable Seeds at Kelway's reasonable prices are in a class to themselves. Our only "combination" is Reliable quality with Reasonable prices.

All our customers, we hope and believe, will experience A PROSPEROUS NEW YEAR.

KELWAY & SON

GROWERS AND SEED MERCHANTS TO THE
WHOLESALE AND RETAIL SEED TRADE

WHOLESALE
(SEEDS) SOLELY

LANGPORT, SOMERSET, ENGLAND

The Articles in This Paper Tell You All About Spraying!

All these writers are authorities on the subject. It is to be expected that their opinions will have weight with you and cause you to give serious consideration to the subject of spraying.

Well, then, the one most important point to you, once you are convinced of the benefits of spraying, is—what machine to get. There are ample reasons why you should

Buy a SPRAMOTOR

First, it has won over a hundred First Awards and Gold Medals all over the country, also in Europe. Second, it took first prize at the Canadian Government Spraying Contest, competing with ten other makes for the honor. Third, it has a successful record of over twenty years. We make SPRAMOTORS and nothing else. No side issue engages our attention for a moment.

We make an efficient hand outfit for as low as \$6, and power machines up to \$350. In the Spramotor line, there is a machine to fit every man's needs, because they are made in a bigger range of styles and sizes than any other spraying machine in the world.

Every part used, even the smallest, is made by ourselves right in the Spramotor factory. We don't take chances on goods bought from other firms. Twenty different patents are in force covering special features on Spramotors that you cannot get in any other machine made. If you're going to spray, do it right with the guaranteed spramotor.

FREE Write us some idea of your requirements and we will send you by return mail a copy of our valuable illustrated treatise on Crop Diseases, also full particulars of a Spramotor that will do your work to best advantage, with the least possible outlay. Do it to-day!

Heard Spramotor Co. 1750 King St., London, Can.



Read this unsolicited letter from one of the best equipped agricultural colleges in America.

MACDONALD COLLEGE
St. Anne De Bellevue, P.Q., Jan. 9th, 1914.
The Spramotor Co., London, Can.

Dear Sirs,—We used one of your model O power sprayers in our 30-acre orchard last year with entire satisfaction. With two lines of hose we had no difficulty in maintaining a steady pressure with the pump running only about two-thirds of the time, each line of hose throwing as much spray as a man could handle efficiently. We could easily have carried an extra line of hose had we needed it.

I might say that this power sprayer was one of the first power sprayers ever used in this Province, and from the interest now being taken in spraying, there should be a large number of power sprayers brought in during the next few years, and I feel confident that from our experience with it, your machine will give good satisfaction to any one using it. Yours very truly,
(Signed) T. G. BUNTING,
Professor of Horticulture.

Have you received YOUR Copy?

Our 1914 Seed Catalogue is just off the press.

The handsomest and most complete seed catalogue in the Dominion.

Just brimful of practical information.

D & F Seed & Catalogue

consists of over a hundred pages. Printed in a clear, legible type and illustrated with over 150 beautiful photographic reproductions.

Contains nothing but the truth about D. & F. High-Grade Seeds. No exaggeration. No extravagant claims.

One exhibitor at the Montreal Horticultural Exhibition, September, 1913, received 58 FIRST Prizes on products grown from D. & F. High-Grade Seeds.

This PROVES that D. & F. Seeds ARE High-Grade.

Whether or not you have the 1913 copy of this remarkable catalogue, don't fail to get the 1914 edition.

Send a post-card for your copy to-day—NOW.

DUPUY & FERGUSON

38 JACQUES-CARTIER SQ. - MONTREAL



Apple Shippers

Read this before disposing of your Apples



IT'S ONLY NATURAL to give your own property **THE PREFERENCE** — Blood is thicker than water.

Having no bought apples of our own, we are in a position to look after your interests. Consign your apples to us—we can take care of them for you.

Have ample storage to hold for improved market.

Dawson-Elliott Co.

32 West Market St., TORONTO

PHONE MAIN 1471

The Canadian Horticulturist
Regular Edition
Contents for February

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TO DESTROY APHIS, THRIPS, ETC.

Without Injury to Foliage
SPRAY WITH

"BLACK LEAF 40"

Sulphate of Nicotine

"Black Leaf 40" is highly recommended by experiment stations and spraying experts throughout the entire United States, also by Canadian experts.

Owing to the large dilution, neither foliage nor fruit is stained.

"Black Leaf 40" is perfectly soluble in water; no clogging of nozzles.

PACKING:

In tins containing 10 lbs. each, 2 lbs. each, and ½ lb. each.

A 10-lb. tin makes 1,500 to 2,000 gallons for Pear Thrips, with addition of 3 per cent. distillate oil emulsion; or about 1,000 gallons for Green Aphis, Pear Psylla, Hop Louse, etc., or about 800 gallons for Black Aphis and Woolly Aphis—with addition of 3 or 4 pounds of any good laundry soap to each 100 gallons of water. The smaller tins are diluted in relatively the same proportions as are the 10-lb. tins.

PRICES: In the United States, our prices for the respective sizes are as follows:

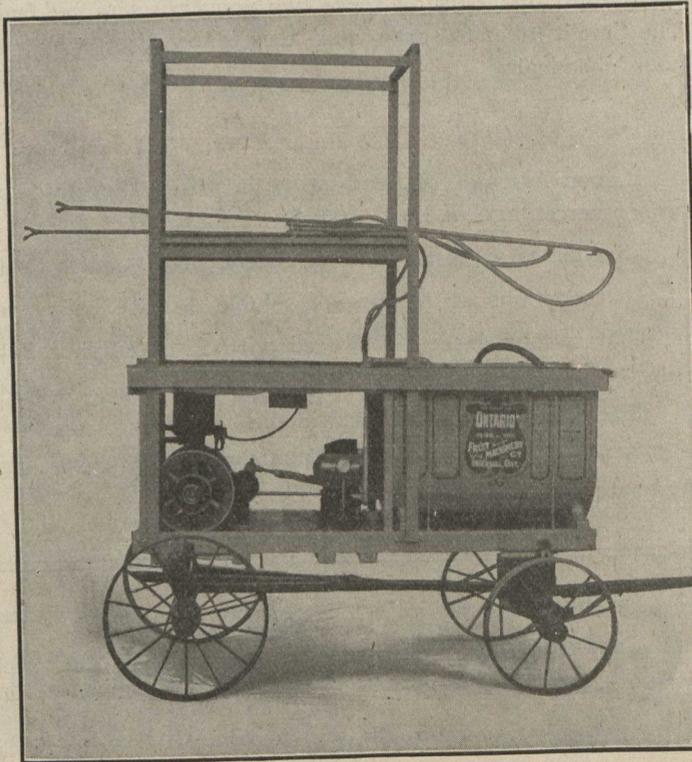
10-lb. tin, \$12.50; 2-lb. tin, \$3.00; ½-lb. tin, 85c.

IN CANADA, Dealers usually charge about 25c to 35c over the above prices because of the Canadian duty, etc. Consult your dealer about this.

THE KENTUCKY TOBACCO PRODUCT CO.

(Incorporated)

LOUISVILLE - KENTUCKY



Fruit Growers

If intending to buy a power sprayer it will pay you to investigate the merits of our successful MODEL 2 B shown in the accompanying cut. It is powerful with large capacity, and the most simple and easy to operate of any large capacity sprayer on the market.

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If intending to build a new evaporator or equip the old hand plant with power we invite your correspondence. We are experts in this line, and manufacture a complete line of up-to-

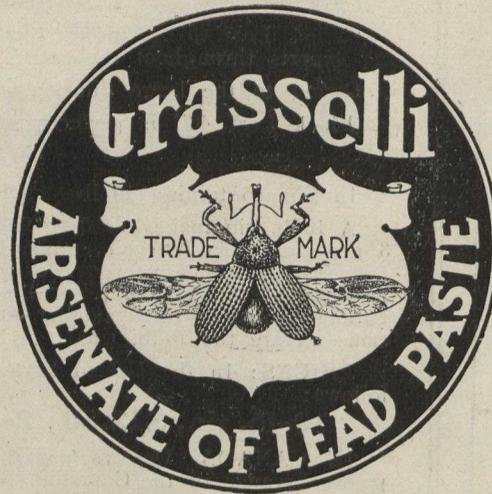
date evaporating machinery and install the entire system with our skilled millwrights. We make plans and specifications to fit all conditions.

Write for our Illustrated and Instructive Catalogue on Spraying and Evaporating

FRUIT MACHINERY CO., INGERSOLL, ONT.

SPRAY

FOR



GAIN

Among the many implements, accessories, chemicals, etc., required by the up-to-date fruit grower, two of the most important are Arsenate of Lead and Lime Sulphur Solution.

By the intelligent use of these two you expect to get fruit free from fungus and insects. The time it takes to spray your trees is the same whether you use good chemicals or poor chemicals.

What Constitutes a Good Arsenate of Lead

A good Arsenate of Lead is one in which the Arsenic Oxide is combined with the proper percentage of Lead Oxide;

That mixes as easily as is consistent with good sticking qualities;

That contains an amount of soluble Arsenic below one half of one percentum;

That can be successfully used with Lime Sulphur Solution (there are but few Leads that can be so used);

That is packed and shipped in the best of packages.

This is the kind you will receive if your order distinctly says, "Grasselli Brand" Arsenate of Lead.

The Grasselli Chemical Co., Limited

HEAD OFFICE AND WORKS:
HAMILTON, CANADA

BRANCH OFFICES AND WAREHOUSES:
TORONTO, - 347 Pape Avenue
MONTREAL, - 49 Reading Street

SPRAY

FOR



GAIN

Time is money.

Therefore, it is to your interest to buy the best Arsenate of Lead and Lime Sulphur Solution on the market.

We invite your inquiries on any point concerning spray chemicals, as well as on the subject of spraying, all of which will have our prompt and careful attention.

What Constitutes a Good Lime Sulphur Solution

The value of a Lime Sulphur Solution is in direct proportion to the percentage of Sulphur contained in it.

Grasselli's is guaranteed to contain not less than 25% Sulphur and tests at least 33° Beaume (59° Twaddell.)

Many Lime Sulphurs contain less Sulphur, even though the Beaume (or Twaddell) strength may be the same—33° (59° Twaddell.)

Satisfactory results cannot be obtained unless all shipments of Lime Sulphur Solution contain a uniform percentage of Sulphur.

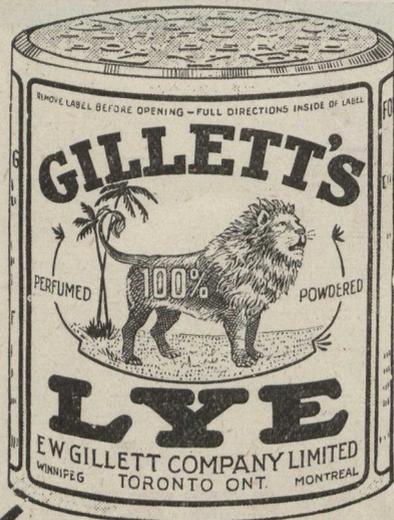
Grasselli's is all thoroughly tested by capable chemists before it leaves the Works. The grower can, therefore, use this brand with a feeling of security.

Grasselli Lime Sulphur Solution is shipped in the best barrels we can procure, on each of which is stenciled the number of gallons contained.

The Grasselli Chemical Co., Limited

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Spring Spraying

The first spray in the spring is the most important one, and the results obtained from the use of Gillett's Lye have demonstrated that there is nothing to equal it, especially when used properly before the buds begin to swell.

One can of Gillett's Lye dissolved in five gallons of water makes a proper solution for **full grown trees**, but a weaker solution, say, about one can of Gillett's Lye to about 10 gallons of water, is suitable for **young trees and vines**.

A strong solution used on trunks and limbs of the older trees will **cleanse** the bark of all moss and fungus growth and kill all insects. The earth should be well scraped back from the foot of the trees, and the trunk and limbs should be well sprayed, and in three or four days the bark will be perfectly clean and look bright. The earth around the trees should be well saturated, thus acting as a preventive and fertilizer as well. In a short time the tree will be vigorous and healthy.

If you have not received a copy of our spraying pamphlet, send name and address on postal card, and this valuable little book will be mailed you free of charge.

E. W. Gillett Company Limited

Winnipeg

TORONTO, ONT.

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Valuable Farm Property For Sale

Consisting of 165 acres of the finest residential property with $\frac{1}{4}$ mile frontage on Lake Erie, near Port Colborne. Large roomy house on natural elevation overlooking Lake. Good cellar with water in house. Large bank barn and all other necessary outbuildings consisting of carriage house, piggery, poultry house, corn cribs, ice house, also outside concrete cellar and repair shop. All first class in every particular with all modern attachments and conveniences. Two fine young orchards and all kinds of small fruit. Good clay loam fronting on the Lake with lighter soil at rear. Valuable gravel bank which is a permanent asset. Three-quarters of a mile from station with plenty of daily trains to Buffalo and Western points. Plenty of natural gas, telephone and electric railway expected soon to pass property. Price for immediate sale, \$10,000. This is a snap, act quick.

MELVIN GAYMAN, LIMITED

INVESTMENT BROKERS

14 Queen Street

St. Catharines, Ont.

The Canadian Horticulturist

Vol. XXXVII

FEBRUARY, 1914

No. 2

Why, When and How We Spray

M. B. Davis, B.S.A., Bridgetown, N.S. (Manager Sunnyside Farm Ltd.)

Spraying is probably the most scientific and complicated operation in connection with fruit growing, yet how often it is conducted in a careless manner, resulting in poor success and a waste of money.

The first spraying we make is about the first of March, the dormant spray. This application is made to combat scale insects such as the oyster shell bark louse and the San Jose Scale. It consists of lime-sulphur solution of the strength 1.03 specific gravity. This has proved an efficient check in the control of the scale insects. In old neglected orchards it should be made every year.

Our next spraying, or second application, takes place just as the leaf buds are bursting out green. This time we use lime-sulphur of the strength of 1.01 specific gravity and two pounds of lead arsenate to every forty gallons of the lime-sulphur wash. The lead not only acts as insecticide, but it also increases the fungicidal value of lime-sulphur. In fact, lime-sulphur when used alone has not proved a thoroughly reliable fungicide, whereas with lead arsenate added it has given consistently good results.

It might be well to mention at this point the importance of using the triplumbic or neutral arsenate of lead instead of the acid arsenate. A very large per cent. of the burning found in orchards where lime-sulphur has been used is caused by the acid arsenate and not by the lime-sulphur. The acid arsenate is a lead which carries a much higher per cent. of arsenic oxide than does the neutral lead. Hence the reason why many are gulled into purchasing it, for the arsenic is the product which does the poisoning. But, although the neutral lead has less arsenic per pound, it is safer to use. The acid arsenate, containing as it does a certain per cent. of free arsenic or arsenic acid, is found to give unsatisfactory results. So beware of this product when you purchase.

THIRD SPRAYING

Our third spraying and also the fourth one are probably the most important ones we make for the control of apple scab. Scab is a disease which spreads by spores, and these spores will germinate and produce the disease in from twelve to twenty-four hours under proper conditions, which are heat and moisture. A

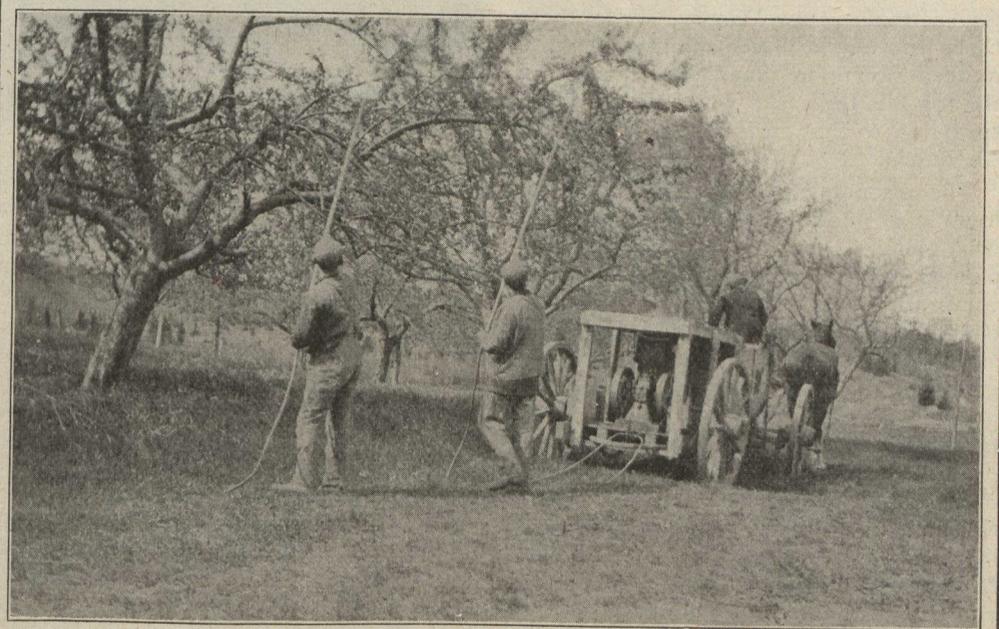
fungicide can only prevent the germination of these spores; it cannot prevent or cure the scab after it has once started. The only way, therefore, to keep fruit clean is to keep the spores from germinating on it from the time it is formed. The third spraying, applied as it is just before the buds show pink, prevents these spores from getting a foothold on the pistil or ovule. The fourth spraying, which is made just as the blossoms are falling, will keep the young apple, or fertilized ovule at the base of the pistil, free of disease. These sprayings must be made on time, and that time can only be set by the time the different varieties bloom.

Many growers find the Gravenstein an apple impossible to keep clean. Why? Because by the time the rest of their trees are in bloom this variety is out, and as they wait for the later ones before spraying, the Gravenstein is missed every time. Get after the early ones by themselves. Don't wait. Be on time and you will see better results.

It is not so much how to spray, but when to spray, that counts in the pack out in the fall. These sprayings not only assist in keeping the fruit clean, but they ensure you a good crop, for if the young apple becomes affected with

scab it withers up and falls off. A great deal of the so-called poor pollination or blossoms not setting good is nothing but scab being on the young ovules and sapping out its life. This is another reason why you should get there on the dot. Keep the young fruit and all new surface coated with spray so that no spores will get an opportunity to germinate.

The fifth spraying we make about three weeks after the fourth spraying, and this may be followed by another. Two years ago we sprayed up to August 10th, and got results from our late sprayings. The latter part of the summer was so damp that the fruit began to spot very late, and people who had spot under control during the first part of the summer became overwhelmed with it later because they neglected to spray. The apples had formed a lot of new surface for the spores to develop on, as this new surface was not coated with spray. Orchards which were sprayed well at first and which were clean in July, were dirtier in the fall than orchards neglected at first but cared for later, and it was simply on this account. Do not be afraid to keep up spraying. Let the good work go on, and if you have a damp season drive the spray pumps right along.



Up-to-date Methods as Applied in a Nova Scotia Orchard

—Photo by Eunice Buchanan.

Don't make up your mind to spray only three times, but spray just as often as you think the weather conditions demand.

If you find it impossible to spray as many as five times, omit the first two of these sprays, but never omit any of the last. In spraying, a good outfit is necessary to do the work well. If you have a large orchard, say ten acres or more, a power sprayer will pay for itself many times over. Use two leads of hose, having one man on the ground and one man in the tower. Do not be afraid of putting too much on a tree. Spray until it drips off in large drops from all over the tree. See that all parts of the foliage and fruit are drenched. In using lime-sulphur remember that more is needed than when using Bordeaux to obtain the same results. If your spray is not too strong you can drench the trees without fear of injury.

A SIMPLE DEVICE

For the purpose of ascertaining the strengths of your dilutions, you should have a hydrometer reading from one to 1.3 specific gravity. These may be obtained for seventy-five cents at any drug store. In places where the water pressure is not very great, filling a two hundred gallon tank is slow work. It may be quickened by a simple method. Elevate two one-hundred-gallon casks eight feet in the air, and connect these at the bottom with a two inch pipe. This will keep the water at the same level in both. From one of the casks lead a two-inch pipe with a shut off or gate attached. Make this long enough so that you can drive under it with the spray tank and fill up. One tap will fill a two hundred-gallon tank in two hours, while these casks run out in fifteen minutes, making quite a saving in time. The hose from the top fills the casks while we are away spraying, so that all is in readiness when we return.

The arsenate of lead is mixed as follows in a stock solution: In a one hundred-gallon cask place one hundred pounds of lead paste and mix well with water to a thin paste, add water up to one hundred gallons, making sure that all the lead paste is in suspension. One gallon of this solution then contains one pound of lead, so that this greatly facilitates the mixing and weighing of the paste when you are in a hurry some fine day. As spraying is an expensive operation, we must give attention to these little details of operation. They help to reduce the time we spend at the work and thus to increase our profits.

For our future apple markets we must look mainly to the western provinces, and to the local market in Ontario cities.

—P. W. Hodgetts.

Spraying Mixtures for Currants and Gooseberys*

L. B. Henry, B.S.A., Winona, Ont.

GROWERS of currants and gooseberries have their share of insect pests and diseases to combat. A description of some of the chief of these with methods of control may be of interest.

San Jose Scale sometimes becomes very bad on black currants. It is rather hard to stamp out entirely on account of the closeness of the canes at the base. The canes that are badly infested should be cut out and burned and

aphids and eggs are destroyed. They may also be controlled by such contact sprays as kerosene emulsion, whale oil soap, or tobacco extracts, but the spray must be applied before the leaves become badly curled.

The Imported Currant worm is a very voracious worm, which chiefly attacks gooseberries and red currants, sometimes entirely defoliating the bushes. The eggs are glued to the under side of the veins of the leaves and hatch in four or five days into a whitish worm, which changes to a greenish color as it grows. The head is black and there are many black spots on the body until the last molt, when the body becomes grass green and is about three-quarters of an inch long. They then pupate in the ground and emerge as adults in late June and produce another brood, which usually does the most damage.

They can be easily controlled by spraying thoroughly with arsenate of lead at the rate of three pounds to the barrel, as soon as their appearance is noted.

One of the worst pests of the currant and gooseberry is the Imported Currant borer. The adult is a clean-winged moth, but the worm which does the damage is a yellowish color, with a black head and numerous tubercles on the body. When the eggs hatch the young larvae bore into the cane and down the centre and spend the winter at the bottom of the burrow. Affected canes can be recognized by the dwarfed and yellow foliage, and should be removed. If the renewal system is practised in pruning the loss will not be noticeable as the old canes are the worst attacked.

The Currant Stem girdler and Four Lined Leaf bug also attack these fruits, but are not serious in Ontario.

Currant Leaf Spot attacks currants and gooseberries, and if bad will cause a premature dropping off of the leaves. The spot is dark around the edge, with a clear centre, on which are numerous black specks.

Currant Anthracnose attacks red and black currants, and may be found on gooseberries, but is worst on red currants, Fay's and Raby Castle being the varieties most seriously affected, while Prince Albert is practically free from attack. Affected leaves are more or less covered with brown spots, and when the disease becomes serious the leaves become yellow and drop.

Both of the above diseases can be controlled by spraying with lime-sulphur sp. gr. 1.009 just after the fruit has set.

Mildew is the most serious disease attacking gooseberries. English varieties



Reaching the Top Branches

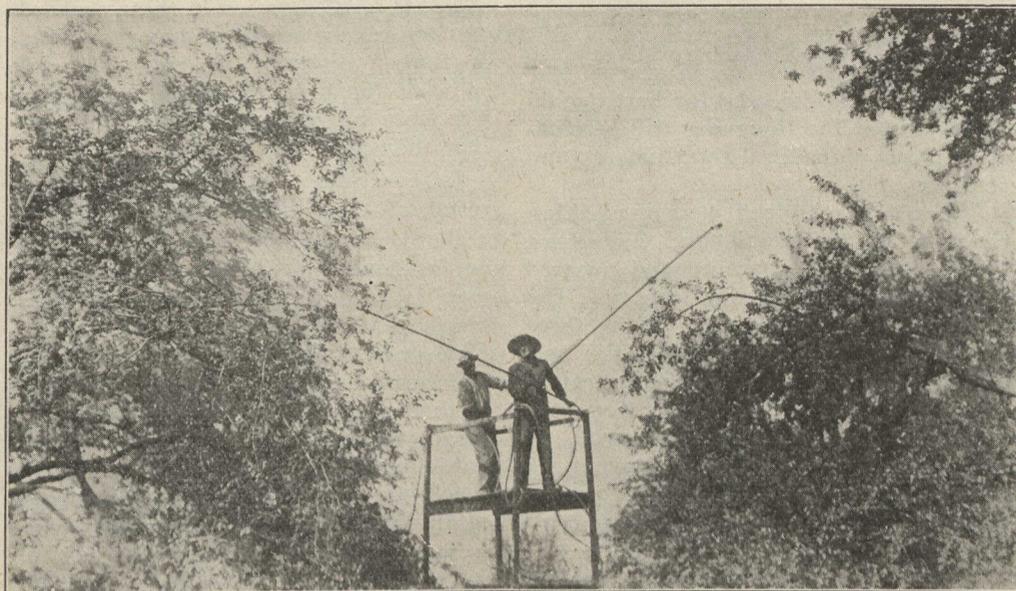
Photo by S. G. Freeborn, B.S.A., District Representative, Walkerton, Ont.

the patch sprayed thoroughly with lime-sulphur at winter strength just before the buds open.

Red currants are sometimes badly attacked by green aphides, which may also be found on black currants and gooseberries. The foliage curls up and becomes a light greenish color. On the under side of the curled leaves the yellowish green plant lice may be found. The eggs of this insect are laid in late fall in the twigs and hatch out as the buds are bursting.

They are very tender at this time and the young aphids are also, and if the winter spraying of lime-sulphur is postponed until this time, many young

*Extract from an address delivered at the last annual convention in Toronto of the Ontario Fruit Growers' Association.



Success in Spraying Depends on Spraying all Parts of the Tree Thoroughly

A power sprayer at work in the orchard of W. H. Heard, St. Thomas, Ont.

in America are the most susceptible, and it sometimes causes injury to the young growth on currant bushes.

It attacks the leaves and stems of the gooseberry, but causes the most serious damage on the fruit, producing a white furry growth and making the fruit unmarketable.

It can be controlled by the lime-sul-

phur spray. Spray the bushes when they are dormant, with lime-sulphur at winter strength. Then just before the blossoms appear spray again with a weaker solution sp. gr. 1.005. To make a complete job the bushes should be sprayed when the fruit is about half grown with the summer strength of lime-sulphur, sp. gr. 1.009.

red clover, buckwheat, or hairy vetch was sown.

The orchards were sprayed very thoroughly three times each year as follow:

First, before or as the leaf bud bursts with commercial lime-sulphur, one to ten to control oyster shell bark louse and leaf blister mite.

Second, just before the blossoms opened with commercial lime-sulphur, one to thirty-five with two pounds of arsenate of lead added per forty gallons of mixture to control apple scab, caterpillars, case breakers, canker worms, bud moths, etc.

Third, immediately after the blossoms fell with commercial lime-sulphur, one to forty with two pounds arsenate of lead added per forty gallons mixture to control codling moth and apple scab.

In spraying we used a double acting hand pump and a tank, a home-made affair, holding two hundred gallons, with a tower attachment for reaching tall trees. We used two lines of hose and two angle nozzles of the "Friend" type on each line of hose. One man was on the tower equipped with fifteen feet of hose and a rod eight feet long; the other man being on the ground with thirty feet of hose and a ten-foot bamboo rod. Two men acted as power on the pump, giving a pressure of from one hundred to one hundred and fifty pounds. All solutions were strained into the tank. The arsenate of lead was first brought into suspension before being strained into the spray tank. We always endeavored to spray with the wind and do as much of the trees as possible.

One side of the tree was sprayed as it was approached; we then drove directly opposite and sprayed the central parts thoroughly; then we completed the other side at the third stop. We aimed to cover every portion of the tree though not wasting any material. For the spray after the blossoms fell we tried to do most thorough work—our object was to fill every calyx cup. Ninety per cent. of the codling worms enter the apple in the calyx end, hence it is important to have the poison placed where it will do the most effective work. We used from five to eight gallons of mixture on each tree for each spraying.

THE RESULTS

Accurate account has been kept of all expenses pertaining to each orchard in each of the three years. All labor with the exception of pruning, which is valued at two dollars a day, was calculated on the basis of one dollar fifty cents a day per man, and a man and a team at three dollars a day. Farmyard manure was valued at one dollar a ton. These figures, it will be agreed, were quite reasonable.

In figuring out the results, no allowance was made for rental of land, as it

Spraying Results in Neglected Orchards

R. S. Duncan, B.S.A., Port Hope, Ont., District Representative for Durham

IN view of the fact that so many of the old orchards in the province of Ontario were being seriously neglected, a campaign for better orchard management was commenced in the spring of 1911 in the counties of Northumberland and Durham. Four demonstration orchards, one each at Colborne, Cobourg, Port Hope, and Newcastle, which had been very badly neglected, were taken in hand for a period of three years to be treated according to the best orchard practices. The orchards were situated near the main road where they could be under observation by passers-by throughout the season so that the results of the demonstrations could be noted.

CONDITION OF ORCHARDS IN 1911

These orchards had been planted some thirty or forty years, but had been almost totally neglected as to pruning, cultivation, fertilization, and spraying. They had never been sprayed, and hence the quality of the fruit was of a very low grade—the percentage of No. 1's varying from thirty to sixty per cent. They were full of bark lice and blister mite, and had suffered severely from canker and sunscald, but it was hoped that with careful management, liberal feeding, and thorough pruning and spraying that they would respond and give satisfactory results. Two of the orchards were in sod and had not been ploughed for years.

The soil in the Colborne orchard is a light sandy loam and in the others a clay loam.

TREATMENT

The orchards were all pruned in 1911, not very severely, but more of a cutting out of the dead wood and a thinning out of the top. In 1912 the greater number of the high trees were "dehorned," as much as twelve feet being taken off. Our object in doing this was to make a more spreading tree, have the fruit borne on the lower branches and thus economize in picking. In 1913 a lot of small twigs and branches were cut out to open up the trees thus giving the fruit a better chance to color.

All cuts of one and one-half inches in diameter and over were given a coat of white lead and oil. The rough, loose, shelly bark was scraped off the trees to facilitate spraying operations. The orchards were all manured each year at the rate of ten to twelve tons of farmyard manure per acre. In two orchards the manure was supplemented by an application of two hundred pounds of muriate of potash and four hundred pounds of acid phosphate per acre.

The orchards were ploughed in each year as early in the spring as it was possible to get on the land, and then they received thorough cultivation up to the middle of June, when a cover crop of



Spraying a Quebec Orchard

A modern power machine in the orchard of the Oka Agricultural College, La Trappe, Que.

was difficult to arrive at a fair valuation of the orchard; it differs in different localities. No account was taken of the interest on the investment or overhead charges, nor depreciation in value of the implements used.

I append herewith a tabulated statement of the expenses and receipts for the orchard of Mr. F. W. McConnell, at Colborne, in each of the past three years. The number of barrels, the percentage of No. 1 apples and the receipts are also given for the three years previous to our taking charge. This will be a basis of comparison between the orchard when in a neglected condition and after being properly cared for.

NORTHUMBERLAND AND DURHAM DEMONSTRATION ORCHARDS

F. W. McConnell's Orchard, Colborne, 117 trees—approximately 2½ acres. Soil—Light sandy loam. Orchard 32 years old.

RESULTS

	After cared for		
	1911	1912	1913
EXPENSES—			
Scraping	\$11 25		
Pruning	34 00	\$22 00	\$39 00
Painting wounds	10 28	7 05	
Gathering brush	6 75	4 00	4 50
SPRAYING—			
First	25 90	21 90	20 55
Second	15 75	15 70	13 13
Third	23 17	23 35	15 60
Cementing holes in trees		1 25	
Bracing trees with wire		1 37	
Removing dead wood and thinning suckers		90	1 80
FERTILIZER—			
Manure	25 00	30 00	30 00
500 lbs. Muriate of Potash	13 00	11 70	12 60
1,000 lbs. Acid Phosphate	11 00	11 00	16 00
Applying	1 00	1 00	1 00
Freight			2 75
Cultivation	7 50	18 00	5 70
Total expenses	202 60	178 22	174 63
Expenses per acre	81 04	71 29	69 85
Yield in barrels	331	333½	234
Receipts from sale of apples	\$740 55	\$449 80	\$493 58
Per Cent, No. 1's	87 6	80 5	82 5
Net profit	537 95	271 58	318 95
Net profit per acre	215 18	108 63	127 58

	In neglected state		
	1908	1909	1910
Yield in barrels	300	250	73
Receipts from sale of apples	\$300 00	\$200 00	\$100 00
Per Cent, No. 1's	30 60	30 60	30 60

Figures from the other orchards could be given, but the foregoing will be sufficient to show in detail the expenses and returns.

The results obtained were in striking contrast to the small and indifferent crops yielded in unsprayed and uncared for orchards of the same locality. The quality of the fruit in each of the three years was exceptionally high—the percentage of number one's being raised from thirty to sixty in 1908, 1909, and 1910, prior to our having charge, to seventy-five to eighty-seven decimal six per cent. while under our care. Further, from ninety-five to ninety-eight per cent.

of all the apples grown in these orchards was absolutely free from any insect pest or fungus disease. Scarcely an apple could be found with a worm in it, and it was only an odd apple here and there that showed a spot of scab.

In conclusion, let me say that as a result of these demonstrations, the old orchards are being cared for in a manner as never before. Carloads of spray material and a great number of spray machines, both hand and power outfits, have been sold to fruit growers in the counties. The demonstration orchard method has proved its effectiveness as a means of stimulating interest in up-to-date methods. Special requests now reach my office asking me to take charge of an orchard for a period of years.

Spraying to Prevent Apple Scab*

Prof. L. Caesar, Provincial Entomologist, Ontario

FOR several years I have been impressed with the great importance of spraying very thoroughly at as nearly the right time as possible. Most of the spraying that is done is not really thorough, or else it is not applied at the right time; in fact, too many men are trying to cover too much ground with a single spray outfit.

I believe in gasoline outfits for large orchards, especially for large trees. You can spray such trees much more thoroughly and easily with these outfits. Keep your machine in excellent condition; spray at the right time; miss none of the first three applications; cover every leaf and young fruit or opening blossom thoroughly. Never mind how much the tree drips. Do not stop until you are satisfied it is done right.

Instead of being discouraged by failure a single year like 1913, remember that James E. Johnson, of Simcoe, our most experienced apple grower, says he never before 1913 saw a season when good spraying would not thoroughly control scab. It is not probable if he lives for thirty years longer, as we hope he will, that he will again see another such season. I might perhaps mention here in passing that good pruning, allowing plenty of light and air circulation will help to make it easy to keep off apple scab.

SUMMARY OF RULES

The following rules are given as a guide with special reference to preventing apple scab:

First Application—Before or as leaf buds are bursting. Use lime-sulphur, hydrometer strength 1.030 (1.035 for San Jose Scale).

Second Application—Just before blossoms open. Use either lime-sulphur, strength 1.010 or 1.009, or Bordeaux

mixture 4.4.40 formula, and to every forty gallons of either wash add two to three pounds arsenate of lead.

Third Application—At once after the blossoms have nearly all fallen (say 80 per cent. off). Use lime-sulphur 1.008 and two pounds arsenate of lead to every forty gallons.

The second and third applications may begin with early varieties, as the bloom on these opens and drops first.

Fourth Application—About two weeks after bloom falls. Use the same mixture as for the third application. This should be applied in the St. Lawrence Valley on varieties subject to scab every year, but in most parts of the province may be dispensed with, if we have fine warm weather beginning a week or ten days after the third application.

Autumn Application—These should be applied only if the weather becomes wet or foggy and cool the latter part of August or early in September. Use lime-sulphur 1.008 or Bordeaux 4.4.40.

Note.—Lime sulphur 1.030 hydrometer reading, commercial lime-sulphur, one gallon, water nine gallons. Lime-sulphur 1.035 hydrometer reading, commercial lime-sulphur one gallon, water seven and one-half gallons. Lime-sulphur 1.010 hydrometer reading, commercial limesulphur one gallon, water twenty-nine to thirty gallons. Lime-sulphur 1.009 hydrometer reading, commercial lime-sulphur one gallon, water thirty-two to thirty-five gallons. Lime-sulphur 1.008 hydrometer reading, commercial lime-sulphur one gallon, water thirtyseven to forty gallons.

I believe that lime and sulphur puts a bloom and a freshness on apples that you cannot get from Bordeaux, and I believe it is a greater stimulant to the fruit and the apples will hang on better.—M. C. Smith, Burlington, Ont.

*Extract from an address delivered at the annual conventions of the Ontario and Nova Scotia Fruit Growers' Associations.

Spraying Suggestions

Rev. Father M. Leopold, La Trappe, Que.

BE thorough. This is one of the essentials in proper spraying. Do not leave a tree until you have covered it entirely with the spray solution, trunk, branches, and foliage. With a good angle nozzle it is very easy to drench the leaves from underneath and on top. Each tree should receive a liberal quantity of the spray mixture. I never leave a tree before seeing the solution dripping from the leaves. In spraying for the codling moth it would be better to use the drive type nozzle.

Get good constant pressure from your spraying machine. The manner in which spraying is done determines very often the quality of the crop of fruit that you may produce. The very best results in spraying are hard to obtain with the use of poor machinery. Power spraying is bound to become one of the best factors in the management of the modern orchard. Power sprayers are capable of giving a pressure impossible with a hand machine. Any one who has worked the handle of a barrel pump hour after hour knows that with its use a pressure of more than one hundred pounds is almost out of the question. Our modern gasoline outfits will easily maintain a pressure of one hundred and fifty to two hundred pounds and more with three leads of hose.

Do not ask one machine to do the work of two or more. Generally speaking, only two acres a day can be well sprayed with one power machine, allowing that nine tanks can be applied in a day. Allowing also the maximum time of ten days for the calyces to remain open, only twenty acres of orchard can be treated with one machine.

A GOOD AGITATOR REQUIRED

Have a good agitator fixed to your pump and outfit; the agitation of the liquid in the tank is an important matter. In the case of most of our sprays, like arsenate of lead and bordeaux mixture, the individual particles that make up the fungicide or insecticide, are suspended in the water. Unless the liquid is kept well agitated, these particles will settle in the bottom of the tank, thus rendering the mixture in the top of the tank weaker than it should be, and that in the bottom stronger, possibly too strong for the foliage. The use of soap to retard settling of certain arsenicals is said to be beneficial. Avoid all haphazard methods in spraying, and you will be well repaid for the trouble. It is not sport indeed to handle lime-sulphur wash in the orchard; but if you intend to make things good, then take the trouble to see for yourself that everything is ready for each spraying. Personally I enjoy spraying, no matter what

sort of spray mixture I use, if I feel that by my efforts I am saving my crop of apples.

Prof. J. R. R. Parker, in a practical article in *Better Fruit*, has shown that the addition of soap to arsenate of lead will help very much in keeping this valuable insecticide in suspension for a long time. He summarizes the whole matter in the following lines:

"The addition of common laundry soap at the rate of two bars to fifty gallons, to an arsenate of lead mixture, retards the settling of the arsenate of lead, only half as much settling out of a soap mixture in fifteen minutes as settled out of a non-soap mixture in the same time. Above a certain quantity, the amount of soap used appears to have little influence upon the amount of set-

ting. Two bars to fifty gallons is about the least to be used, and in practical work it would be safer to use three bars to every fifty gallons. Whale oil soap gave slightly better results than the more expensive laundry soaps. By the addition of soap a more even distribution of arsenate of lead was secured, and the amount left in the bottom of the spray can was reduced to about twenty-five per cent."

As we have obtained very good results in following out Prof. Parker's advice, in spraying our orchards at La Trappe, I can not help saying it would be a good thing for others to try also.

It is more important for almost every disease that the spraying should be done just before rain rather than after. The rain won't wash it off, provided it has dried after it has been put on.—Prof. L. Caesar, O'A.C., Guelph, Ont.



Rev. Father Leopold, Past President of the Province of Quebec Fruit Growers' Association, under a Fameuse Apple Tree in the Orchard of the Agricultural College at La Trappe, Que., where Thorough Spraying is Practised



A Well Sprayed and Cultivated Orchard

Formerly the property of Mr. A. E. Sherrington, Walkerton Ont., the well-known Institute speaker.

The Peach Tree Borer---Methods of Control*

L. Caesar, B.S.A., Provincial Entomologist, Ontario

THE following are the chief insects attacking the peach in Ontario:—Peach-borer, Lesser Peach-Borer, Plum Curculio, Fruit-tree Bark-beetle or Shot-hole Borer, and San Jose Scale. There are a number of minor insects sometimes found but doing very little damage, such as Green Peach Aphis, Black Peach Aphis, Peach Twig-borer, Tarnished Plant Bug, and Red Spider.

The Peach Borer when full grown is a rather stout, cream colored or yellowish larva about an inch long. It nearly always attacks the trees just at or slightly beneath the ground. Frequently it is necessary to remove the earth a little around the trunk to be sure whether one of these insects is present or not, but usually its presence can be ascertained by seeing the dirty gum mass that exudes from the part where it feeds. The injury is caused by the borer or borers (there may be several to a tree), working just beneath the bark and girdling or partly girdling the tree. A tree thus affected becomes sickly in appearance somewhat as if attacked by Yellows, and may die the same season or be killed by the succeeding winter. Young and old trees are alike attacked. Fortunately in a great many orchards this insect is very scarce, but this is not true of all districts, and in some it is far the most destructive and difficult enemy the peach grower has to contend with. It often seems to be worst in districts where there are comparatively few peach orchards.

PLANTS ATTACKED

In addition to the peach it attacks to some extent the plum, cherry and apricot,

but the peach is the favorite. To intelligently understand the methods of combating the pest it is necessary to give briefly its life history:

The winter is passed as a partly grown (usually about half grown) larva beneath the bark. In the spring, with the return of warmth, this larva begins to feed ravenously and increase rapidly in size. By the end of June it is usually full grown, and then leaves its tunnel or burrow to form a brown cocoon on the outside of the bark or on the ground close to the trunk.

About the end of July this pupa changes into a pretty little steel-blue moth, about an inch long, looking to most people more like a wasp than a moth. The female has around her abdomen a broad orange band that makes her conspicuous. Moths may be found from about August first to the end of September. They soon lay their eggs, placing them on the trunks, branches, leaves and even weeds growing close to the trees. In about ten days these hatch and the tiny borers drop to the ground, and work their way into the soft inner bark through crevices. Here they feed on the inner bark against the sap wood. At first little brownish saw-dust-like castings are thrown out where they feed, but after a time gum exudes. Large masses of this may sometimes be seen. Gum, of course, in peach trees, tends to be produced by any wound especially in the early part of the summer. There is but one brood a year.

MEANS OF CONTROL

There is no easy means of control and many that are advocated are useless or dangerous to the tree. The best method I know of is to combine the practice of

digging out the borers by means of a knife or wire with mounding up the earth around a tree or wrapping the base of the trunk with paper. The digging out with a knife should be done twice a year, first about the end of May, so that as few borers as possible may escape to transform into moths and lay eggs, and again about the end of October to destroy the new larvae. Mounding up the trees with earth to a height of about ten inches has been found very useful. Such trees are freer from injury than unmounded trees. The mounding also causes the borers to attack nearer the top of the mound instead of down at the crown so that when the earth is removed their presence can be easily seen, and they can be readily killed with a knife.

The mounding to be of value must be done about the end of July and left on until about the middle of October, that is during the period when the moths are flying around and eggs being laid and hatched. Wrapping with paper may be substituted for mounding. Two or three ply of common newspaper placed around the tree to a height of about eighteen inches is very satisfactory. This should be tightly fastened with a cord at the top and loosely the rest of the way down. To secure against larvae getting in below it, a little of the earth should first be removed to let the paper lower down and then this earth heaped up about four inches around the base of the paper. Common building paper is good and is more durable. Tar paper is often used, but may do some damage to the trees. The mounds should be replaced to avoid danger of winter injury.

VARIOUS WASHES

Many kinds of washes have been tried to keep out the borers. Most of these are either useless or dangerous. The only two that have given fair satisfaction are first ordinary gas tar, and asphaltum. The former of these has been known in some cases to injure the trees. The latter is highly recommended by a California entomologist, who says that in four years it has done no damage whatever and has given excellent results. I have not had an opportunity to test asphaltum. It is a cheap substance costing, I think, from two to five cents a pound and should be procurable through any of the wholesale drug stores. It is applied warm with an old paint brush. In applying, remove the soil to a depth of about four or five inches, then cover this to a height of about six inches above ground. It is better to put a light coat on first. This dries or hardens almost at once, then put on another coat so that there will be a good unbroken coat all around. It is necessary to re-touch the part each year. Some sort of heater is necessary to melt the asphaltum or keep it liquid when melted.

*Extract from an address delivered at the recent annual convention of the Ontario Fruit Growers' Association.

Plants and Their Insect Pests

R. A. Tillett, Hamilton, Ont.

MANY plants, whether grown for ornamental or for utility purposes, and whether grown under glass or in the open air, are threatened during the spring and summer months with insect pests of various kinds. The first thing to do when a plant is not thriving is to decide what disease or insect pest it is that is injuring it. The next thing is to know what is the right antidote to apply. If we make ourselves masters of these matters, the rest should be easy of accomplishment.

One of the greatest enemies of every gardener is the great family of aphides. Nearly all plants, whether grown in the garden or under glass, are subject to the ravages of these pests. The aphides are known by a variety of names, such as plant lice, green or plant fly, and are often named after the plant on which they particularly live, while the disease they produce is often called "blight." Aphides are provided with a mouth, and they damage our plants principally by sucking out the sap and so weakening its vitality. These insects multiply at a surprising rate owing to the fact that the young attain the age of reproduction after about ten days.

Certain kinds, such as rose aphid, attack not only the leaf but the young shoots of the plant. Other kinds of aphid—the bean aphid, for example—will attack the fruit pods, while others, the woolly aphid, attacks the roots, stems, or twigs. Plant lice migrate from plant to plant, and some can live both above and below ground. Towards the end of the year, as cold weather comes on or food becomes scarce, males as well as females are produced, the females depositing their eggs at the base of the buds and on the stems and leaves of the plant. These eggs remain over winter, hatching into larvae in the early spring.

In addition to the green aphides there are the blue and red kinds, and the black aphides commonly found on chrysanthemum plants. Then there are quite a number of other insects, such as the mealy-bug, the red spider, and the thrips, which, although small, are none the less voracious in their habits. The amount of destruction they can do in a short space of time if left unmolested is astonishing. Our common foe—the slug—must not be overlooked.

DISTINGUISHING POINTS

The aphides make up in numbers what they lack in size. They may be readily identified by their rather long antennae, their soft pulpy bodies, and conspicuous round eyes. They are found on the rose bush usually crowded together on the under side of the leaves and smothering the young buds and flowers.

The mealy-bug has a scaly body and derives its name from its being covered with a white powder.

A tiny little insect is the red spider, which is really a mite and so small that it may easily escape detection; it generally goes by the name of the red spider. It is not until they reach the adult age that they acquire their red color, for in their younger stages they are usually yellow or green. The red spider only attacks plants—especially violets in frames—when the soil is too dry. If the soil is kept moist and the plants given a good syringing with water, the red spider will disappear.

Thrips are generally associated with corn where many species attack the inflorescence. In hothouses we find them destroying the leaves of plants, and to distinguish them from the aphides or "green fly," they are often called "black fly." Thrips have suctorial mouths, rather long bodies, and are winged.

Slugs inhabit the damp shady parts of gardens and greenhouses, and feed at night. They are found under old rubbish heaps, under the bark of decaying trees, and in similar places. They lay numerous eggs in decaying vegetation, and are fond of attacking tender, young plants, such as lettuce and peas. The most effectual way of ridding a garden of them is to gather them up and destroy them, but if numerous, the best course is to dig in one of the advertised insecticides.

Another effectual way of dealing with them is to fork in ground lime, using of the latter four ounces per square foot.

OTHER DISEASES

We notice on certain plants diseases known respectively as "rot" and "rust" and fungus—diseases which require special treatment. Fungus is usually brought about by too much watering; it attacks the stems of seedlings. It is this that causes potato disease and the mildew of the vine. The same mouldy growth is found on decayed bread, preserves, and other household provisions.

The destruction and prevention of garden pests and plant diseases is of the utmost importance, and a consideration of the most efficacious and economical remedies brings its own reward.

Practical experience of this subject among a great variety of plants has taught me the use of several excellent remedies which, if properly applied, are beneficial in the distribution of aphides. One of the best washes I know of that can be used is obtained from dissolving six pounds to ten pounds of soft soap in one hundred gallons of soft water. When the solution is thoroughly mixed let this be freely sprayed on any plants on which aphides are found. The soft soap blocks up their breathing pores and quickly destroys them. This solution can be used in any less proportion, according to requirements.

For black fly on cherry and for all



Begonia Gloire de Lorraine

This beautiful plant measured three feet across and was grown at Castle Loma, the residence of Sir Henry Pellatt, Toronto.



A Collection of Wild Flowers as Gathered, near Peterboro, by an Enthusiast

Owing to the ignorance and carelessness of the public many of our native wild flowers are already almost extinct. Can not the Ontario Horticultural Association and the local horticultural societies take steps to preserve them?

those species which produce a copious flow of honey dew, quassia is a most useful ingredient to add. It acts as an astringent to the leafage and cleans it of all the honey dew and excreta formed by aphides. The quassia chips should be boiled and the extract added to the soft soap wash.

For those aphides which attack the roots of plants, there is no better cure than bisulphide of carbon. Inject about one-quarter ounce to every four square yards. This substance being both a deadly poison and highly inflammable, care must be taken in its use. The vapor of bisulphide of carbon liquid used in the beekeeper's "smoker" is another good remedy for green fly, and does not injure even delicate flowers.

In all cases aphides should be attacked directly they show themselves, especially when the species of aphis has the habit like the plum aphis of curling up the leaves and so protecting themselves from the spray.

For the destruction of mussel scale, woolly aphis, mealy-bugs, thrips, and red spider in glass houses, there is no more effectual remedy than fumigation with hydrocyanic acid gas. Nursery stock will be freed from insect enemies at all stages if fumigated with this poison.

The materials used for fumigation with hydrocyanic acid gas are: First, potassium cyanide of ninety-eight per cent. purity; second, sulphuric acid of a specific gravity, not less than one decimal eighty-three; third, water, four jars and a glass measure. The following propor-

tions of cyanide of potassium, sulphuric acid, and water to be used, and the amount of space per unit of cyanide are recommended, viz., One ounce of cyanide of ninety-eight per cent. purity to every two hundred, or three hundred or five hundred cubic feet of space respectively.

The amount of cyanide to be used necessarily depends to some extent on the character of the plants to be fumigated, and their strength, whether they are dormant or active, evergreen, or deciduous, and on the season. With tender plants one ounce of cyanide will serve for five hundred cubic feet of space, while hardy plants may be treated with one ounce of cyanide to two hundred cubic feet of space.

The first step is to render the glass house or other place to be treated as air-tight as possible. The sulphuric acid must then be very carefully and slowly poured into the water, which may be put into a jam jar or disused crock. Wrap the cyanide of potassium in thin blotting paper, which should then be dropped into the sulphuric acid. The vessel containing the solution should be placed within reach of a window so that the operator can drop the cyanide of potassium into the diluted sulphuric acid at the end of a long stick or lower it by means of a string and pulley. The window must be immediately closed so that the operator escapes the fumes. See that the door is already closed tightly, and all chinks filled with raps or paper, and that the window shuts close. It is important that the fumes should be dis-

tributed into all parts of the house. This can be effected by an arrangement of fans which can be worked from the inside.

Fumigation should be carried out in the evening and not in a strong sunlight. The plants should be dry and the temperature between fifty to sixty degrees. The work must be done by a skilful operator, for the fumes of cyanide are deadly poisonous.

The place which has been fumigated should be kept closed for an hour. The windows and doors should be opened from the outside and no one should enter until another hour has elapsed. When opening the windows after fumigation, be careful that no escaping fumes of the cyanide are inhaled. It is safer not to fumigate plants which are in bloom.

OUTDOOR PLANTS

It is of the utmost importance to remember that both cyanide of potassium and hydrocyanic acid gas are highly dangerous poisons. The cyanide should be kept in a stoppered bottle labelled "poison." The gas generated must on no account be inhaled.

Fumigation with cyanide will destroy all forms of insect life, except the eggs of the woolly aphis. Where there has been previous trouble with these pests, the treatment should be repeated in about ten days. Eggs of the apple mussel scale are also unaffected by gas of the strength mentioned.

Fumigation with tobacco is a simple and effectual means of exterminating many kinds of insect pests, and has the advantage of being harmless to those using it. In employing this method of fumigation, procure first of all a wire basket about twelve inches wide and six inches deep, and fasten to each corner a strong wire with which to suspend it. Into the bottom of the basket throw a few hot cinders, and over them a handful of charcoal. Swing the basket about for a few minutes until there is a good red fire. The best tobacco to use is common shag. When using it get a handful of wet litter from the stable and chop it into pieces about an inch long, and fix well with the tobacco. Then place the whole on the fire and give the basket a good swing in the air. The smoke will fill the greenhouse in a few seconds. Hang the basket in the house, and should it burst into flame, damp it. All plants in flower should be removed. Repeat this exterminator in two or three days in the evening, and in the morning give plants a thorough syringing with clean water.

Moss roses are, if anything, hardier than most of the hybrid perpetual bush roses. almost as hardy as the Japanese or Rugosa roses.—Wm. Hunt, O.A.C., Guelph, Ont.

Starting and Growing Plants Indoors

Henry Gibson, Staatsburg

NOW is the time to sow seed of early vegetables and annuals that you intend to grow during the summer. Of course you have looked over the catalogues, and selected just what you want in order to prevent delay and consequent disappointment.

If you have your hotbed prepared you can sow your seed at once. Sow the seeds in rows about three inches apart, and cover very lightly. Deep covering is a thing to be avoided, as is sowing too thickly. Save some of the seeds for a second planting. If the seedlings come up too thick and crowded, they will be unable to get sufficient light and air to develop into strong, sturdy plants. Fairly large seeds, as cabbage and lettuce, may be covered an eighth of an inch or so, but very small seeds should be pressed into the soil with a smooth, flat piece of wood and just covered from sight. This treatment applies to most seeds, whether they be started in the hotbed, greenhouse, or living rooms.

HOUSE CONDITIONS

There are many amateurs who lack both hotbed and greenhouse. They must make the most of the conditions that obtain in the house. Even then there is no need to despair, for with a little thoughtful preparation very fine plants can be raised under such adverse conditions. The equipment needed to accomplish this is of the simplest, and incurs no very great expense.

A light, sunny window where there is room for a generous table or shelf, and where the temperature is not likely to drop below forty-five degrees on average nights, is the first essential. An occasional drop below forty will not prove fatal, but each time this occurs it means the progress is just so much retarded. If repeated at all frequently, it will be attended with very unsatisfactory results.

GOOD SOIL NEEDED

The next essential thing to light and warmth is soil, one light and porous being the most satisfactory. No doubt you have some stored in the cellar. Turn this over and ascertain its "physical condition." Richness is no advantage, in fact it is often a drawback. A soil that will retain moisture, and at the same time be porous enough to allow any surplus moisture to drain off at once and which will not tend to form a crust, is the most important factor in success with seeds. If your soil is not in this condition you can easily make it so by the addition of leaf mould or very old spent manure and sand.

If you are not able to get soil in such a condition as this, better purchase a bushel or two from the local florist, but whatever you do have it in just the right

condition, for "well begun is half done," and with proper soil half the trouble of raising seeds is overcome.

SUITABLE BOXES

From your grocer you can get a few haddock boxes, which are of a very convenient size for this purpose, and have the advantage of being very light. Failing these, you can get some cracker boxes. These sawed lengthwise into two inch sections and bottomed so that narrow spaces, say half an inch, are left between the boards, will provide you with the most useful of boxes for starting vegetable and large flower seeds.

For very fine seeds, such as begonias, heliotrope, and petunias, a few seed pans—which are easily obtained from any florist for a nominal sum—are more convenient to handle. Cigar boxes are useful for this purpose, but they are apt to dry out too quickly.

ENSURE GOOD DRAINAGE

The matter of thorough drainage is so important that besides having porous soil and open-bottomed boxes, still further precaution should be taken by filling the boxes about one-third full of some coarse material. The coarser pieces of soil or sphagnum are the most desirable for this purpose. On this place enough of the prepared soil to come just a little below the edge of the box, so that when water is applied later it will not run over the top. Press the soil down in the corners and along the edges firmly with the fingers and level and firm off the surface.

Plenty of moisture in the soil is necessary to ensure good germination. Give the boxes a good soaking the day before planting, or place them in a sink or tub after planting and let just enough water soak up through the soil from the bottom to moisten the surface. This is indicated by the soil turning a darker color. Let them drain until all drip ceases before placing them where they are to remain until the seedlings appear.

The next problem is to get the seeds to come up strong. This should take place in anywhere from four days to as many weeks, according to variety. The surest way of doing this is to apply what florists term "bottom heat." Where steam, hot water, or hot air radiators are installed this is easily arranged. Simply place the seed box over it, elevated on two or three bricks. Otherwise the kitchen range may be utilized or an oil heater may be brought to serve a useful purpose. Care should be taken in the latter case to have a piece of metal between the direct heat of the flame and the box, which should be far enough from it to prevent it getting more than nice and warm.

Such a degree of heat as is hereby obtained will tend to dry out the soil very rapidly. This may be counteracted to some extent by placing panes of glass over the boxes, raised about a quarter of an inch at one end. Until the seeds begin to break ground they are as well kept



Phlox and Petunias in the Garden of Mr. Jas. Gadsby, Hamilton, Ont.



Prize Winning Asters

in the dark as not. If they are placed where the sun strikes them directly they should be shaded with sheets of newspaper laid on the glass covering. The minute they are up they should receive all the light possible and be kept near the window.

From the time the seed leaves appear until the seedlings are big enough to transplant is the critical period of the plant's growth. Prepared as suggested, the boxes will need no further watering until the seeds have germinated. If watering really appears necessary, use the sub-irrigation method as you did when preparing the boxes for sowing. As the seedlings develop care should be taken not to over-water, as they will do better if kept on the dry side. When watering is done, however, it should be done thoroughly, and again sub-irrigation is the method to be adopted. In this way the soil is saturated through, the seedlings are not bent over by the force of water, nor the foliage left wet to start damping off. Where rooms are steam or hot air heated, some difficulty will be experienced in keeping a normal degree of moisture in the atmosphere. This unfavorable condition may be to a large extent overcome by giving all the fresh air possible and evaporating water near the plants, shallow flat pans being best to use for this purpose.

In admitting air be careful to avoid cold draughts striking plants. In many cases it may be convenient to admit air through an adjoining room, or to put a layer or two of newspapers, which are splendid non-conductors of heat or cold, between the window and the plants. While most of the seeds sown will do nicely as suggested in a night temperature of forty-five to fifty degrees, with a rise to sixty or seventy degrees during

the day, there are several that require fifty-five to sixty degrees at night to do as they ought. These include tomatoes, peppers, egg plants, melons, cucumbers, and such heat-needing plants as begonias, salvias, and heliotropes. These, however, may be brought along after the early vegetables. For instance, if cabbage and lettuce seeds are planted in February and tomatoes and peppers a month or so later, they will be sprouted about the time the former are transplanted, and can occupy the space thus made vacant. By the time these are ready to transplant the earlier vegetables will be ready to go to the cold frame, and in many localities into the garden, to make room for the newcomers.

All this may seem a lot of trouble, but when one has spring vegetables and flower beds weeks ahead of neighbors who have not troubled at all, you will feel amply repaid for having started your seeds in the house windows.

Asters (*Callistephus Chinensis*) "Marquis"

The aster is generally known as one of the most beautiful of all our annuals, as well as one of the easiest grown, when its requirements are known. It will grow in any good garden soil, but is best in a rich loamy soil. The plant may be raised from seed, any time from the beginning of March to the end of May, and good results obtained.

The seedlings should not be allowed to become crowded at any time, but as soon as large enough to handle they should be transplanted singly in boxes or in beds, and as the season advances, about the end of May or beginning of June, they should be planted where they are intended to bloom, the ground having been previously prepared and manured. The planting should be carried out, if possible, in showery weather.

The plants require a lot of room. They should never be less than one foot apart for Daybreak, Hohenzollern, and Queen of the Market, and one and one-half to two feet for Semples, Vick's Branching, and similar varieties. At no period of their growth should the plants be allowed to suffer for want of moisture. I prefer to keep them moist by a judicious use of the hose. During a dry time use the hose once a week. When the plants are about one foot in height, they should be given a light sprinkling of fertilizer, hoed into the soil. The plants should be watched for aster bug. The only relief known to the writer that can be recommended is hand picking. All sprays tried so far have to be handled with such extreme care that it makes the remedy as bad as the pests.

As soon as the flower bud shows, it is well to remove all secondary buds,

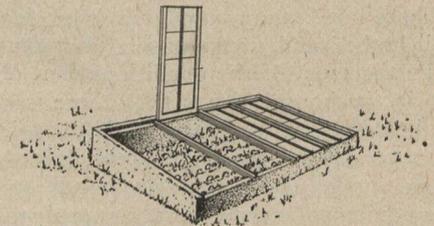
leaving only the tip or crown bud to each branch. About one week later give a dressing of pulverized sheep manure, and keep the hoe going freely, as long as it is possible to get among the plants.

Hot Frames

R. S. Rose, Peterboro, Ont.

A hot frame is just the same kind of a structure as the cold frame, but is placed upon a quantity of fermenting manure. To prepare this manure, get all you can from the nearest horse stable; make it into a good sized heap; water well if dry. Leave it for a few days until fermentation sets in; then turn it over, watering again if you think it necessary, that is, if it appears to be dry. The idea is to get the manure into an active and uniform fermentation and have it continue for some time after putting the soil in it.

Use the same position for the manure heap as for a cold frame. Have the heap about one to one and a half feet wider than the frame, with a depth of from one and a half to two feet; tramp it down good and firm, then place the frame on top, and put in the soil to the



A Hot Frame Made of Cement

depth of, say, three or four inches. Throw some manure up around the outside of the frame. This will help to hold in the heat. Put on the glass and let it stand for four or five days, when the heat should be even. I would advise a thermometer placed in the frame where it can be easily seen. When the temperature falls to about seventy-five degrees seed can be sown. At night do not allow the temperature to fall too low, but keep it as near sixty degrees as you can. It should not go below forty-five degrees at any time. In sowing seeds, sow them the same as in a cold frame. At first keep a small opening in the sash to allow the steam caused by the manure to escape, otherwise a damp mould will get on the earth or the seedlings will rot.

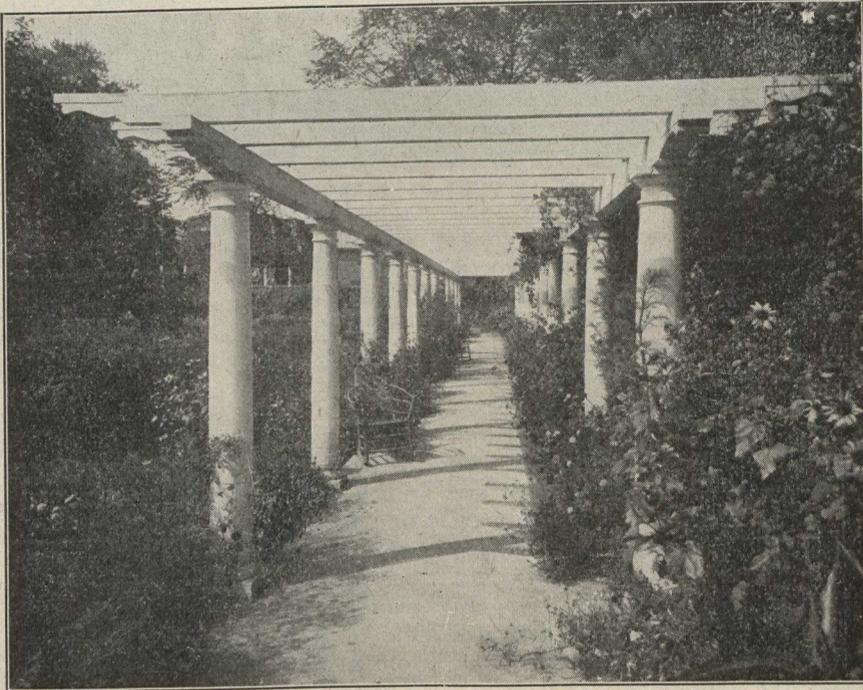
Keep all seedlings that come up first by themselves, and the ungerminated ones keep well under the glass; give the seedlings that are showing up more light and ventilation. When they get a little stronger take the flat out of the frame and place in the warm sunlight, so that the young plants may harden before transplanting out in the open beds. Vegetables or flowers can be started in either of the frames, and one can obtain much satisfaction from them.

Pergolas in the Garden

A. V. Main, Ottawa, Ont.

IN our Canadian gardens the use of pergolas is as yet limited. Some have been erected that have not been a success. Others again see fit to criticize

Many people construct pergolas of cedar or wire material and have a poor pathway also. Cedar in its untrimmed state soon looks shabby and is of short



A Pergola in the Garden of Mrs. G. MacLaurin, Ottawa, Ont.

their usefulness, in our severe climate, which interferes with their splendour. To my mind we might as well say that our verandahs, arbours, and summer cottages were unnecessary. If pergolas present some difficulties as regards having them clothed with beautiful climbers, it only means that we must be more consistent in our efforts to overcome this obstacle to success.

What is a pergola, anyway? It might be termed a continued archway, with climbers overhead: A leafy canopy, partially shaded: A retreat for rest and quietude: An avenue situated near the mansion, that stands out in dignity and adds to the beauty of all around it, by its open entrances and majestic stateliness. It bids us come forth and admire.

Many pergolas, particularly those of amateur construction, remind me of the hermit build. They are out of proportion and lack space in which to stand up properly. They are inclined to be dingy, pokey affairs. Pergolas are not dungeons. The one here illustrated was built last spring. Where it now stands a row of lilacs and viburnums stood relics of many a wintry blast, which provided an excellent breeding space for sparrows and aphids and also shaded a twelve-foot strip of ground. With some reluctance they were beheaded.

duration. In winter it does not furnish a pleasant contrast to the snow.

The beautiful pillars or columns here shown are seven feet six inches, and are placed on cement pillars eight feet apart,

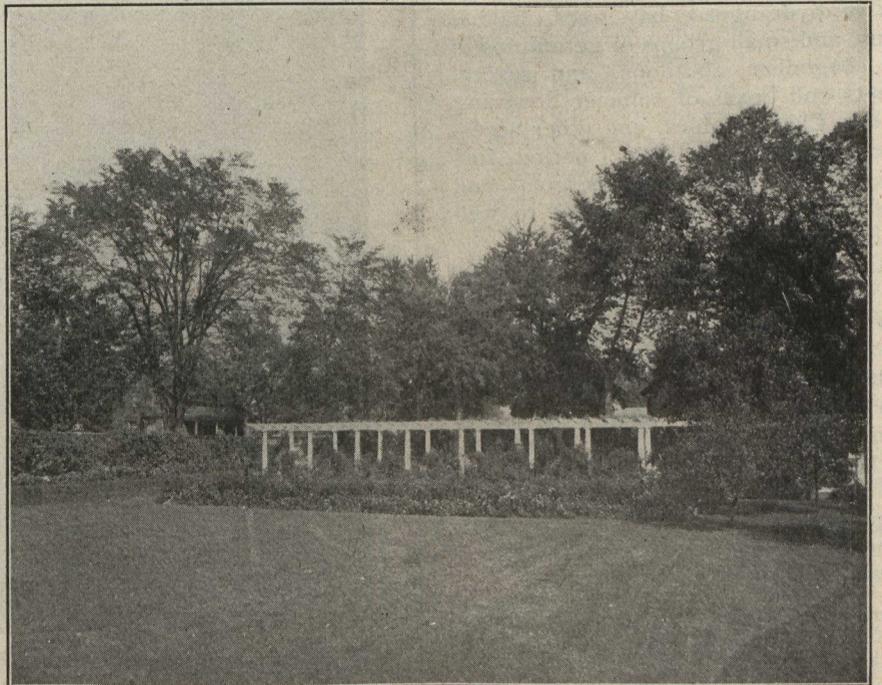
down two sides. There are twelve columns to a side. Beams six-inch by four-inch are placed parallel on the top of the column. Cross rafters are then placed overhead two feet apart. These are twelve feet in length, two feet being allowed to project over the columns, the ends being of an ornamental nature.

The walk is eight feet wide and projects to the outside line of columns. It consists of a solid four-foot foundation of stone and has a red cement finish. The columns are set on cement three inches above the walk to avoid decay, and the walk itself is situated several inches higher than the ground at each side to avoid splashing of earth in time of rain or washing off.

Four wires should be evenly distributed up and down the pillars about two inches from the wood. Along the top, galvanized wire should be stretched the entire length about eighteen inches apart to provide assistance for the climbers. White is the best color of paint.

This is a substantial pergola, and pleasant to look at in winter as well as in summer. It is a work of some duration. The entire length is one hundred feet. It is probably the only one of its kind in the Dominion. These pergolas are a specialty of some United States firms and are very much in use across the border. They vary in some small details of design. Very often they are linked with the house, like the conservatory.

The work of the carpenter or builder is an easy matter, and is soon finished, but the gardener, who has to make the dress for Miss Pergola, has many misfits. He fails to see a finish to his work.



The Pergola in Mrs. MacLaurin's Garden as Seen From the Street

To be fashionable many dresses are called for. Grape vines for the rafters, roses for the pillars, Clematis, Dutchman's Pipe, Honeysuckle, Wistaria, Begonia, Radicans, Nasturtiums, Canary Creepers and Bittersweet, all find a place. Any shade trees overhanging the structure shut out light, rain, and another valuable item, the refreshing dew.

A good perennial border is the best possible set-off to the sunny front side of the pergola. The primary object is to have the tall five and six feet perennial planted at the back, right between the pillars, say one section between two pillars, first helenium, second perennial asters, third hollyhocks, fourth helianthus, and so on. Nothing can surpass this arrangement of the flowering heads as they nod in the leafy promenade.

A strong arrangement of flowers on either side must be an accepted part of the plant. Extra trenching of the soil and manuring is imperative if the climbers are to grow luxuriantly. On the sunny side we have tried Tausendschon Rose on the pillars, also Clematis, Aristolochia, Wistaria, and grape vines. The idea is to establish permanently the wild grape vine to cover the overhead rafters and to allow them to remain all winter without pulling them down for winter protection as has to be done with most other climbers. The fruiting grape vines could be introduced and if successful they might replace parts of the wild vine. The vine leaf provides a pleasant canopy of foliage. A water tap and hose is convenient.

For several years, before the climbers and suitable material have attained their full growth, the wide and spacious walk can be fittingly decorated with large tubs of hydrangeas, bay trees, palms, coleus, and small groups of geraniums in pots, begonias, abutilons, and several baskets and boxes of summer flowering plants. Chairs, tables, and other accessories of the "five o'clock" period, further enhance the utility of pergolas and give an acceptable environment to well kept gardens.

As this pergola was not finished till June 1st, 1912, annuals were resorted to for a summer display. Nasturtiums, co-bea, and canary creepers were rapidly reaching the rafters by August. Annuals were braced up on each side. Sunflowers, seven feet cosmos, marigolds, and zinnias made a fair show. Patience we must have, for the first year's growth of the permanent plants can not possibly produce complete results.

Barnyard manure not only furnishes plant food for growing the crop, but greatly improves the texture of the soil by adding the necessary humus.—F. F. Reeves, Humber Bay.

The Care of Cuttings

Henry Gibson, Staatsburg

The plants of bedding stock which were started into growth as suggested last month, will soon furnish you with a good supply of cuttings. These should be put into sand and rooted at once in order to have fair-sized plants by bedding-out time.

The rooting of cuttings seems to have lost favor with many amateurs, owing possibly to many past failures. Do not, however, be discouraged by failures. They should only be an incentive to greater effort. The majority of cuttings can be rooted under precisely the same conditions as you raise your seedlings under, save that a little higher temperature is required. For the novice, sand is perhaps the most satisfactory rooting medium. If only a few dozen cuttings are required, make use of shallow pans such as are suggested for use when sowing begonia seeds. Fill the pan to within half an inch of the top with sand and press it down firmly. Cuttings that are in right condition and inserted an inch in the sand, watered freely, and shaded from say nine or ten a.m. until four p.m., will root in from ten to twenty days, according to the kind of plants that are being rooted and the temperature of the sand.

The right condition of a cutting is quite a problem to the uninitiated, yet it is easy of solution. Take a shoot of any plant you intend to take cuttings

from, and bend it over. If it snaps off you have a cutting in right condition for rooting. If, on the other hand, the shoot simply bends and does not break, it is too hard and is not suitable for propagating purposes. Cuttings of this nature will throw out roots, yet it will be slower in doing so, and the roots emitted will be weaker and more wiry than those from a cutting that breaks. Hence the resultant plant will not be so healthy and vigorous.

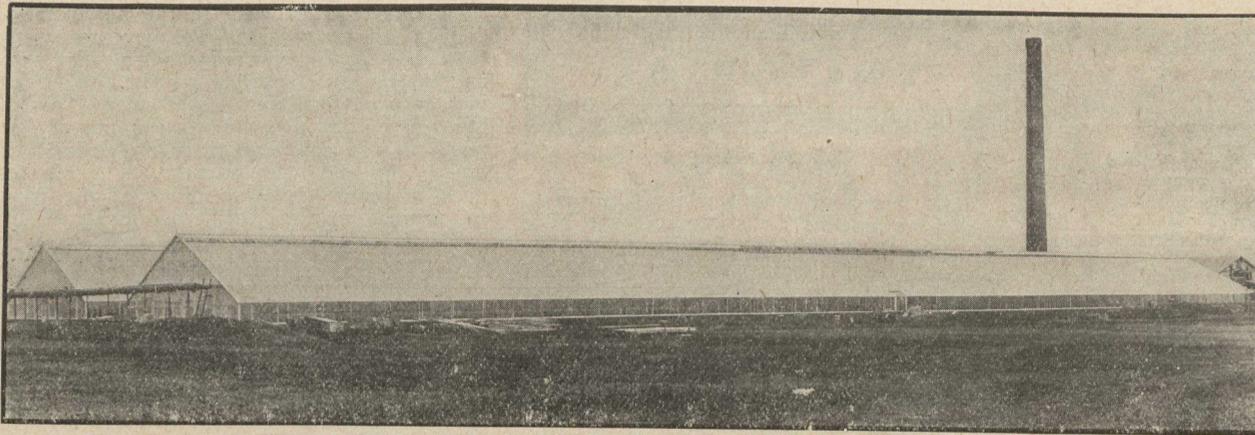
Every care should be taken to maintain a somewhat close and moist atmosphere during the rooting period. Draughts should be avoided at all times. Among the many plants that can be rooted in this way are geraniums, pansies, verbenas, petunias, lobelias, ageratums, and fuschias.

While the plants named may be rooted under practically cool conditions, there are many others which require a much higher temperature, especially bottom heat, in order to get them to root readily. Of these, crotons, ficus (rubber plant), begonias, Lorraine, and Cinnamata, duaseneas and bouvardias are the most popular with amateurs. The tops of ficus may be rooted in sand, but a better way is to root them on the plant. This is done by making an incision in the stem half way between two joints, then turn the knife upwards and cut through the first joint. Place a piece of



A Modern Greenhouse—A Model of Its Kind

Mr. John H. Dunlop, Toronto's leading retail and wholesale florist, has recently erected at Richmond Hill, Ont., a range of greenhouses that are the most modern and complete on the continent. An interior view of one of these houses is here shown.



An Exterior View of Two of Mr. Dunlop's Greenhouses. They are 61 by 400 feet. They are worth a visit

match stalk or a grain of corn into this incision to prevent it closing and healing up, cover with moss (asphagnum is best), and wrap securely. Keep the moss moist at all times, and place the plant in a warm, moist place. If you have a warm greenhouse so much the better. When the young roots show through the moss it should be removed, and the young plants severed from the old one and potted up into a good growing medium. The old stems of these plants may be used for increasing your stock by cutting them up into short lengths, taking care to have one or more joints to each piece and placing them in sand with a good bottom heat.

Bouvardias are rather shy in throw-

ing out suitable material for propagating purposes. A better way than waiting for the old plants to throw out young growths is to make root cuttings. Remove the soil to get at the roots, and take off cuttings half an inch to an inch and a half long. Place some coarse soil in a box and over this an inch of sandy soil. On this place the cuttings and cover with the same material. Water well and place where a little bottom heat is to be obtained. Within a month you will have young plants.

When rooted all cuttings should be potted into a good, light soil in pots two to three inches in diameter, and treated carefully by shading and watering for a few days until they become established.

Tomatoes Under Glass

Jack W. Collins, Moncton, N.B.

How I grew one of my best crops of tomatoes in Canada, will perhaps be interesting to some readers of The Canadian Horticulturist at this time of the year.

The variety selected was Livingstone's Globe. The seed was sown the beginning of December. The plants were planted in fruiting houses in February, and ripe fruit was gathered in quantity by the end of April. I had forty-two hundred plants planted in five houses. From these I sold thirty-five thousand pounds of fruit. This gives an average of eight and one-third pounds per plant. The plants were planted at an average distance of two feet apart. This gave a fairly good return per square foot of ground.

The method of growing was as follows: Seed was sown in flats in a temperature of from sixty to sixty-five degrees, covered until the seed had germinated, and then transplanted to a light, sunny position to develop into strong, stocky plants; as soon as large enough they were potted into three and a half inch pots, and kept growing rapidly, but with plenty of light and air until about two weeks before planting out, when they were transferred to a cooler temper-

ature to make the plants good and hardy. I find they do not flag when planted and start off much more quickly when given this treatment. I planted in the row at a distance of two feet between rows, as follows: The first two rows at a distance of one and a half feet, then a space left of two and a half feet, then two more rows of one and a half feet, and so on. This gave an average of two feet for each plant. The two and a half feet between each two rows, made it much easier to get along each row, to trim, tie and to gather the fruit. In training the plants a wire was stretched over each row right along the houses, eight feet from the ground. A cane was placed to each plant, and then made fast to the wire overhead. The plants were tied to this as they needed it, which kept them in position, and also presented a very neat appearance. In trimming out some of the foliage I never cut out more than was absolutely necessary, and then always the entire leaf. Cutting a leaf only half back tends to make that leaf sprout again. That is only wasted energy on the part of the plant. Another method which I pursued, which I know does not find favor with many growers, was to train two stems to each plant,

to be found with it, is that it is thin-skinned and liable to crack under certain conditions. One reason for cracking is shutting down with a lot of moisture in the houses. I found it much more profitable to keep a little steam going and the ventilators open a little all night.

Success With Garden Annuals

P. D. Powe, Cainsville, Ont.

Good seed is a prime essential in attaining success with any class of plants.

Nothing but the best seed is cheap in the end. Cheap seed as sold by some firms, is nearly useless. It is apt to be largely the left over stock of former years or seed that has been bought from a grower who having allowed his stock to degenerate, is forced to sell it cheap in order to procure a market. No reliable firm sells cheap seed, or will handle it under any consideration. Most firms demand that growers send them samples of their seed, which they then put through the most rigid tests. Though seed may be procured from many of the general stores we would advise its purchase from some reliable seed company, as by so doing you can get your own choice of seed and not be bound down to a small assortment.

Before beginning to plant assort your seed into two classes, namely, those for starting in house, hotbed or cold frame, and the seed that succeeds best when planted out of doors. As many of our best annuals cannot be started with success, except in a hot or cold frame, that may be said to be the most commonly used method. First obtain a shallow box (such as haddies come in) from your grocer. These usually cost five cents each. If these are not obtainable, any box about two and one-half inches deep by about twenty-four inches long, and fifteen inches wide, will do. These boxes are known to the florist as flats.

In the bottom of this box place an inch of coarse soil and place on top of this an inch of rich soil mixed with one-fifth sand. Level the soil with a piece of lath or other smooth wood, and you will then be ready to sow.

Also I never used stable manure or any manure at all when preparing the ground but gave fertilizers after five to six trusses of fruit had set. I find this makes shorter jointed plants and the fruit sets more freely.

The only fault to find with Livingstone's Globe, if there is a fault

The Canadian Horticulturist

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1. The Canadian Horticulturist is published in two editions on the 25th day of the month preceding date of issue. The first edition is known as The Canadian Horticulturist. It is devoted exclusively to the horticultural interests of Canada. The second edition is known as The Canadian Horticulturist and Beekeeper. In this edition several pages of matter appearing in the first issue are replaced by an equal number of pages of matter relating to the bee-keeping interests of Canada.

2. Subscription price of The Canadian Horticulturist in Canada and Great Britain, 60 cents a year; two years, \$1.00, and of The Canadian Horticulturist and Beekeeper, \$1.00 a year. For United States and local subscriptions in Peterboro (not called for at the Post Office) 25 cents extra a year, including postage.

3. Remittances should be made by Post Office or Express Money Order, or registered Letter.

4. The Law is that subscribers to newspapers are held responsible until all arrearages are paid and their paper ordered to be discontinued.

5. Change of Address—When a change of address is ordered, both the old and the new addresses must be given.

6. Advertising rates, \$1.40 an Inch. Copy received up to the 20th. Address all advertising correspondence and copy to our Advertising Manager, Peterboro, Ont.

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 13,000 to 15,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1913	11,570	August, 1913	12,675
February, 1913	11,550	September, 1913	13,729
March, 1913	11,209	October, 1913	13,778
April, 1913	11,970	November, 1913	12,967
May, 1913	12,368	December, 1913	13,233
June, 1913	12,618		
July, 1913	12,626	Total	150,293

Average each issue in	1907, 6,627
" " " "	1908, 8,695
" " " "	1909, 8,970
" " " "	1910, 9,067
" " " "	1911, 9,541
" " " "	1912, 11,037
" " " "	1913, 12,524

Sworn detailed statements will be mailed upon application.

OUR GUARANTEE

We guarantee that every advertiser in this issue is reliable. We are able to do this because the advertising columns of The Canadian Horticulturist are as carefully edited as the reading columns, and because to protect our readers we turn away all unscrupulous advertisers. Should any advertiser herein deal dishonestly with any subscriber, we will make good the amount of his loss, provided such transaction occurs within one month from date of this issue, that it is reported to us within a week of its occurrence, and that we find the facts to be as stated. It is a condition of this contract that in writing to advertisers you state: "I saw your advertisement in The Canadian Horticulturist."

Rogues shall not ply their trade at the expense of our subscribers, who are our friends, through the medium of these columns; but we shall not attempt to adjust trifling disputes between subscribers and honourable business men who advertise, nor pay the debts of honest bankrupts.

Communications should be addressed

THE CANADIAN HORTICULTURIST,
PETERBORO, ONT



EDITORIAL

SPRAYING

The successful fruit growers and well-known authorities on spraying, who have contributed articles on spraying to this issue of The Canadian Horticulturist, are agreed that two essentials to success involve the thorough spraying of all parts of the tree, at exactly the right time. Only within the past few years have many even of our leading growers, been led to appreciate the importance of these two points. Commercial spraying is still a sufficiently new operation in orchard practice to leave no reason for wonder.

The experience of growers in many sections of the country has now demonstrated to a certainty that in the great majority of cases where spraying operations have apparently proved to be a failure, that the work was either not done with sufficient thoroughness, or at the right moment. Where an unsprayed portion of a tree is left it becomes a breeding place for insects and a seeding ground for fungus diseases, and leads to much of the work of the grower being lost. There are many other factors, such as the proper preparation of the fluids and the use of suitable appliances, that must be attended to if success is desired, but these are points that generally are watched more carefully than the two already specified.

A wise man once said that "Wisdom consists in knowing what to do next, and doing it." Our fruit growers will profit if they act on this suggestion. Prepare now for the approaching spraying season by seeing that everything necessary for the success of the work is ordered in time to ensure your being able to attend to it without delay and with the proper degree of thoroughness, when the season for spraying arrives.

ONTARIO FRUIT

Three boxes of Baldwin apples, shown recently in an open competition at the exhibition of the New York Horticultural Association, held recently in Rochester, N.Y., added to the already high reputation for quality held by Ontario fruit by winning the sweepstakes prize. This victory, together with the premier honors that were captured by Ontario fruit last fall in the competition open to the continent held in Cleveland, Ohio, and later at the Land Exhibition, in Winnipeg, where Ontario fruit captured first and second prizes, should prove a source of encouragement to Ontario fruit growers.

During the past few years we have heard much criticism of the poor quality and poor packing of a large portion of the fruit crop of Ontario. The fruit that has been sent to the western provinces, where it has met the competition of the British Columbia and Pacific Coast States' products, has been criticized with especial severity. Much of this criticism has been deserved. It has been beneficial inasmuch as it has drawn the attention of Ontario fruit growers to the need for improvement. The critics for the most part have been friends who have desired to see Ontario fruit maintain its reputation in competitive markets.

Speaking generally, the Ontario fruit grower is just as capable, and just as willing to make improvements as the fruit grower of any other section. The trouble lies in the fact that he is faced by condi-

tions that fruit growers in the newer fruit districts of the west do not have to meet. In the west the orchards are mostly new and it has been possible for the grower to introduce modern methods of culture, packing and marketing with a minimum of opposition. In the east the orchards are mostly old and fruit growers are burdened with practices that are relics of the past but which are none the less difficult to set aside on that account.

In the east the barrel pack has been popular for years. There has been a steady demand for this package. This has encouraged methods of buying which have enabled growers to dispose of their crops in bulk, and thus has made it difficult for them to appreciate the importance of following modern methods of orchard practice. We agree with the critics that the time has come for a change. We are inclined to think, however, that we may possibly devote a little less criticism to the grower and possibly more elsewhere.

An examination, for instance, of the assistance given by the Department of Agriculture in British Columbia to the fruit growers of that province, and of the work being done by the Ontario Department of Agriculture, would not prove complimentary to the latter. In British Columbia, for instance, compulsory spraying has been followed for some years. The mere suggestion of introducing such a measure in Ontario would be likely to strike consternation to the heart of the Ontario Minister of Agriculture. Yet the time has come when a move along this line is required. Some years ago it was felt that it was impractical to require the sanitary inspection of cheese factories and creameries. It was anticipated that the opposition to such a movement would be pronounced and influential. Yet such a measure was enacted and has been successfully enforced with a minimum of opposition and with results that have been a benefit to the industry. We believe that the time is ripe for the Minister of Agriculture of Ontario to have legislation enacted which will give his department power to enforce compulsory spraying in the leading fruit districts at least of the province. This would protect the largest and best fruit growers and ensure a great improvement in the quality of a large proportion of the apple pack of the province. Later the principle could be extended to other districts as conditions permitted.

The British Columbia Department of Agriculture has a much stronger staff in its horticultural division than is the case in Ontario. On the whole it is showing more leadership. By its example it is doing much to encourage and inspire the fruit growers of that province. The Minister of Agriculture for Ontario has made several forward moves of late, but should make more. Additional assistance should be given to the horticultural division of his department, and it should be permitted and encouraged to show more leadership. A portion of all the criticism of the fruit growing industry of Ontario may properly be laid at the door of the Ontario Department of Agriculture. A forward move on its part will meet with a ready response from the fruit growers.

February is a month when many of the good resolutions that we made last fall in regard to the garden we are going to have this year, will be broken if we are not on our guard. By starting many of our plants indoors now we will obtain a start that will do much to help and encourage us during the late spring and early summer months. Don't let this opportunity slip and later regret your negligence.

PUBLISHER'S DESK

Our front cover illustration shows a scene in the orchard of Mr. J. C. Harris, of Ingersoll, Ontario. Mr. Harris controls a number of orchards, in which he uses six power sprayers of the type shown.

* * *

This is the Third Annual Spraying Number of The Canadian Horticulturist. We have made an effort to fill it with information by well-known authorities that will be of practical value to our readers. We feel sure that you will like it. Year by year these special numbers have grown in popular favor. In this issue no less than fourteen firms are advertising spraying machinery, in which they believe our readers should be interested. Thus our advertising, as well as our reading columns, contain much helpful information. We have other reasons for being pleased with this issue, inasmuch as it exceeds all previous issues of The Canadian Horticulturist, both in the volume of advertising carried and in its paid circulation. No better evidence of the popularity of a paper can be furnished than the fact that both its subscribers and advertisers continue their support from year to year in an increasing measure.

* * *

Some of our readers who looked at the circulation statement published on the editorial page in our January issue, which showed an average circulation during the year 1913 of 12,002, and at the statement which appears in this issue revealing an average circulation of 12,524, may be mystified by the apparent contradiction. Both statements are correct. The statement published last month showed the average circulation last year of the first edition only of The Canadian Horticulturist. Last May, as we announced at the time, we commenced the publication of a second edition of The Canadian Horticulturist, which is known as The Canadian Horticulturist and Beekeeper. The two papers are practically one and the same, the second edition differing from the first only in its front cover and in a few pages of reading matter. This month, therefore, we decided to show the average circulation for last year of both editions. This represents an increase in average circulation during 1913 over 1912 of 1,500. This is the largest increase we have ever shown in one year. Naturally we are pleased to be able to report it.

* * *

The March issue of The Canadian Horticulturist will contain some features of special interest. The introductory article will be by a British Columbia contributor. It will expose the misleading statements issued by land agents in regard to the possible profits of fruit growing in that province, and will show what intending purchasers of British Columbia fruit land may reasonably expect to realize therefrom. There will be a special article in the floral department by Mr. H. J. Moore, of Queen Victoria Park, Niagara Falls, and an interesting, well illustrated description of a beautiful London, Ontario, garden. A western contributor will have an illustrated article in the vegetable department. The issue all through will be especially helpful. Our readers will appreciate it.

* * *

Watch for our Spring Gardening and Planting Number in April. The front cover of this issue will show one of the finest

gardening scenes ever reproduced in The Canadian Horticulturist. It will be the best gardening number of the year.

* * *

Advertisers desiring space in the March and April issues should make application at as early a date as possible to ensure a service which we may not be able to give them if they are late in forwarding their copy and instructions.

SOCIETY NOTES

Hamilton

The Hamilton Horticultural Society has elected for its president, Mr. J. W. Jones, and for its secretary, Mrs. Ada L. Potts. It was Mrs. Potts who delivered the interesting address on "School Children and Horticulture" at the recent annual convention of the Ontario Horticultural Association. Two flower shows held by this society last year were the most successful ever conducted in the city. Several helpful lectures were also given during 1913.

In tendering his resignation from the office of secretary-treasurer, Mr. McCulloch presented to the society three handsome medals, neatly engraved, and said that the medals might be given as prizes in some of the competitions. Then, on behalf of the society, President Jones gave the retiring secretary-treasurer a medal which has been in the possession of the society since 1862. The medal, which is engraved in curious figures, was presented to the Hamilton Society by the Royal Horticultural Society of Canada.

Ottawa

The Ottawa Horticultural Society has arranged a programme of meetings, which promise to prove particularly helpful and interesting. These meetings are schedul-

ed for every two weeks during January, February, March, and April. They will be held in the Carnegie Library. Each address will be accompanied with practical demonstrations of how the points touched on in the address should be carried out. Different varieties of flowers will be dealt with at the different meetings. It is believed that better results will be obtained by holding more meetings during the winter months when by holding one meeting a month and continuing the meetings during the summer. Officers of societies might write to Mr. J. F. Watson, 19 James Street, Ottawa, for a copy of the programme of these meetings.

St. Catharines

The St. Catharines Horticultural Society is now coming into its own. The Society, which has a membership of seven hundred and fifty, has really made St. Catharines the beautiful city that it is. It has been a large struggle to bring the society to its present splendid standing but the result is well worth the effort.

The last Fruit and Flower Show was the most successful in the history of the organization. The members feel much encouraged by the splendid support received from the fruit growers of the district. Special attention was paid to the children who exhibited in classes for asters, arrangement of flowers, the decoration of dolls' carriages and small tables.

It has been the policy of the Society to distribute asters and sweet pea seed among the children but last year the sweet peas were dropped. Nearly six thousand gladioli bulbs were sold to the youngsters at five for four cents. For each gladiolus bloom produced they receive from the Society four tulip bulbs. Increased interest is being taken in the work carried on by the Society at the public schools. The young folks of St. Catharines are receiving a training that will count for much in future years.

Nova Scotia Fruit Growers' Convention

THE fiftieth anniversary meeting of this association met at Kentville, January 20-23, and was marked by a record attendance and deep interest in the discussion of problems confronting the fruit growers of the province.

The opening meeting was held on Tuesday evening and was addressed by the Premier, Hon. P. H. Murray. The people of Kentville also put on a splendid musical entertainment. Wednesday was devoted chiefly to a discussion of the greatest enemy of the fruit growers of the province the Black Spot or scab of the apple.

Prof. Caesar, of Guelph, set the ball rolling and didn't leave it until those present knew all about its life history, conditions of development and control.

The principal points brought out in the address will be published in The Canadian Horticulturist.

SPRAYING PAYS

The experience of some of the best fruit growers in the province was given. These showed that thorough spraying pays a big dividend on the expense of application, even in a year like this when many are in doubt whether or not spraying is efficient.

Mr. J. M. Robinson, of the Experiment Station, Kentville, gave tabulated results of spraying experiments in three orchards in the Valley. In brief these experiments showed that commercial lime sulphur gave better results than the home boiled, that lime sulfur is preferable to Bordeaux, and that the difference between sprayed and un-

sprayed fruit per acre gave a gain in favor of the sprayed fruit of over one hundred dollars an acre.

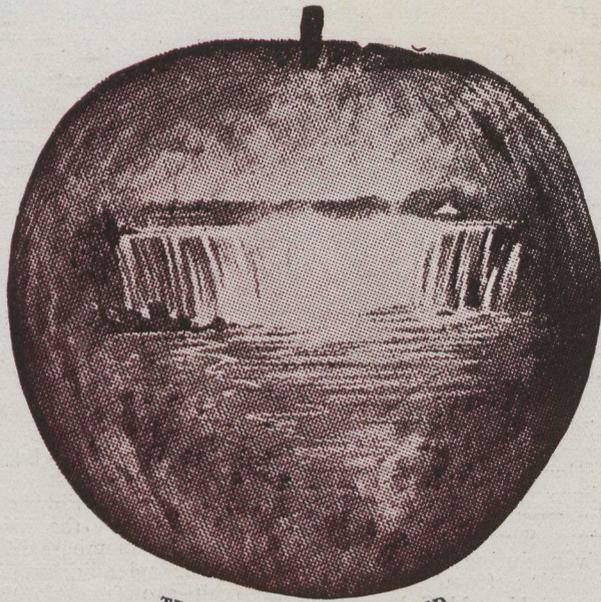
A very able address on cooperation and one which should be published all over the Dominion, was given by A. E. Adams, of the United Fruit Companies of Nova Scotia. He went into history, and showed how cooperative organizations had benefited such countries as Denmark, England and Germany, and then took up the work and aims of the United Fruit Companies. This organization bids fair to become one of the strongest factors in the progress of our province industrially and agriculturally. Already, by scientific marketing and cutting down expenses of shipping, thousands of dollars had been saved to the farmers, and not only had money been saved in the selling but also in the buying of supplies. The organization was becoming stronger every day.

APPLE APHIDS

Prof. Brittain, of Nova Scotia Agricultural College, gave an instructive talk on the apple aphids and their control. He recommended adding to the ordinary spray mixture Black Leaf 40, a mixture preparation on the market, and spraying after the young aphids have hatched out. Because we are able to put Black Leaf 40 in with the spray we use for scab, and so forth, it is, therefore, better than the emulsions which have to be sprayed by themselves.

Dominion Entomologist Saunders told of

(Continued on page 54)



TRADE MARK REGISTERED

NIAGARA

THE Sprays of Quality

HIGHEST IN STRENGTH
ALWAYS UNIFORM
FAMOUS FOR RESULTS
RELIABLE OLDEST AND BEST
ALWAYS READY TO USE

NIAGARA SOLUBLE SULPHUR

(Patented in United States and Canada)

THE MOST TALKED-OF SPRAY IN AMERICA

A Sulphur Spray in Powder Form. Dissolves immediately in water. No sediment. A positive **Fungicide** and **Insecticide**. Works quicker and better than Solution. It does all the work of Lime-Sulphur and has the following advantages: Is cheaper—Easier to handle—No leakage—Keeps indefinitely—Saves freight and storage. 100 lbs. of Soluble Sulphur will make more spray than a 600-lb. barrel of Solution. Soluble Sulphur was used by hundreds of growers in Ontario in 1913 with excellent results. Those who experimented last year will use it entirely this year.

More Soluble Sulphur will be used this year than the combined output of all Lime-Sulphur factories.

Remember this material can only be procured from us. Last year we were forced to disappoint many growers. Our supply is limited again. Order at once so as to be sure of being supplied. We will be pleased to send additional information about this great spray. Write for it.

DON'T PAY FREIGHT ON WATER

ARSENATE OF LEAD

SWIFT'S BRAND—The highest grade of Arsenate of Lead in the world. Will not burn foliage. Mixes easiest and stays mixed. Sticks best and kills best. 15% Arsenic oxide. **Guaranteed**. When you use **Swift's** you don't lose that half-hour dissolving your lead every time you fill your tank. You don't find that dark sediment in your tank, either. You can buy cheaper brands, but you cannot buy any Lead as good. **SWIFT'S** is the **STANDARD**.

NIAGARA LIME SULPHUR

The Pioneer Sulphur spray—Oldest and most reliable Solution made. Highest in Beaume test—Absolutely clean and uniform.

Because of the success of NIAGARA we have had many imitations. Get the original.

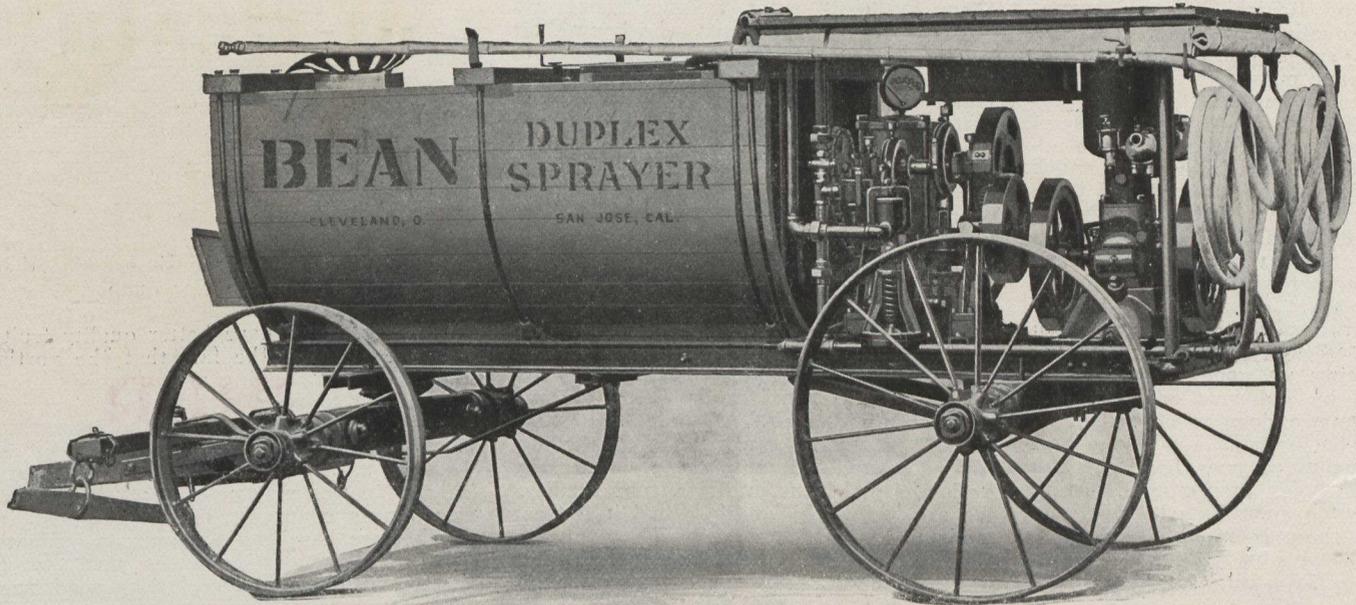
WHERE EVER FRUIT EXCELS NIAGARA SPRAY IS USED

NIAGARA BRAND SPRAY CO. LTD.

BURLINGTON, ONTARIO

SPRAY PUMPS

CAPACITY HIGH PRESSURE SIMPLICITY EFFICIENCY
 DURABILITY LOW COST OF MAINTENANCE



POWER PUMPS

BEAN DUPLEX POWER OUTFIT—2 cylinders—Operates with 1½, 2½ or 3½ h.p. engine—Capacity: 6 to 7 gallons per minute—Pressure: 200 to 250 lbs. The perfect sprayer.

BEAN GIANT POWER OUTFIT—3 cylinders—Large capacity—Will supply four lines of hose—Operates with 2½ or 3½ h.p. engine—Most powerful sprayer made.

NIAGARA POWER OUTFIT—3 cylinders—Capacity: 6 to 7 gallons per minute—High pressure—Light and very compact—2½ to 3½ h.p. engine.

BEAN MIDGET POWER OUTFIT—The one man outfit—Operates with 1½ h.p. engine—Pressure: 175 to 200 lbs.—Best light power sprayer ever made.

These power sprayers have many exclusive features. All have porcelain-lined cylinders, so are proof against the chemical action of corrosive sprays. Valves are large and very accessible. No threaded joints. No stuffing box packings to leak. Direct connected. No bolts or connecting rods.

PATENT PRESSURE REGULATOR—The greatest invention ever put on a power sprayer. Maintains a uniform pressure whether nozzles are turned on or off. Saves one-third the gasoline and the same proportion of wear and tear. With this regulator the engine can be started as easily against full pressure in the pump as it can when there is no pressure.

This pressure regulator is the simplest, safest and most efficient and dependable pressure controlling appliance on the market. It eliminates 90% of the troubles so common in other power sprayers.

HAND PUMPS

MAGIC NO. 9—Largest hand pump made—Can be easily operated by one man at a pressure of 140 lbs.—Convertible into a power sprayer.

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

THE PIPPIN NO. 50—Barrel pump—Made for smaller orchards.

Write for our new complete catalogue No. 29, which illustrates and describes in detail all our equipment.

We would like to refer you to our thousands of satisfied customers. We have no dissatisfied ones. If you need a pump of any kind it will pay you to investigate the BEAN.

WHERE PROFITS ARE THE BIGGEST, THESE POWER PUMPS ARE USED

NIAGARA BRAND SPRAY CO. LTD.
BURLINGTON, ONTARIO

Ontario and the Northwest Market

E. F. Palmer, Ontario Fruit Branch, Toronto, Ont.

If Ontario is to retain a fair portion of the northwest market, apple growing must be made a business. During the past year Ontario has shown that she can produce just as good fruit in every respect as British Columbia. The Canada Land and Apple Show is evidence of this statement, where Ontario carried off first and second prizes in the competition in apples, while British Columbia came third. We can produce the fruit but we have got to advertise it. Ontario should have fruit at every large exhibition throughout the northwest, not just one or two. British Columbia spends ten dollars annually advertising her fruit where Ontario spends one. What are we doing to advertise ours?

Already Ontario has lost much of the Northwest fruit market. Why? Because of our policy, or rather lack of policy, in sending to this valuable market too much poorly packed, poorly colored and poorly graded fruit. We have made no effort to retain or extend our market there, but rather the reverse. And the expected is happening. Western grown fruit is forcing Ontario out of market after market, for the western growers realize the importance of this Northwest market, and they are extending it by putting up good fruit in good packages, and by judicious advertising.

What has Ontario done to advertise her apples in the northwest? Little, but trying to see how much poor fruit she can send without the fruit inspectors detecting it. There is much good Ontario fruit, too, of course, but there is enough, and more than enough poorly packed and poorly graded fruit to give all Ontario stuff a

black eye. Only in few cases is fruit being put up that will successfully compete with fruit from British Columbia and the western states. And what encouragement is there for a few to put up an honest pack when they have to sell their fruit in the face of an existing prejudice? Just this—that, while Ontario fruit as a whole has a bad name, and will have until better cultural and packing methods are more generally used, yet those who are putting their fruit up as well packed and graded as western fruit, are receiving prices that more than pay them for their extra trouble. They are selling to dealers, however, who know their pack and who therefore have confidence in them. How much confidence have western fruit dealers in the average Ontario pack that goes to the west?

NOT IMPROVING

I have said that we have made no effort to extend or even retain our share of the northwest market—no continued effort. We have done even less. We have persisted in sending poor grade fruit, while our western competitors have improved their grade and increased their advertising year by year.

It is now time for someone to say that western fruit hasn't the quality of Ontario fruit. I hear that statement wherever I go, and I hate to hear it, not because I am originally from British Columbia, but because it sounds too much like trying to justify poor grading and packing. But why avoid the real issue by harping on quality? We are losing this market, and it is poor methods that are losing it. Extra quality of fruit alone will not save us. The past has proved that. How much is there in this

"superior" quality anyway? Those who are in the habit of comparing an Ontario Snow and a British Columbia Snow, an Ontario McIntosh and a British Columbia McIntosh, just for a change compare a British Columbia Jonathan and an Ontario Jonathan, a British Columbia Spitzenberg and an Ontario Spitzenberg, a British Columbia Yellow Newtown and an Ontario Newtown.

POINTS TO NOTE

Further it must be remembered that the Northwest is a market of comparatively low grade fruit. The west has not shipped her fancy varieties there in any quantity but has sent such varieties as Ben Davis and Rome Beauty. Also the average age of the orchards in British Columbia is only nine or ten years, and everyone knows that fruit from young trees is not as high quality as from mature orchards. Much, too, of western fruit has in the past been over-irrigated. This produces poorer quality, poorer keeping fruit. However, these poor quality varieties of apples, and apples from young orchards, have been compared by the northwest people, many of whom are from Ontario, to high quality varieties as King, Spy and Russet, from mature Ontario orchards. Hence largely the impression that western fruit is of inferior quality.

LOSING THE MARKET

However, if we have better quality fruit, that doesn't alter the fact that the northwest market is slipping away from us. For in addition to poor grading, we have not the color nor the pack, nor the attractiveness of package of our western competitors. That is, as a general rule, our apples are inferior to western apples in color and attractiveness of pack. The exhibitions in which there has been a chance to compare fruit from the two provinces have proved that Ontario can produce just as good fruit

Scientific Cultivation

Get away from useless drudgery and old-time wasteful cultivating methods in your family garden and on your farm. Use the Planet Jr and do the work of 3 to 6 men better, quicker, cheaper. Planet Jrs are light, strong, lasting. \$2 to \$100. Fully guaranteed.

FREE Our new 72-page illustrated catalogue of 60 implements for all farm and garden uses. Write postal today.

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Box 1106G, Philadelphia
Write for the name of our nearest agency

Planet Jr.



No. 28 Planet Jr Combined Hill and Drill Seeder, Wheel Hoe, Cultivator, Rake and Plow

The newest and most accurate Planet Jr seeder. Sows all garden seeds in hills or drills, opens the furrow, covers, rolls down, and marks next row all at once. Has steel frame and handles, and complete set of attachments. Light enough for woman's use.



No. 25 Planet Jr Combined Hill and Drill Seeder, Double Wheel Hoe, Cultivator and Plow

A capital implement for large-scale gardening especially. It has a steel frame, and complete seeding and cultivating attachments. The hoes run close to row without danger to leaves or roots. Two acres a day can be worked with this tool.



Planet Jr 12-tooth Harrow, Cultivator and Pulverizer

An invaluable tool in the market-garden, truck and strawberry patches. Has new steel wheel which prevents clogging. Its 12 chisel-shaped teeth cut out all weeds, stir and mellow the soil and leave the ground in the finest condition without throwing dirt on plants.



No. 30 Planet Jr Single Wheel Hoe, Cultivator, Plow, Rake and Marker

A new Planet Jr Single Wheel Hoe that is light, strong and practically indestructible—the frame and handles are steel. It is completely equipped for plowing, hoeing, cultivating, and raking. The marking attachment insures rapid, economical wheel-hoeing.



No. 10 Planet Jr Horse Hoe, Cultivator, and Hiller

Does more and better work than any other horse-hoe ever invented. It is light and easily handled, yet unusually strong. Has new steel wheel which prevents clogging with trash. Quickly adjusted to rows up to 3½ feet apart. Vine-turner attachment is great for many crops at last workings.

in every respect as British Columbia. But we are not producing or packing the quantity of good fruit that British Columbia is. To retain a fair part of the northwest market we have got to put up a higher grade of fruit in a better package than the barrel. For what quality is it that sells an article? Its appearance? In the majority of cases, yes. Thus it is the color of the fruit, the perfect grading and the appearance of the package that are the main factors in selling western grown fruit. Further, people have come to know that they can rely on fruit from the west. They know that when they buy a box of apples from British Columbia or the western states that the fruit will be practically the same throughout the box. It is honestly packed. If it is marked No. 1 it really is No. 1. If they could rely on Ontario fruit the same way it would mean thousands of dollars to the apple growers of this province.

It is said that Ontario fruit is preferred in the northwest on account of better dessert and cooking quality. It is preferred, but it does not sell fruit because of the several reasons already outlined—appearance of fruit, appearance of package, and honesty of packing, as compared to western apples.

In the Winnipeg Tribune for November 29, 1913, western jobbers are quoted as saying "that the American fruit is the best seller because it is better sorted and packed and that Ontario can recapture the western market and drive out American competitive fruits as soon as it standardizes its product and overcomes the effects on the westerners of past carelessness and dishonesty in packing."

WHAT MUST BE DONE

And so, as I have already intimated, if we are going to build up a market for our

fruit in the Canadian northwest, we have got to produce a higher grade of fruit as to color and freedom from blemishes; we have got to put up an honest pack, and we have got to use the western package—the box. For though a few of the western towns still prefer the barrel, and there will doubtless be a market for barreled fruit for many years to come, yet the box is coming into greater favor. It is a handier package and—it has a reputation. The barrel has lost its if ever it had one. And further, though the day of high prices for box-packed apples is probably gone forever, this fact in itself brings the box-packed apples in more direct competition with barrel-packed fruit. The result is that the market for barreled fruit will become more and more restricted each year and there will be a demand for larger and larger quantities of boxed fruit. The fact is evident and we must accept it.

MUST HAVE AN HONEST PACK

Then as to an honest pack. We have got to produce it, that's all. We are not competing with British Columbia until we do. We are simply out of the competition. And here again the argument is all for the box package. Here is an extract from a western paper. "Barrels are going out of fashion. The demand for them is giving place to the demand for the boxed product." The barrels encourage carelessness in grading for quality and size. It has been the package not so much of inferior grades of apples, as ungraded apples. Let the top and the bottom of the barrel be nicely "faced" and the space between invites ungraded fruit. The box, on the contrary, requires close grading for size, as the apples must be uniform to pack properly. This close grading further insures that all blemished fruit will be found and culled out. The box then does not encourage improper grading.

Douglas Gardens

OAKVILLE, ONT.

Our Spring

(1914)

Planting List

Is now ready for mailing

A copy will be sent promptly on application

Early orders from our list are respectfully solicited. It is almost certain that there will not be sufficient plants this year to go around. Early orders will save disappointment.

The newer Snapdragons (Antirrhinums) give much satisfaction and they should be in all gardens. We shall have a limited number of the new Silver Pink, which is especially fine.

Our China Asters and Stocks are also of high quality.

JOHN CAVERS

Make Your Own Crop Prices!

With a Goulds Reliable Sprayer you not only increase your yield, but you grow a higher grade of fruit. Thus you take two extra profits—one on quantity and one on quality.

Spraying is useless unless it is done effectively. Every leaf, every crevice must be saturated with solution. Goulds Sprayers apply the mixture in just the right form and quantity. They are made by experts in the largest exclusive pump factory in America.



The pump, fittings, entire equipment are constructed to last, to withstand chemical action. All working parts are made of bronze. The improvements are new, practical. They are the result of countless experiments, of the application of skill and long experience by trained engineers. Get the best spray outfit to start with. Cheap outfits are time and money wasters, more costly in the long run.

GET FREE SPRAY BOOK

40 pages, illustrated. Packed full of facts you want to know. Spray formulas, spray calendar, how to mix and apply, how to prevent and destroy insects and diseases, what sort of sprayers to use, a volume of valuable information. Write for it to-day.

THE GOULDS MFG. CO.
17 W. Fall St., Seneca Falls, N.Y.
Largest Manufacturers of Pumps for Every Purpose



Apples	Per Acre	\$600
Potatoes	" "	\$250

For the Land's Sake

Use the best Manure and get

GOOD CROPS

For Nurseries, Fruit Growers and Gardeners.

Sure Growth Compost

Makes poor land fertile and keeps fertile land most productive.

Supplied by

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133 Victoria St., TORONTO

Telephones: Main 2841; Residence, Park 951

Say you saw this ad. in The Canadian Horticulturist

FAVOURITE FLOWERS From the BEAUTIFUL OLD-FASHIONED GARDENS of ENGLAND

KELWAY'S famous Hardy Herbaceous Plants are modern developments of the old English favourites. The cottage "Piny Rose" has become the Pæony, incomparable in form, colour and fragrance. The old-fashioned Larkspur has developed into the stately blooms of the Delphiniums; Gaillardias, Pyrethrums and the rest, all serve to bring back the charm of the old-world English garden. Special care is taken in packing plants to arrive in Canada in good order, and they can be relied upon to thrive with a minimum of attention.

Full particulars and illustrations given in the Kelway Manual of Horticulture mailed free on receipt of 60c by

KELWAY & SON
LANGPORT - SOMERSET,
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Send—now—for a copy
of the Kelway Book—
and make your Garden
glorious

Kelway's Perennials
for
Canadian Gardens



Direct from
KELWAY & SON
The Royal Horticulturists
LANGPORT ENGLAND

Last, and of most importance, Ontario as a province, has got to produce a better grade of fruit. Herein lies the most difficult problem, for in Ontario the apple orchard is usually a side line to general farming. It is unsprayed, unpruned and uncultivated, for the farmer does not realize its money value to him. He sells the fruit for whatever he can get, and every dollar he gets he considers money found. I would again quote the Winnipeg Tribune as follows: "The whole trouble lies with the Ontario fruit grower. Fundamentally, he is not a fruit grower at all, but a mixed farmer, who devotes most of his time to his grain and his stock. He neglects the four fundamentals of scientific fruit growing, which are judicious pruning, adequate spraying, careful thinning and thorough cultivation of the orchard ground. Only when these are attended to can really first class fruit be secured. A man cannot work his farm and neglect his orchard and raise good fruit. This is the fundamental fault which has brought Ontario fruit into disrepute in the west."

The farmers of Ontario as a whole have got to be taught the value of cultivating, pruning and spraying. Then, and not until then, can we look for a general improvement in the grade of Ontario apples. The western apple growing districts have the advantage of us in that fruit growing is a comparatively new industry there. They are not troubled to nearly the same extent with insect pests and fungous diseases, and in the majority of cases, fruit growing is the sole means of livelihood of the people in the fruit growing districts. It is their occupation, their business, and they have got to make it pay. It is not a side line to be neglected and the crop sold for what it will bring.

PICKLING METHODS AT FAULT

I believe also that much of Ontario's apple crop is picked before it is fully mature, and some after it is over mature. This is partly due to the fact that Ontario growers take all the fruit off the trees at one picking. Immature and over-ripe fruit has low storage and shipping quality. Green immature fruit is subject to scald, and if very green will shrivel in storage, while the same variety fully matured holds much longer and in better condition. This principle has been found to hold true for all kinds of fruits except pears and lemons. These are apparently the only fruits which are better when picked before full maturity or ripeness as the term is ordinarily interpreted. By full maturity is meant full color, with firm flesh, and the seeds fully grown and colored. It is best, especially with the earlier ripening varieties, to make more than one picking, selecting each time the fully colored fruits, and allowing the undeveloped to remain. The fruit grown on the outer branches develops more rapidly and consequently ripens first.

FRIENDLY CRITICISM

I have had the opportunity recently of reading a letter from an Ontario man who has lately gone to the northwest. He has made a special study of market conditions there. He writes as follows:

"I feel keenly with regard to the marketing of Ontario apples in the west, and I am strongly of the opinion that although Ontario is rapidly losing that market, yet it is not too late, were proper methods of holding it adopted.

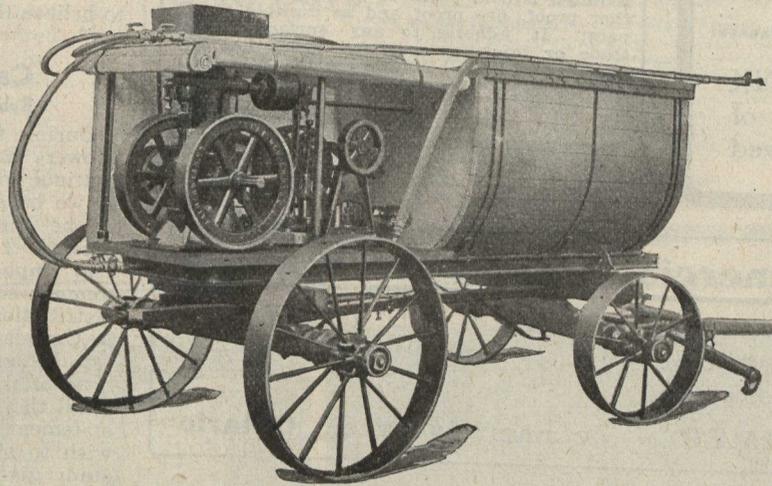
"The most serious phase of the question is this: The people of British Columbia are making a rapid advance in the matter of apple production. They are not only packing their apples well, but they are improving the quality as quickly as possible.

"The Hardie Power Sprayers"

The Sprayer that is Free from Experimental Risks

OVER 6,000 IN USE

PLACE
ORDERS
EARLY



SEND
FOR OUR
CATALOG
NOW

THE HARDIE TRIPLEX

Known as the "*The Sprayer with the Trouble Left Out*" used in over 6,000 of the best orchards of America. Many have been used for over ten years. They are noted for their Simplicity of Construction, Large Capacity, High Pressure, Light Weight and most important of all, Their *Dependability*.

Thousands of the most successful growers say their success is in a large measure due to the reliable and effective operation of this machine, which never fails, and which is always ready to deliver the spray to the tree in large volume and under high pressure.

HARDIE FEATURES

SIMPLICITY OF CONSTRUCTION—Obtained by leaving out everything of a complicated and troublesome nature, using only such construction as long experience has proven best.

LIGHTNESS—Obtained by using high carbon pressed steel frames such as are used under all automobiles, in place of the big heavy timbers or heavy soft steel frames. We get four times as much strength with less than one-half the weight. Our machine frames only weigh seventy pounds and will carry a load of three tons. This same principle is carried out through the entire machine.

STRENGTH—Obtained by bearing in mind that anything is only as strong as its weakest part, by knowing where strength is needed and by using material which will stand the wear and tear of high pressure work.

ACCESSIBILITY—(Get-at-ability)—we build our machines so that you can get at any part in a moment. You never need to take a "Hardie" to the machine shop if an accident happens. You can fix it generally in the orchard. Any one who has ever used a power sprayer knows the importance of Accessibility.

BIG CAPACITY—Our pumps are properly designed and are specially built by "Sprayer Specialists." We know the importance of lots of liquid at the nozzle and build accordingly.

HIGH PRESSURE—We use a powerful engine on our machines and our pumps are so light running that we get the highest pressure. All of our machines are guaranteed to maintain a steady, working pressure of 200 pounds.

FROST PROOF ENGINE—We use the IDEAL Engines. R. E. Olds, the Pioneer Gas Engine Builder of America, the R. E. Olds of Automobile fame, is at the head of the firm that builds them. There is no engine just as good as the Ideal. It cools with water, but it is carried in such a way that freezing will not injure it.

STAY-THERE HOSE COUPLINGS—The kind that you can't blow off.

HILO SPRAY ROD—Throws the spray three feet or thirty feet as you want. Just a movement of the thumb does it.

ORCHARD SPECIAL SPRAY HOSE—The hose that has made good.

THREE SIZES OF POWER MACHINES

The Triplex, shown above. Specifications:

BED: High Carbon pressed steel.

TANK: 1½ in. Red Cypress. Capacity, 200 gallons.

PUMP: Three 2-in. cylinders; Capacity 6½ gallons per minute.

ENGINE: Full 3 H.P. Water cooler. Magneto ignition.

TRUCK: Steel wheel "Havana" truck, wheels 28 in. front, 34 in. rear, ¾ in. x 5 in. tires. Complete with neck yoke and double tree.

PRICE: Lower than any other machine of like Specifications.

The Duplex—A smaller machine of the same type. Specifications:

BED: High Carbon pressed steel.

TANK: 1½ in. Red Cypress. Capacity, 150 gallons.

ENGINE: 1½ H.P. Water cooler. Magneto ignition.

PUMP: Two 2-in. cylinders. Capacity 4½ gallons per minute.

TRUCK: Havana Steel truck, front wheels 28 in., rear wheels 34 in., with ¾ in. x 5 in. tires. Complete with neck yoke and double tree.

PRICE: Lower than any other machine of like Specifications.

The Hardie Junior—A still smaller machine. Specifications:

BED: 4 in. x 4 in. Maple.

TANK: 1½ in. Red Cypress. Capacity 100 gallons.

PUMP: Single Cylinder, double acting. Capacity 3 gallons per minute.

ENGINE: Air cooled 1 H.P. Battery Ignition.

PRICE: Lower than any ever put on a practical power sprayer.

The Hardie Hand Pumps—The World's Best. Made almost entirely of Brass. So simple a "Boy with a Monkey Wrench" can take them apart and put them together again. Made in twenty sizes and styles.

Get our catalog and prices before you buy. You will save money, time and trouble by so doing.

DISTRIBUTORS FOR CANADA

The Biggs Fruit & Produce Company, Burlington, Ont.

Imperial Bank

Established OF CANADA 1875

Capital Authorized - \$10,000,000
 Capital Paid Up - 6,925,000
 Reserve and Undivided Profits - 8,100,000

D. R. WILKIE, President and General Manager

Open a SAVINGS BANK ACCOUNT. Deposits of \$1.00 and upward received

PAINT WITHOUT OIL

Remarkable Discovery That Cuts Down the Cost of Paint Seventy-Five Per Cent.

A Free Trial Package is Mailed to Everyone Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powderpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof and as durable as oil paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manuf'r., 441 North St., Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write to-day.

First-Class Commercial Gardeners Wanted

A few good market garden properties for sale or rent. Locations good, prices and terms attractive. Cheap natural gas for greenhouse fuel. Write for details to

O. PATTERSON FARMER - Jeannette's Creek, Ontario

Beautify and Protect Your Property

Peerless Ornamental Fencing accomplishes two great purposes. It beautifies your premises by giving them that symmetrical, pleasing, orderly appearance, and it protects them by furnishing rigid, effective resistance against marauding animals, etc.

Peerless Ornamental Fencing

is made of strong, stiff, galvanized wire that will not sag. In addition to galvanizing, every strand is given a coating of zinc enamel paint, thus forming the best possible insurance against rust. Peerless ornamental fence is made in several styles. It's easy to erect and holds its shape for years.

Send for free catalog. If interested, ask about our farm and poultry fencing. Agents nearly everywhere. Agents wanted in open territory.

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



THE BEEKEEPERS' REVIEW

would like very much to enroll a goodly number of new subscribers for the year 1914. Listen! Besides the 3,000-colony series managed from one office, we will begin with the January number of the REVIEW a series of articles by a beekeeper "grey with experience" that we will call the Farmers' Series; or, How to Produce Comb Honey with Two Visits a Year. The editor of the REVIEW has looked into this system quite thoroughly, and believes that, with this method that will be described in the REVIEW during 1914, the busy man or farmer can harvest much more comb honey per colony, with about a fourth the work that is required with the ordinary system now in vogue.

All progressive beekeepers should subscribe for two or three good bee journals. We are making a special low price on the REVIEW when clubbed with other bee journals.

Here is a { GLEANINGS, one year, \$1.00 } Both, one year, for \$1.50
 good one: { The REVIEW, one year, \$1.00 }

Here is an- { GLEANINGS, one year, \$1.00 } All Three for \$2.00
 other: { AMER. BEE JOURNAL, 1 yr., \$1.00 }
 The REVIEW, one year, \$1.00

Extra for Canadian postage: Gleanings, 30c; American Bee Journal, 10c.
 All three listed above 40c.

To take advantage of this low price all remittances should be addressed—

THE BEEKEEPERS' REVIEW - - - NORTHSTAR, MICHIGAN

In that province poor varieties are destroyed and replaced by better varieties, and although much is said against the quality of British Columbia apples, yet the fact remains that some of the varieties are almost, if not quite as good, as those produced in Ontario.

"Then, too, the British Columbia fruit grower is becoming very aggressive. The bad season of 1912 has caused him to become almost desperate, and this year great efforts were put forth to market their fruit more satisfactorily, and I have good reason to believe that they have succeeded in doing so."

Canadian Markets*

Robert Thompson, St. Catharines

During the past year many of the fruit growers have asked the question: If we continue to increase our planting as rapidly as we have during the last few years, will we be able to find markets for the fruit grown? I wish to answer this question very emphatically, and say, Yes, if we use common sense and business methods in the distribution. There are consumers enough in Canada to use all the tender fruits that can be grown from Toronto around the head of the lake and to the Niagara River if all the suitable soil were planted. This statement may seem pretty strong, but I wish to state that it is based on years of study given to the distribution of our fruit as the president of one of the oldest, largest and most successful of our cooperative fruit growers' associations. If the fruit can be placed before the consumer in good shape and at reasonable prices there is hardly any limit to what may be consumed.

First: Our own Ontario market can be doubled, trebled, yes and quadrupled, if we go after it. There is hardly a town but what will take at least five tons—twice or three times each week, if arrangements could be made to get the fruit dealers to get in their supply by freight—the fruit can be landed in perfect condition at less than half the cost by express, and no pilfered or broken baskets. If we continue to depend on the express companies to furnish transportation for us, so long will we have complaints, dissatisfaction and poor distribution. During the past season several of the smaller towns have been supplied as I suggest, and in every case with satisfaction to every one, and the quantity consumed was a surprise to the grower.

Second: The lower provinces also furnish a very large opening that has never been worked to any great extent.

Third: The western provinces present an enticing field to the grower. We read a good deal about Ontario fruit not holding its own and that western fruit is gradually crowding out the Ontario growers, which if half were true, would mean ruin to our industry in Ontario. Unfortunately a lot of writers and others come back from visits to the west and hasten to present to the public here the tales they have listened to told by certain wholesale jobbers who are doing their best to get control of the fruit trade of the west, and then rob the public worse than ever, or to the complaints of some few who expect to purchase fruit as cheaply as in Ontario, or to those who have purchased some of the poor fruit that is sometimes sent out from here, or who have received shipments from Ontario not properly packed or loaded, and that has arrived in poor condition.

*A paper presented at the recent annual meeting of the Ontario Fruit Growers' Association.

I think I have a right to speak with some confidence when I give you this information, viz.: That the St. Catharines Cold Storage Company has been giving this market special attention for over ten years; that their shipments have increased year by year until the past season they sent out to the west one hundred and seventy-eight car loads containing two thousand four hundred and thirty boxes and forty-four thousand four hundred and eighty baskets of peaches, ninety-one thousand four hundred and fifty packages of tomatoes, one thousand five hundred and fifty boxes and fifty-eight thousand two hundred and twenty baskets of pears, eight hundred and sixty boxes and ten thousand three hundred baskets of apples, fifty-seven thousand five hundred and thirty packages of plums, fourteen hundred and sixty baskets of peppers, twelve hundred baskets of crabs, fifteen hundred and seventy baskets of quinces, one hundred and forty-nine thousand four hundred packages of grapes, besides several hundred baskets each of egg plants, onions, cucumbers, beans, melons, black



Let Me Send You
My New Big Book
"Why, How and When to Spray"

FREE

HURST EVERY farmer, truck- or fruit-grower needs this book. It is more than a catalog. Contains 74 different illustrations from photographs of insects and plant diseases that rob the grower of his profits. It gives full details as to how to combat these pests, the various remedies which experiment has proven successful and directions as to how and when to apply them. The book also contains illustrations, some in colors, of the famous **HURST SPRAYERS**—28 different styles and sizes—from small hand power outfits to large gasoline engine sprayers for field and orchard. It explains in detail the liberal terms on which **HURST SPRAYERS** are sold—

10 Days FREE Trial—5 Year Guarantee
No Money In Advance—No Freight To Pay

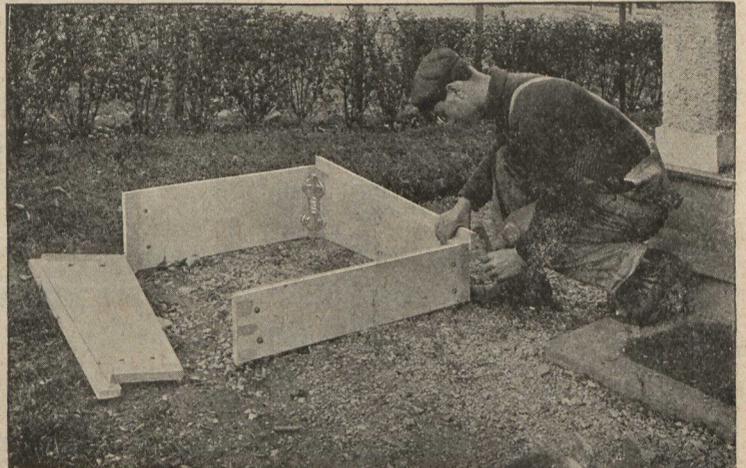
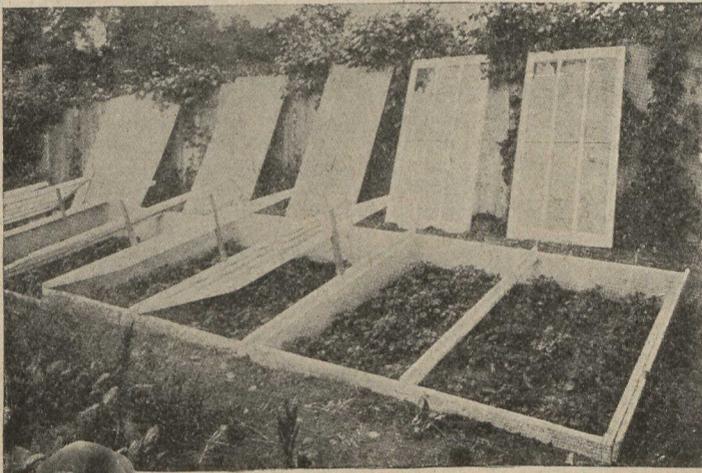
I will ship you any **HURST SPRAYER** on 10 days free trial, without one cent in advance—no bank deposit—no agreement to keep and pay for the machine unless you are thoroughly satisfied. Our liberal selling plan gives you your own terms of payment. The sprayer will pay for itself in the extra profits of one season. I want to tell you about our

Money Saving Offer This offer goes to the first buyer in each locality this season. So write today. Tell me what size sprayer you need or what you have to spray and get my big free book and raise bigger, better crops, and increase your profit.

E. H. LAMIELL, General Manager

THE H. L. HURST MFG. CO., 987 North St., Canton, O.



Gardening By the Sense of Sense Or the Reason Why of Garden Boosters

There are lots of us, who are "put-offs." We put off yesterday, what should have been done the day before yesterday. It's very human—but very bad for gardening.

Before expanding on the actual get ready phrase, let's digress for a moment into the "I-told-you-so" class.

The last part of last Winter, you will remember, was just the kind that made you think that "Spring is going to be early this year."

But it wasn't. It lagged along until some of us had to plant our gardens all over again, and others said "what's the use anyway of trying to have an early garden any more in this confounded climate?"

Along in February we reminded you that Cold frames or Hot beds were the only sure insurance against a late garden. We even went so far as to say pretty strongly that you ought to buy some of our frames—even if only ten of the single plant ones for \$6.25.

We endeavored to make it plain to you how, with the help of frames, you could boost your garden along anywhere from

two to six weeks. It being entirely up to you which.

But some of you trusted to luck again. That's why we can now say, "I-told-you-so."

But to the real point: This year you are going to buy frames—you made up your mind to that eight months ago.

This being so, as it certainly is so, then the thing for you to do is: send at once for our Two P's Booklet which tells you about the Pleasure and Profits of Cold Frames and Hot Beds. We have seven different kinds and sizes of these frames or garden boosters.

Every one of them is illustrated, described and priced in that booklet. There's several pages of Helpful Hints, and a Planting Time Table, both of which you want right handy under one cover.

Send for this Two P's Booklet. Pick out your frames. Order them. The only way to be ready—is to get ready

LORD AND BURNHAM CO. LTD. OF CANADA

GREENHOUSE DESIGNERS AND BUILDERS

TORONTO

12 QUEEN STREET, E.

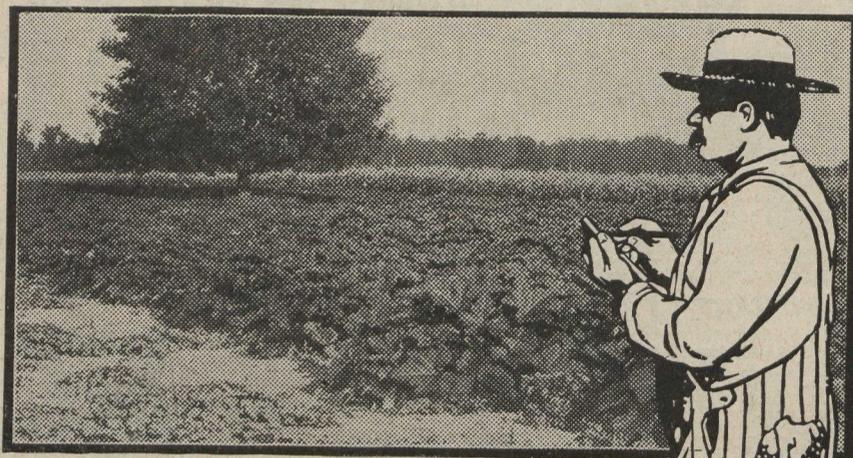
NEW YORK

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ROCHESTER



Market Gardeners Make Big Profits from Small Acreage by Modern Cultivation and Spraying

If a business doesn't pay there's a reason, and the same may be said of a farm. Many 10 acre market gardens are producing greater profits than 150 acre farms simply because modern cultivation and spraying are applied on the former and disregarded on the latter. Adopt the spraying policy but, in doing so, select

SHERWIN-WILLIAMS

NEW PROCESS ARSENATE OF LEAD

to effectively exterminate all leaf-eating insect pests.

This spraying material is used exclusively by many of the largest growers and societies in the fruit growing districts of the country. These people are business men as well as fruit growers, and they prefer to use Sherwin-Williams New Process Arsenate of Lead because they find it pays them better.

It is very fine and fluffy in character, so remains well in suspension, making a spray, uniform and efficient in poisoning capacity, that covers the largest amount of foliage. S-W New Process Arsenate of Lead, is absolutely safe—it cannot burn the foliage or russet the fruit, because all the Arsenic acid is thoroughly combined with the Lead. This arsenate can be used with Bordeaux Mixture or Lime Sulphur.

S-W NEW DRY ARSENATE OF LEAD

has all the requisite qualities of a good paste lead and the advantage of being in dry powder form for dusting on garden truck. It mixes readily with water or spraying mixtures and is somewhat lighter in gravity than the paste lead. One pound of the dry lead will do the work as effectively as two pounds of paste lead. This enables you to make a saving of practically half your freight bill.

Write for full particulars and prices.



THE SHERWIN-WILLIAMS Co.

of Canada, Limited

MANUFACTURERS OF INSECTICIDES

Offices and Warehouses:

Montreal, Toronto, Winnipeg, Calgary, Vancouver,
Halifax, N. S., London, Eng.

and red currants, cherries and gooseberries, making a total of four hundred and twenty-three thousand three hundred and twenty packages, or very nearly one-third of the total shipments from the companies' shippers. If Ontario is not holding her own, then all I have to say is that this company is steadily shipping more each year. They have been selling to the same firms year after year, and at the end of each season very flattering letters are received from purchasers of these cars in the west.

While I say that the west presents a great opening for Ontario fruit, and while our company has made a great success in supplying a portion of their wants, it has only been accomplished after years of patient watching, studying and learning all the ins and outs of the business. This has cost, time, money and hard work, and I do not wonder, nor am I surprised when I hear or read of the many who think all they have to do is to have a car of any kind of fruit brought in and packed, without any experience, in a car and sent west; of course it is only by the merest chance that such shipments turn out well.

The only way that shipments to the west can be successful is for a number of growers to arrange to plant the varieties that will carry well, to agree in the early part of the season that they will pick their fruit at the proper stage of ripeness, furnish a stated regular supply, have it properly packed, placed in good cars promptly that have been well cooled and see that these cars are loaded so that the fruit will carry safely. If this is done then all of the Niagara District will not furnish too much fruit. The railways will then give us regular or special fruit trains making the trip as far as Winnipeg in from three to four days, and more rapid and cheaper transportation to more western cities and towns.

The citizens of Ontario could have peaches, plums, pears, and so forth, landed at a cost of from three to five cents a basket for freight charges—the quantity consumed would be so much greater that the merchant could handle the fruit at a smaller cost per package, and he would not suffer any loss by delay in sales, nor from the pilfering that takes place when shipped by express.

If we had a good fast freight service it would mean a revival of the fruit business, and we older men would be besieging the nursery men for more trees to supply our Canadian markets.

An exhibit which attracted favorable attention at the recent Ontario Horticultural Exhibition comprised ten plates of fine apples grown by D. W. Wright, of Cashmere, State of Washington, U.S.A. They were not entered for competition. The object of the exhibit was to show the effect of extra care and plenty of water in the production of large high colored apples. This exhibit was all the more interesting in view of the well known reputation of apples grown in the State of Washington. The exhibit bore out the high reputation of this fruit. One Northern Spy apple weighed twenty-six ounces. Other varieties included Stayman's Winesap, Winesap, Missouri, Gano, Delicious, Winter White Pearmain, Winter Banana, Ortley (White Bellflower), Arkansas Black.

I think it is very important that we should have one size in the Dominion for apple barrels and that this should be fixed by law.—Prof. Saxby Blair, Kings Co., N. S.

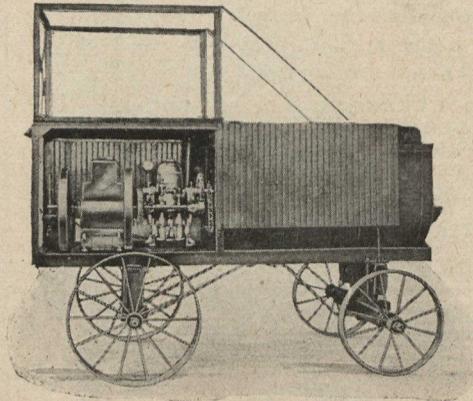
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JUST THE OUTFIT YOU ARE LOOKING FOR

The Most Practical, Efficient and Simplest High Pressure POWER SPRAYING OUTFIT ever offered.

"Goes Like Sixty"

- Light Weight
- High Pressure
- Direct Geared
- No Racking Pump Jack



100% Service

- Engine can be used for other work all the year round.
- Truck makes a capital farm wagon.
- Sills of channel steel, with steel platform.

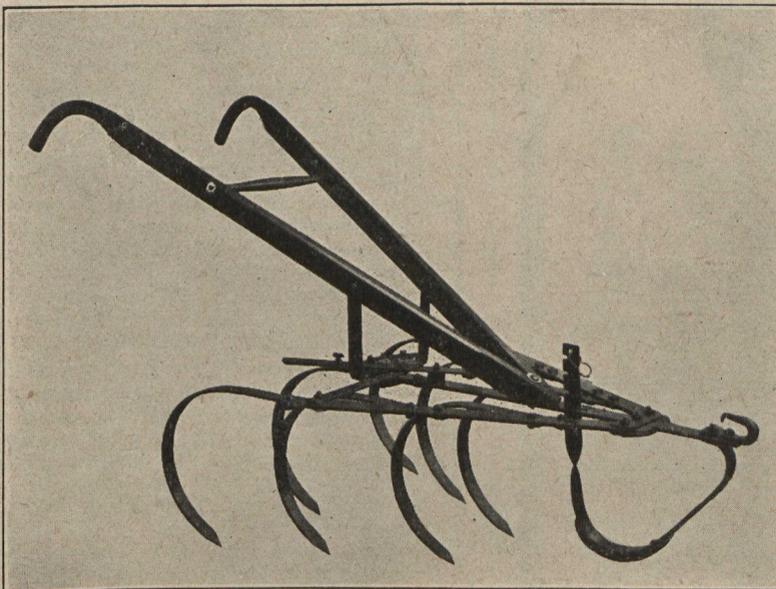
Price of Complete Outfit, Only \$230.00

This includes all Accessories, Engine, Pump, Tank, Truck, Bamboo Extensions, Agitator, Hose, Nozzles, etc.

Do not buy a Sprayer until you have investigated the "Goes Like Sixty" Power Sprayer. Send for Sprayer Catalogue to-day.

GILSON MFG. CO., 244 York St., GUELPH, ONT.

One Horse Spring Tooth Cultivator



HAS NO EQUAL

Read the Following Testimonials:

The One-Horse Spring Tooth Cultivator I got from you is the best I ever hitched a horse to; it does more than you claim.

W. P. WILLSON,
Union, Ont.

ANOTHER

The One-Horse Spring Tooth Cultivator that I got from you will equal two others in cleaning out Berry Bushes.

J. INGRAM,
Union, Ont.

If there is not an agent in your locality handling the One Horse Spring Tooth Cultivator, write us to-day. Pleased to give you prices and particulars.

THE HALL ZRYD FOUNDRY CO. LIMITED

HESPELER

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MAKERS OF PILOT STOVE, RANGES AND FURNACES.



READ THE LABEL

FOR THE PROTECTION OF THE CONSUMER THE INGREDIENTS ARE PLAINLY PRINTED ON THE LABEL. IT IS THE ONLY WELL-KNOWN MEDIUM-PRICED BAKING POWDER MADE IN CANADA THAT DOES NOT CONTAIN ALUM AND WHICH HAS ALL THE INGREDIENTS PLAINLY STATED ON THE LABEL.

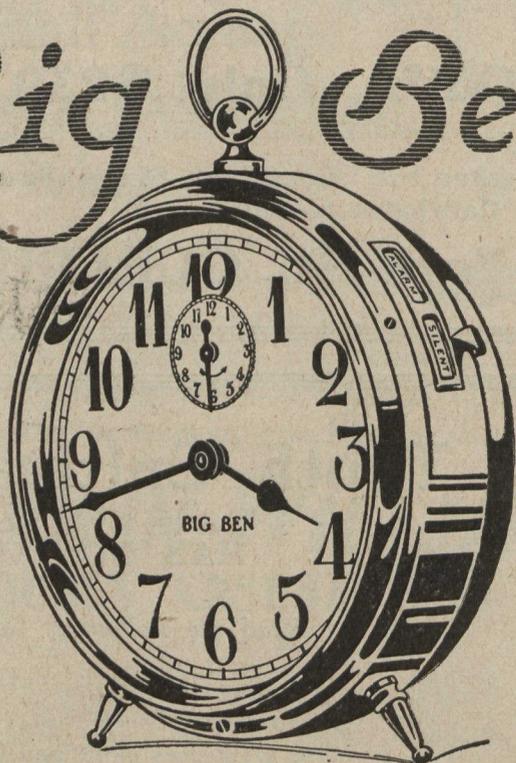
MAGIC BAKING POWDER
CONTAINS NO ALUM

ALUM IS SOMETIMES REFERRED TO AS SULPHATE OF ALUMINA OR SODIC ALUMINIC SULPHATE. THE PUBLIC SHOULD NOT BE MISLED BY THESE TECHNICAL NAMES.

E. W. GILLETT COMPANY LIMITED

WINNIPEG TORONTO, ONT. MONTREAL

Big Ben



Hitch Your Sleeping Schedule to Big Ben

Big Ben will wake you early enough for profitable before-breakfast action. His gentle get-up call starts the day with a flying start on thousands of farms.

For your accommodation he rings TWO WAYS. He'll get you up by degrees or in a hurry. Set him either way you wish—to give one long five-minute ring, or ten short rings at one-half-minute intervals, until you're wide awake.

He stands 7 inches tall; is triple-nickel plated over a tested implement steel coat, the handsomest and truest thoroughbred in the clock world. He has big, bold numerals and hands that show the time plainly at a glance, large keys that anyone can wind easily, and such a pleasant tone that you are glad to get up when he calls.

Big Ben makes early rising easy. He's the leader of the early morning brigade. His cheerful

"good morning" ring calls millions of live wires to action. Thousands of successful farms are run on a Big Ben schedule. He starts you off right in the morning and keeps you right all day. From "Sun up" to "Lights out" he regulates your day. He'll work for 36 hours at a stretch and overtime, if necessary. The only pay he asks is one drop of oil a year.

He is sturdy and strong—built to last a lifetime. Yet under his dust-proof steel coat is the most delicate "works." That's why his on-the-dot accuracy has won him fame.

Big Ben's wonderful sales are due to his having "made good." His biggest hit has been with folks with the "make good" habit. He stands for success—that's why you'll like him for a friend.

When 3 million families find Big Ben a good clock to buy and 20,000 dealers prove he's a good clock to sell, it's evidence that he is worth \$3.00 of your money. Suppose you trade \$3.00 for him today.

A community of clockmakers stands back of him. Their imprint, Made in La Salle, Illinois, by Westclox, is the best alarm-clock insurance you can buy.

Fruit Season at Montreal, 1913

E. H. Wartman, Dominion Fruit Inspector

Commencing the last of April with North Carolina strawberries, and followed by Baltimore and Delaware, quite a trade was done of a very satisfactory nature to buyers. The fruit generally landed in good condition in imperial quart boxes. Our own strawberries followed about June 12th, when American ceased. Our own crop being light good prices ruled all the season.

Raspberries being short long prices prevailed. Complaints were few as to over-facing crates. A few complaints were heard in reference to slack filled boxes, but these grumblers were told by inspectors they were easily examined in this respect, and they should pay according to amount of fruits received.

Following closely came plums, peaches and pears. At times these were in large quantities and of ungraded poor quality, which brought low prices, but good large graded fruits of these kinds brought good prices all season.

The breakage in six and eleven quart baskets that were in car lots was large, due partly on account of poor material in baskets and loading too deep when the whole car was in one compartment. To avoid this three compartments by stanchions and not over seven feet high may be the remedy.

Our apples as a whole were poor. This is verified by the large percentages of number twos and number threes. Some particularly fine lots went forward from favored places where conditions were good. There were 209,025 barrels of apples exported from Montreal, against 300,000 barrels last season, and the record for the port is over 700,000 barrels. Some of the conditions on arrival at this port were anything but satisfactory but I am glad to announce conditions were generally good in eight hoop barrels well coopered and dry. I examined two cars that arrived in a soaked through and through condition. The fruit was good. The effect of too much moisture is very damaging to both fruit and barrels. The wood so softened, heads and staves warp, nails do not hold, liners slip out, causing in one case ten barrels to break open before reaching the steamer, and many more would break open when lowered for piling in the hold. We have to draw on our imagination as to where this excessive wetting came from. The car seemed quite water proof. Likely they were piled in the orchard or at the station or on the dock unprotected. There must have been carelessness somewhere which would be a great loss to the shipper. The shipments of pears were the largest on record in boxes and barrels. The varieties were Anjou, Keiffer, Duchess and Bartlett.

One steamer left for London with six cars of fruit. Of these only twenty-four barrels were of apples, the rest being pears. In reference to our Elberta and Crawford peaches that went forward the system of packing and quality of fruit was excellent, and no doubt would meet with good results. The inspectors at this port were obliged to brand several lots marked number one that lacked in grading and quality. These lots were no credit to the packers. The grading and packing generally speaking was never better. This should increase our trade wherever they are sent and bring credit to our country.

A large association can take more effective measures for ensuring a first class pack than a small association, and thus the standard of quality will be raised.

MAX STOLPE

Landscape Architect

Ex-Superintendent Royal Gardening Institute
Saxony - Germany
Holder of Gold and Silver Medals

Artistic Plans, Sketches furnished for all kinds of LANDSCAPE CONSTRUCTION WORK.

Ornamental Trees, Shrubs, Conifers, Hardy Perennials, etc.

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17 Main Str. East - HAMILTON, Ont.
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SMALL FRUIT PLANTS

Gooseberries, Josselyn! Josselyn!! Red Jacket, Downing, Pearl, Houghton.—Currants, Perfection! Perfection!! Ruby, Cherry, White Grape, Lee's Prolific, Champion, Black Naples, Black Victoria, Boscop.—Raspberries, Herbert! Herbert!! Herbert!!! Outhbert, Marlboro, Brinckle's Orange, Golden Queen, Strawberry-Raspberry. — Garden Roots, Asparagus, Rhubarb. Write for Catalogue.

WM. FLEMING, Nurseryman, 496 - 4th Avenue W., OWEN SOUND, ONT.

Sprayers

Sulfur Dusters

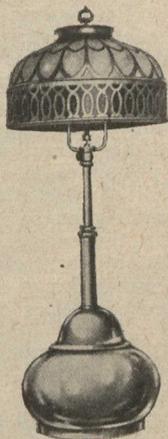
For Fighting Every Disease of Cultivated Plants

Knapsack, Pack Saddle or Horse Drawn Power Sprayers

Send for Catalogues and particulars to: **VERMOREL** Manufacturer, VILLEFRANCHE (Rhône), FRANCE



This Lamp Makes Its own Gas From Coal Oil



The "FAULTLESS" Lamp

Simplest, Strongest, most Beautiful and Perfect Portable Lamp in the World

Cannot Explode

Can Roll it on the Floor while Burning

Requires No Cleaning

Costs Less than One Cent a Night to produce Three Hundred Candle Power of Bright White Light

Write for circular

MACLAREN & CO., Main St., Merrickville, Ont.

The Call of the North

DO you know of the many advantages that New Ontario, with its millions of fertile acres, offers to the prospective settler? Do you know that these rich agricultural lands, obtainable free, and at a nominal cost, are already producing grain and vegetables second to none in the world?

For literature descriptive of this great territory, and for information as to terms, homestead regulations, settlers' rates, etc., write to

H. A. MACDONELL

Director of Colonization

Parliament Bldgs., TORONTO, Ont.



Progressive Jones Says:

“Watch for this Sign”

If you want to get right on the fertilizer question, friend, take my advice and visit the nearest agency for

Harab FERTILIZERS

You will know the Harab agency by the sign shown above. It will be found over the door of our dealer in your nearest town or village. Every agent is thoroughly posted about profitable fertilizing. I say here—that fertilizing the Harab way is like sowing pennies to harvest dollars, for it not only gingers up the present profits by providing a bigger crop—but also nourishes the soil for future dividends.

Every one of the Harab Fertilizers is a proven success—one of them is the right fertilizer for your soil and for the crop you wish to raise. Harab experts will give your enquiry individual attention. By their aid your proper fertilizer is easily selected.

The Harris Abattoir Company have an interesting booklet of information about their twenty-five successful fertilizers.

Just write for a copy to-day—and keep a weather eye open for the Harab sign—visit the Harab agency.

Yours for bumper crops,

Progressive Jones



Fertilizer Department
The Harris Abattoir Co., Limited
Toronto

BLACK KNIGHT STOVE POLISH



**FOR BRIGHTNESS
BLACK** **AND LIGHTNESS, USE
KNIGHT**

**A PASTE
NO WASTE** **No Dust
No Rust**

THE F. F. DALLEY & LTD. HAMILTON, ONT.

PERSISTENT SPRAYING WITH A MASSEY-HARRIS SPRAYER PAYS BIG RETURNS

Long experience with Fruit Growers has enabled us to produce a Power Sprayer adapted to the most difficult conditions.

Double Cylinder Vertical Pump with Bronze Plungers.

Tank is made of selected Cypress put together by Experts.

Simple, Direct Connection between Engine and Pump—no Sprocket Chains to get tangled in branches of trees.

Agitator is positive in its action and is operated from the top—no holes through side of Tank to leak.

The Cab protects all working parts.

Front Wheels turn under the Frame.

Engine is Hopper-cooled; runs in any weather and on the steepest side-hill; is efficient and economical in its operation.

MASSEY-HARRIS CO., Limited.

Head Offices—TORONTO, CANADA.

Branches at—Montreal, Moncton, Winnipeg, Regina, Saskatoon, Swift Current,
Calgary, Yorkton, Edmonton.

— Agencies Everywhere —



United States Activities

At a conference of fruit growers held at Spokane in connection with the annual national apple show, November 17 to 22, the gathering under the leadership of E. H. Shepard, editor of "Better Fruit," went thoroughly into the question of taking measures to secure the adoption of a standard apple box and pack. The bill finally drafted for presentation to Congress contains the following provisions: (1) Dimensions, 18 x 10½ x 11½, inside measurements, or 2,173½ cubic inches; (2) Boxes containing less than this number of cubic inches to be marked "Short Box;" (3) Boxes to be stamped with number of apples contained, style of pack used, name of "person, firm or organization which first packed them or caused them to be packed, locality where grown and variety, a variation of three from the actual number contained being allowed;" (4) Apples packed and offered for sale to be "well grown specimens of one variety, reasonably uniform in size, properly matured, and practically free from dirt, insect pests, diseases, bruises and other defects;" (5) Violations of the Act, or offering apples for sale in a standard box other than those originally packed in it, without first obliterating the markings, to be punished by penalty of one dollar a box up to one hundred dollars on any one shipment.

COLD STORAGE RESULTS

In the discussion a strong sentiment showed itself in favor of a decided and immediate action in the direction of providing proper facilities for the manufacture of fruit by-products of all kinds.

BY-PRODUCTS ORGANIZATION

A valuable address was given by A. W. McKay of the United States Department of Agriculture setting forth the results of experiments with Northwestern apples in cold storage. One set of experiments showed conclusively that the percentage of decay is greater when apples are placed in cold storage immediately after picking than when storage is delayed; another that a storage temperature of thirty-two degrees gives better results than one of thirty degrees; a third, that picking before the proper degree of ripeness has been obtained results in high percentage of decay compared with more matured fruit.

Items of Interest

A Mississippi inventor has patented and put on the market a new collapsible crate that folds into small space for storage and can be put into box form in a few moments without the use of nails. This crate may be utilized for shipping berries, fruit, vegetables and poultry. The two sides and two ends are permanently hinged together with wire hooks. The top and bottom when slipped into place are held by the same hooks. Two of the hooks are loose so that they can be clamped over the cover to hold it in place.

The annual use of a medium quantity of manure is better than either too little or too much. Demonstration orchards receiving over ten loads of manure per acre yearly, with one exception, have not yielded so much as those receiving from six to ten loads.—H. K. Revell, Northumberland Co., Ont.

Education is the first and most important step to take before you can start a successful cooperative association.—James E. Johnson, Simcoe, Ont.

GLADIOLI At Less Than Wholesale Prices

America—The standard pink, 1½ in., \$1.50 per 100.
 Taconic—Bright pink (perfect), 1½ in., \$4.00 per 100.
 Klondyke—Light Yellow, Crimson, Maroon blotch (fine), 1 in., \$1.00.
 Augusta—White, 1 in., \$1.00.
 Mixed—\$1.00—25 of each at 100 rates. Express charges collect.

H. P. VAN WAGNER
 R. R. NO. 5 HAMILTON, ONT.



Prune 3 trees

in the same time your neighbor is pruning one tree. Work from the ground.

SAVE time and money and do better work by pruning your orchard and shade trees with the

MONARCH PRUNER

No ladders required. No injury to the trees. No stripping of the bark or bruising the limbs. The Monarch cuts clean and smooth leaving no scars or stumps. One thrust severs a large branch. Saw blade attached in ten seconds. Removes dead limbs in a jiffy. Thousands of orchardists endorse them.

In an ordinary orchard the saving on one day's work will more than pay for a Monarch. A lifetime of service will not wear it out. Extra saw blades can be secured as needed. Satisfaction guaranteed or money back. For sale by all live dealers. If your hardware man does not handle the Monarch write us direct.

Monarch Pruner & Mfg. Co.
 1310 Lafayette St.
 Detroit, Mich.

FRANK H. COX, Dist. Agt., BEAMSVILLE, ONT.



EWING'S RELIABLE SEEDS

A Garden of Beauty and Fragrance

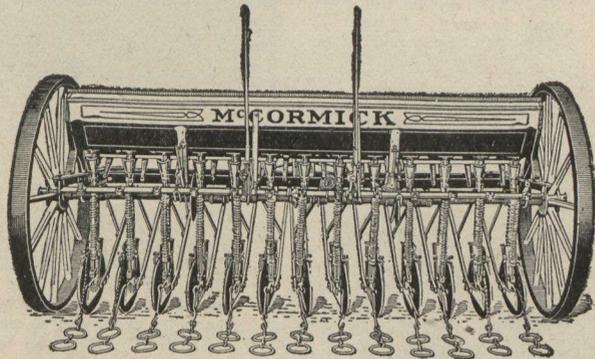
WHETHER you love the dear old Marigolds, Heliotrope, Nasturtiums and Petunias—the gorgeous Poppys and Asters—the many-hued Sweet Peas—the heavy-scented Nicotiana — or the huge and picturesque Ricinus—you'll find in Ewing's Catalogue the particular varieties which will make your flower garden a real satisfaction.

Ewing's Reliable Flower Seeds have been delighting beauty lovers for more than forty years. Write for Illustrated Catalogue to-day, and if your Dealer hasn't Ewing's Seeds, order from us direct.

THE WILLIAM, EWING CO., LIMITED,
 Seed Merchants,
 McGill St.,
 MONTREAL.



McCormick Drills For Eastern Canada



A McCORMICK drill prepares the best possible seed bed, and McCormick drills are longest-wearing. Any man who owns one of these implements will assure you that these are facts. When you buy a drill, buy a McCormick.

McCormick single disk and hoe drills have continuous axles, strong, light, thoroughly braced frames of angle steel, and durable, wide running drive wheels. They have a double run force feed which adapts them perfectly to the sowing of all kinds of seed.

Bearings are simple, as nearly as possible dust-proof, and easily oiled. Grain boxes are of large capacity, and they are too firmly supported to allow sagging.

See McCormick drills at the nearest IHC local agent's. All their features are explained in our catalogues. Get catalogues from the dealer, or drop a line to the nearest branch house.

International Harvester Company of Canada, Ltd

HAMILTON, ONT. LONDON, ONT. MONTREAL, QUE.
 OTTAWA, ONT. QUEBEC, P. Q. ST. JOHN, N. E.

These machines are built at Hamilton, Ont.





130-Egg Incubator and Brooder Both For \$13.90

If ordered together we send both machines for only \$13.90 and we pay all freight and duty charges to any R. R. station in Canada. We have branch warehouses in Winnipeg, Man. and Toronto, Ont. Orders shipped from nearest warehouse to your R. R. station. Hot water, double walls, dead-air space between, double glass doors, copper tanks and boilers, self-regulating. Nursery under egg tray. Especially adapted to Canadian climate. Incubator and Brooder shipped complete with thermometers, lamps, egg testers—ready to use when you get them. Five year guarantee—30 days trial. Incubators finished in natural colors showing the high grade California Redwood lumber used—not painted to cover inferior material. If you will compare our machines with others, we feel sure of your order. Don't buy until you do this—you'll save money—it pays to investigate before you buy. Remember our price of \$13.90 is for both Incubator and Brooder and covers freight and duty charges. Send for FREE catalog today, or send in your order and save time. Write us today. Don't delay. **WISCONSIN INCUBATOR CO., Box 316, Racine, Wis., U. S. A.**

FREIGHT AND DUTY PAID



"FRIEND" Sprayers



Mr. Fruit Grower
You have heard of the celebrated

"Friend" Power Sprayer

But you have not heard of the 1914 MODELS.

Western King and Queen

Western King

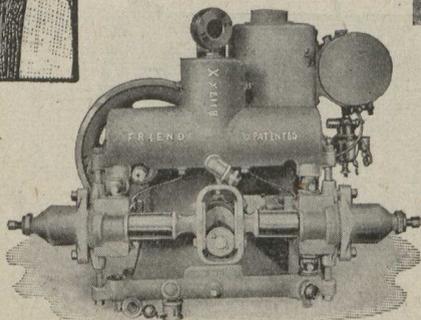
If you have a power sprayer, EXCHANGE engine and pump for our POWERFUL UNIT MOTOR-PUMP and PROPELLER AGITATOR, or sell it and buy a whole new outfit. "FRIEND" outfits are now made in many styles, TO SUIT YOUR TASTE, in-



Western Queen

cluding motor-pumps, & fits on bed without trucks, and complete machines—built in large and small sizes. The SIMPLEST, MOST COMPACT, MOST POWERFUL and FINEST WORKING power sprayers ever produced. Many Westerns sold in Canada last year to growers who are STAUNCH FRIENDS this year.

WRITE FOR CATALOG TO-DAY, STATING REQUIREMENTS.



The "Friend" Motor-Pump

"FRIEND" MFG. CO., GASPORT, NEW YORK

Nova Scotia Fruit Growers

(Continued from page 39)

the thorough work done by the Agricultural Department in the control of the brown tail moth and the San Jose Scale.

A very pleasing feature of the convention was the presentation to R. W. Storr, of a resolution of congratulation on having attended fifty consecutive annual meetings of the association, not having missed a meeting since its organization fifty years ago.

The officers for the ensuing year are: President, F. W. Bishop, Paradise; vice, A. E. McMahon, Aylesford; secretary-treasurer, Mr. K. E. Eells, Port Williams; delegates to the fourth fruit conference, S. B. Chute, M. K. Eells, W. W. Rineo, S. C. Powker.

The following resolutions passed:

That we place on record our sorrow at the death of Alex. McNeill.

That because the Provincial Exhibition is held too early to make a creditable display of winter fruit on account of its immaturity, we recommend that winter varieties of apples be cut out of prize list and more money be offered on the early varieties to insure a more attractive display.

That we ask the Federal Government to define a number three grade of apple, with a view of raising the standard of the present pack.

That we join with the other associations in asking for a grant of \$2500 per year for the National Fruit Growers' Association.

That the Valley exhibition be held at a later date.

That we recommend the appointment of a provincial plant pathologist.

GLADIOLI

GROFF'S HYBRIDS are now more largely grown in the United States and Canada, than any other strain. They are in good demand in AUSTRALASIA, and English orders have nearly exhausted some varieties.

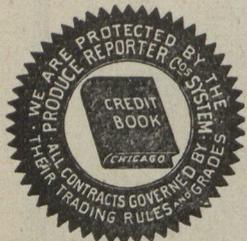
AMERICA (Groff's 119) stands easily at the head of commercial varieties.

PEACE, WAR, DAWN, BLUE JAY, LAVANDULA, PEACHBLOW, and others, will soon be found in all gladioli lists.

We try most of the European kinds, as they come out, but so far have found very few, that are likely to secure a permanent place.

CATALOGUES ON APPLICATION

CAMPBELL BROS.
SIMCOE, ONT.



We Solicit Your Consignments

Send for Shipping Stamp

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.

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.



SEEDS

**SURE GROWERS
GOVERNMENT TESTED**

Write for Catalogue

Wm. RENNIE Co., Limited

Cor. Adelaide and Jarvis Streets, TORONTO.

THIS WASHER MUST PAY FOR ITSELF.

A MAN tried to sell me a horse once. He said it was a fine horse and had nothing the matter with it. I wanted a fine horse, but, I didn't know anything about horses much. And I didn't know the man very well either.

So I told him I wanted to try the horse for a month. He said "All right," but he pay me first, and I'll give you back your money if the horse isn't all right."

Well, I didn't like that. I was afraid the horse was't "all right" and that I might have to whistle for my money if I once parted with it. So I didn't buy the horse, although I wanted it badly. Now, this set me thinking.

You see I make Washing Machines—the "1900 Gravity" Washer.

And I said to myself, lots of people may think about my Washing Machine as I thought about the horse, and about the man who owned it.

But I'd never know, because they wouldn't write and tell me. You see I sell my Washing Machines by mail. I have sold over half a million that way. So, thought I, it is only fair enough to let people try my Washing Machines for a month, before they pay for them just as I wanted to try the horse.

Now, I know what our "1900 Gravity" Washer will do. I know it will wash the clothes, without wearing or tearing them, in less than half the time they can be washed by hand or by any other machine.

I know it will wash a tub full of very dirty clothes in Six Minutes. I know no other machine ever invented can do that, without wearing the clothes. Our "1900 Gravity" Washer does the work so easy that a child can run it almost as well as a strong woman, and it don't wear the clothes, fray the edges, nor break buttons, the way all other machines do.

It just drives soapy water clear through the fibres of the clothes like a force pump might.

So, said I to myself, I will do with my "1900 Gravity" Washer what I wanted the man to do with the horse. Only I won't wait for people to ask me. I'll offer first, and I'll make good the offer every time.

Let me send you a "1900 Gravity" Washer on a month's free trial. I'll pay the freight out of my own pocket, and if you don't want the machine after you've used it a month, I'll take it back and pay the freight, too. Surely that is fair enough, isn't it?

Doesn't it prove that the "1900 Gravity" Washer must be all that I say it is?

And you can pay me out of what it saves for you. It will save its whole cost in a few months in wear and tear on the clothes alone. And then it will save 50 to 75 cents a week over that in washwoman's wages. If you keep the machine after the month's trial, I'll let you pay for it out of what it saves you. If it saves you 60 cents a week, send me 60 cents a week 'till paid for. I'll take that cheerfully, and I'll wait for my money until the machine itself earns the balance.

Drop me a line to-day, and let me send you a book about the "1900 Gravity" Washer that washes clothes in six minutes.

Address me personally:

K. E. MORRIS, Manager, 1900 Washer Co., 357 Yonge St., Toronto, Ont.



ESTABLISHED 1856

SIMMER'S SEEDS

—Have Stood the Test for—
NEARLY 60 YEARS

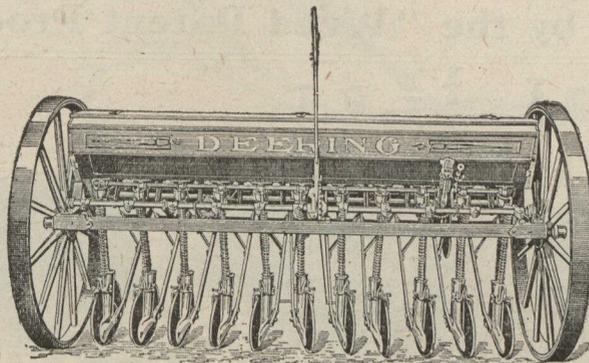
That Means - - - THE QUALITY IS RIGHT

CATALOGUE for 1914 is now ready, and is FREE to all who write for a copy.

It contains a complete list of the very best in Vegetable and Flower Seeds—the kinds that are sure to please. Write for a copy NOW.

J. A. SIMMERS, Ltd., TORONTO, Ont.
BULBS SEEDS PLANTS

Deering Drills



GIVE your seed a chance to produce a record crop by sowing it with a Deering drill. Deering disk and hoe construction puts the right amount of seed in the right position at the bottom of the furrow, to insure your getting a full even stand of grain.

No matter whether your ground is hard or soft, gravel or clay, smooth or rough, level or hilly, there is a Deering drill in the line that will plant your seed as it should be planted.

Examine Deering drill construction and the many features. Note the light draft, the large capacity grain boxes, the double-run force feed that handles all kinds of grain and seed, the ease of regulation to suit soil and seed—and a dozen other points to grow enthusiastic over.

See the drills themselves at the I H C local agent's place of business. Our catalogues tell you all the features of all the types. Get catalogues from the local agent, or write the nearest branch house.

International Harvester Company of Canada, Ltd



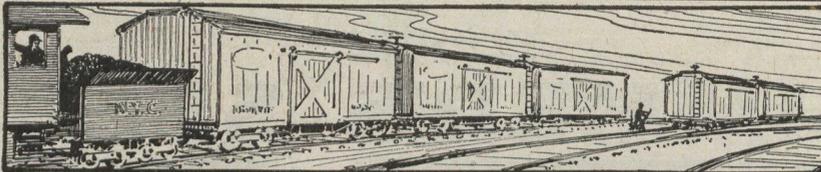
Hamilton, Ont.
Ottawa, Ont.

London, Ont.
Quebec, P. Q.

Montreal, Que.
St. John, N. B.



These machines are built at Hamilton, Ont.



Why Not Cut Off the Two Cars of Filler ?

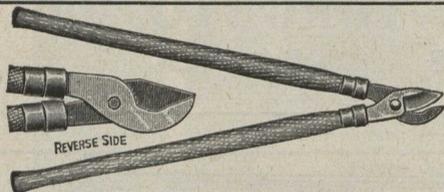
It takes 400,000 cars to carry American Fertilizers to our farmers and planters every season. Forty per cent.—2 cars out of 5—of this stuff is Filler, which requires 160,000 cars! Order less filler, higher grade and

Nitrate of Soda

for your active Nitrogen and save freight bills.

The greater productive capacity of high-grade fertilizers without so much filler means a greater outbound tonnage for railroads and greater purchasing power for farmers, so that railroads and everybody would be benefited.

DR. WM. S. MYERS, Chilean Nitrate Propaganda
NO BRANCH OFFICES 25 Madison Ave., New York

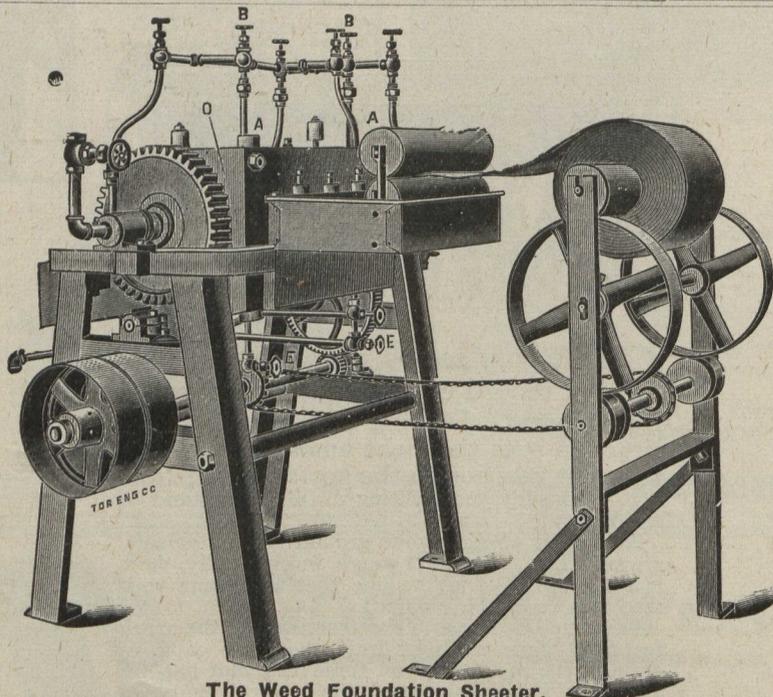


Cronk's Pruning Shears

To introduce a high-grade pruning shear at a very low price, we are now offering direct, provided your dealer does not have them, our 25-inch No. 09½ guaranteed pruner at \$1.25 per pair, via parcel post, prepaid; cash with order. **CRONK & CARRIER MFG. CO., ELMIRA, N. Y.**

COMB FOUNDATION

Made by the "Weed Patent Process"



The Weed Foundation Sheeter.

FOUNDATION made by this process excels all other in strength of texture. This combined in nice, straight uniform sheets, with good cell walls and thin base, gives it world-wide reputation for general excellence of quality. So much better than the ordinary, and costs no more—Try it.

Customers Wax made up by "Weed Patent Process"
Beeswax taken in payment of making at trade prices if desired

THE HAM & NOTT-CO. Limited
BRANTFORD, ONTARIO

Quebec Fruit Growers' Convention

The annual convention of the Quebec Pomological Fruit Growing Society was held in Westmount, Quebec, during December. In his presidential address, Rev. Father Leopold, Oka, an illustration of whom appears on page thirty-three of this issue, referred to the light crop of apples last fall in many districts, that had been caused by the unfavorable nature of the season. Tent caterpillars had defoliated many orchards where spraying was not practised. Power sprayers were becoming more popular, eleven now being operated in the province. The orchards of the La Trappe Monastery at Oka last season yielded two thousand five hundred barrels. While many growers have had fair success leaving trees in sod, Father Leopold stated that it was being demonstrated in the experimental orchards at Rougemont, St. Hilaire, and Abbotsford that stirring of the soil in May and June followed by a



BUY CARNIOLANS IN CARNIOLA

Pure Carniolan Alpine Bees
Write in English for Booklet and Price List. Awarded 60 Honors.

Johann Strgar, - Wittnach
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Upper-Carniola (Krain', Austria

THE CHAS. E. HOPPER COMPANY
BEEKEEPERS' SUPPLIES

Sole Distributors of **ROOTS GOODS** General Agents for **DADANTS FOUNDATION**

We also Handle **HAM & NOTT GOODS**
Poultry Supplies **Seeds**

Write for a Catalogue
185 Wright Avenue, TORONTO, Ont.

FOR SALE

Italian Queens and Bees by the pound. Ready for delivery April 1st Having over 600 colonies of bees and 500 nuclei from which to draw, we expect to fill all orders very promptly. For a number of years we have been constantly improving in stock with commercial queen-rearing in view. Now we are in a position to guarantee satisfaction to our customers. Untested queens, each 75c, 6 \$4.25; tested, each \$1.25, 6 \$7.25. Bees by the pound without queen, 1 pound \$1.25, 5 \$4.25. Write for complete price list.

BROWN & BERRY
HAYNEVILLE - - ALABAMA

A FARMER'S GARDEN

IS without real serious meaning to many thousand farmers because they think it is too hard work or it is not convenient to work a horse. So many farmers fail to understand what truly wonderful possibilities there are in modern hand tools

IRON AGE Wheel Hoes and Drills
(Now made in Canada)

do all of the sowing, hoeing, cultivating, weeding, furrowing, ridging, etc., in any garden with better results, far less work and some real pleasure for the operator. 38 or more combinations at \$3.00 to \$15.00. Ask your dealer about them and write us for new booklet. "Gardening with Modern Tools" also copy of our paper "Iron Age Farm and Garden News"—both are free.



The Bateman-Wilkinson Co., Limited
462 Symington Ave., Toronto, Ontario.

For Sale

Cedardale Fruit Farm, 50 acres, finest farm in Norfolk county for fruit, tobacco and poultry raising, one and a quarter miles from Simcoe, and a quarter mile from New Lake Erie and Northern Electric Road.

Buildings in A1 condition. House, bungalow style, frame, nine rooms, surrounded by lawns, drives and ornamentals. Outbuildings, two good barns, one recently built costing \$2,500, with cement basement and up-to-date fixtures. Four poultry houses and cement hoghouses, and two good wells.

Bearing fruit trees consist of 50 apples, 500 peach and Bartlett pears, 1 acre strawberries, 1 acre raspberries, set last season. The farm is of sandy loam soil, adapted to strawberries, being protected by thirteen acres of standing timber valued at \$3,000.

Farm could be divided for speculation into three sub-divisions, each with timber at rear and fronted with maples.

THIS IS A SNAP

For further particulars apply

CEDARDALE FARM

R. R. No. 3 - SIMCOE, ONT.
O. MARSHALL, Proprietor

PRIZE DAHLIA ROOTS

15 for one dollar by mail prepaid. 15 larger roots one dollar by express, not prepaid. Low rate to Horticultural Societies who give Dahlias as premiums.

GEO. E. EGERTON

112 CHALMERS ST. - GALT, ONT.

STRAWBERRIES

Your copy of our Strawberry Catalogue is now ready. A Post Card will bring it. It describes all the best varieties of Strawberries and Raspberries. Cultural directions and lots of other valuable information.

THE LAKE VIEW FRUIT FARM

H. L. McConnell & Son Grovesend, Ontario

TO THE TRADE

KELWAY'S

(Of LANGPORT, Eng.)
**RENOWNED
PLANTS & SEEDS**

as advertised, are offered at
**SPECIAL RATES TO
CANADIAN NURSERYMEN.**

**NO AGENTS
NO BRANCH STORES**

Our House is open to every legitimate Nurseryman and Seedsman in the Dominion. ASK FOR PRICES

**KELWAY & SON, THE HOUSE
OF QUALITY
LANGPORT, ENGLAND.**

FOR SPRING, 1914

We have a large assorted stock of the best varieties of **FRUIT** and **ORNAMENTAL TREES, SHRUBS, ROSES** and **PERENNIALS.**

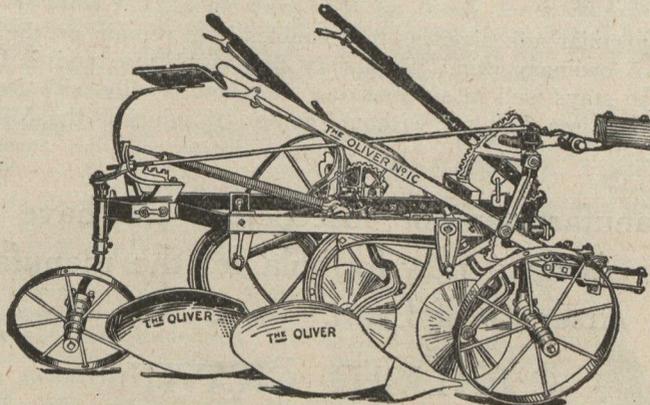
A specially selected stock of Specimen Evergreens, Box and Bay Trees, Rhododendrons, Kalmias and other plants in demand for modern gardening.

Plans and estimates for landscape work.

ROSS & SON

Toronto Nurseries - 1167 Queen St. E.

Oliver Plows



OLIVER Plows for Eastern Canada stand in a class by themselves as satisfaction givers.

The Oliver plow line includes walking plows, three-wheel sulkies, walking gangs, hill-side plows, high and low lift gangs, and riding cultivators. There are plows in the line which are specially adapted for most Eastern Canadian conditions. Among these are the Oliver 1-C sulky and 1-C gang. In both these plows most of the weight of the plow is carried on the two furrow wheels which, of course, ride on a smooth surface all the time. There is a spring on the land wheel which, in connection with the two bails on which the plow is hung, insures an even depth of plowing.

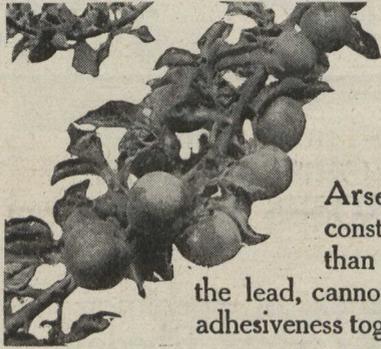
You can see any plow in the Oliver line at the place of business of the IHC local agent. If you will tell him what kind of plowing you want to do, he can show you an Oliver plow that will do your work best. See him for catalogues and full information, or write the nearest branch house.

International Harvester Company of Canada, Ltd

At Hamilton, Ont.; London, Ont.; Montreal, P. Q.; Ottawa, Ont.;
St. John, N. B.; Quebec, P. Q.

Oliver plows are built at Hamilton, Ont.





**There's
a great difference in
spray adhesiveness**

Arsenates of Lead, which are coarse in construction and contain more arsenic oxide than will remain permanently combined with the lead, cannot be adhesive. To obtain maximum adhesiveness together with effectiveness and safety, use



TRADE MARK

**THE CANADA PAINT CO.
LIMITED**

**Neutral Arsenate of Lead
(Paste)**

This arsenate is neutral in character and so cannot russet the fruit or burn the foliage. This means unblemished fruit and more of it. This arsenate is sufficiently strong in poisoning power to destroy all leaf-eating insect pests.

It has a peculiar adhesiveness that enables it to remain on the foliage in spite of ordinary rain. It is very fine in texture and is light in gravity, so stays well in suspension. It mixes readily with Bordeaux Mixture or Lime Sulphur without danger of injuring the foliage or the fruit.

As manufacturers of insecticides we have been able to obtain a new formula for the manufacture of dry Arsenate of Lead.

C. P. LIGHT GRAVITY

Dry Arsenate of Lead

All the good qualities of our paste lead are embodied in this product, and it has the advantage of being proof against deterioration, and so can be kept over from one season to another. Half a pound of the Light Gravity Dry Arsenate goes as far as a pound of paste lead. To many orchardists and gardeners considerable saving in freight may be effected by using this material. It mixes readily with water or other spraying mixtures, and can be dusted on such plants as potatoes if desired. Descriptive folders and prices sent on request.



TRADE MARK

**THE CANADA PAINT CO
LIMITED**

PAINT-VARNISH & DRY COLOR MAKERS-LINSEED OIL CRUSHERS

MONTREAL · TORONTO · WINNIPEG · CALGARY · HALIFAX
OXIDE MINES · RED MILL · QUEBEC

corn crop was productive of the best results.

The advisability of heating orchards during a frost such as occurred last May was also discussed. Although such a killing frost might occur only once in ten years the expense of providing burners or smudge materials might be more than made up by the saving of a single crop. Growers in Colorado have adopted heating outfits in many cases and have found that they can offset the effects of ten or twelve degrees of frost.

OFFICERS ELECTED

Hon. Pres., Rev. Father Leopold, La Trappe; president, Prof. T. G. Bunting, Macdonald College, Que.; vice-president, R. A. Rousseau, Acton Vale; secretary-treasurer, Peter Reid, Chateauguay Basin; directors—G. B. Edwards, Covey Hill, Rev. H. A. Dickson, Rectory Hill; G. P. Hitchcock, Massawippi; J. Crossfield, Abbotsford; A. D. Verreault, Village des Aulnaies; F. X. Gosselin, Ste. Famille; N. E. Jack, Chateauguay Basin; W. H. Thompson, Hudson Heights; Robert Brodie, Montreal.

A paper dealing largely with technicalities in orchards was read by Mr. J. M. Fisk, of Abbotsford. In the discussion which followed, Mr. Brodie maintained that the Fameuse apple was not dying out.

The "FRIEND" Hand and Power Outfits are still in the land. Don't buy any spraying equipment until you have seen the new catalogue just issued by the "Friend" Mfg. Co. of Gasport, N.Y. Get their best prices.

Send your consignments of APPLES to the Home Country to

Ridley Houlding & Co.
COVENT GARDEN
LONDON, ENGLAND

who specialize in APPLES and PEARS during the Season. Personal attention, prompt account sales and remittance

Correspondence invited

Roses Roses

Irish, Dutch and American. Hybrid Perpetual, Hybrid Teas and Climbing. Strong 2 year field-grown bushes that will bloom the first year—none better, none cheaper.

ALSO

Trees, Shrubs, Vines, Perennials

Get Catalogue

A. W. GRAHAM
St. Thomas - Ontario

Better Spraying

Write For FREE Spraying Guide

Brown's Auto Spray does its work *thoroughly*. Actually does banish blight, disease, insects in less time, with less work and less solution. Keeps vines, trees, plants in perfect condition; 40 different sizes and styles.

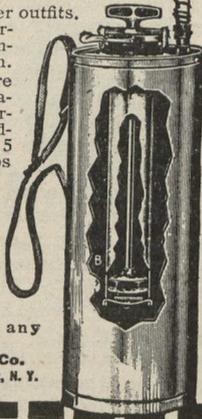
BROWN'S AUTO SPRAYS

Hand and power outfits. 300,000 farmers, orchardists, gardeners now use them.

Spray No. 1, here shown—4 gal. capacity—easily carried over shoulders—suitable for 5 acres of field crops or 1 acre of trees—has Auto Pop Non-clogging nozzle—all kinds of sprays.

Larger sprayers use Brown's Non-Clog Atomic Nozzle. Cannot clog—sprays any solution equally well. Fits any sprayer.

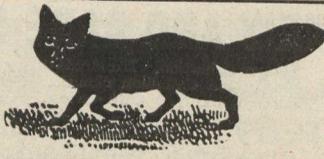
The E. C. Brown Co.
57 Jay St., Rochester, N. Y.



Silver black, patched, blue, and red Foxes supplied for stocking fur farms.

\$40.00 per pair paid for sound live Mink

JOHN DOWNHAM, Strathroy, Ont.



BLACK CURRANTS

We have some excellent plants of the Black Naples variety, grown from the most productive patch in the district. Also some Lawton Blackberry plants.

Apply for prices.

J. E. HENRY & SON - WINONA, ONT.

Peerless Guaranteed Fencing

Strongly made and closely spaced—making it a complete barrier against large animals as well as small poultry. Top and bottom wires No. 9—intermediates No. 12 wire—made by the Open Hearth process which time and other tests have proven to be the best material made for the manufacture of wire fencing. Send for literature. Ask about our farm and ornamental fencing. Agencies nearly everywhere. Live agents wanted in unassigned territory.

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

It Pays to Get Real Tested Seeds

For every cent you spend for seeds this spring you expect to reap dollars next fall.

If these fail you, you lose not only the cents you pay for them, but the dollars you should get in crops. You lose the labor, time and use of land in which you plant them.

That's why it is so important to get seeds that are tested and proven.

Carter's Tested Seeds are really tested by actual growing on the famous trial and testing grounds of James Carter & Co. at Raynes Park, London, England. They are tested for purity, germination, quality and production. At the same time other brands are tested alongside them to make certain that Carter's are superior.

Carter's Tested Seeds have

made a big success in Canada because they have given most profitable results. They are your best seed investment.

Write to-day for a copy of the new Carter Catalogue of flowers and vegetables with all prices in American currency.

Carters Tested Seeds, Inc.
133 A King St. E., Toronto

United States Offices, 100 Chamber of Commerce Bldg., Boston, Mass.

If you are interested in upkeep of Lawn Tennis-courts or Golf-Course, write for the "Practical Greenkeeper." Every Championship Golf-Course in America is today using Carter's Tested Grass Seed.

Carter's Tested Seeds



Lots of Luscious TOMATOES

To raise the largest and best quality and most profitable crop of Tomatoes and "garden truck" use DAVIES Special Mixed FERTILIZERS. Send for free booklet

The DAVIES Company
Wm. Davies Limited
WEST TORONTO, ONT.



FLOWER POTS

Hanging Baskets and Fern Pans FOR THE SPRING TRADE

We make the "Standard" Pot, the best Pot in the world—uniform, best of clay, well burned, in every respect superior to all others.

All our pots have rim on shoulder, thus allowing them to be placed together perfectly and preventing breakage in shipping and handling.

Place your Spring Order NOW.

A complete line and large stock of all sizes kept on hand to ensure prompt shipment.

Send for NEW CATALOG and PRICE LIST

The Foster Pottery Co.
HAMILTON - ONTARIO
Main Street West

FRUITLAND NURSERIES

are offering for sale a general assortment of first-class Fruit Trees, Bushes, Vines and Ornamental Shrubs, etc., at very low prices. Our catalogues are just out. It will pay you to send for one.
G. M. HILL, Box 42, FRUITLAND, ONT.

NEW AND RARE SEEDS

Unique collection. Hundreds of varieties adapted for the Canadian climate. Perennial and perfectly hardy. Own sowing. Catalog free.

Perry's Hardy Plant Farm
ENFIELD, MIDDLESEX, ENG.

Make Your Own Spray

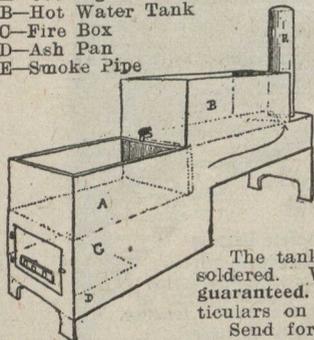
Home Boiled Lime Sulphur is being used in increasing quantities by leading fruit growers and fruit growers' associations. They find that by making their own spray they can effect a considerable money saving, and at the same time produce a preparation that will do the work thoroughly.

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. Send for pamphlet illustrating the finest pruning saw on the market.

STEEL TROUGH & MACHINE CO., Ltd., TWEED, Ont.

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



For Use in any wagon, cart, etc.

The Right Kind of Sprayer



No. 190. Horizontal, 50-Gallon

Means the one that just fits your purpose. You need to consider capacity, pump, engine, pressure, mixing, straining sediment, stability on hillsides, using your own wagon, engine or sprayer with balance of the outfit to fit what you already have. Get the right sprayer for YOUR work and you won't have any cause to be dissatisfied. We show here but three of the 70

IRON AGE

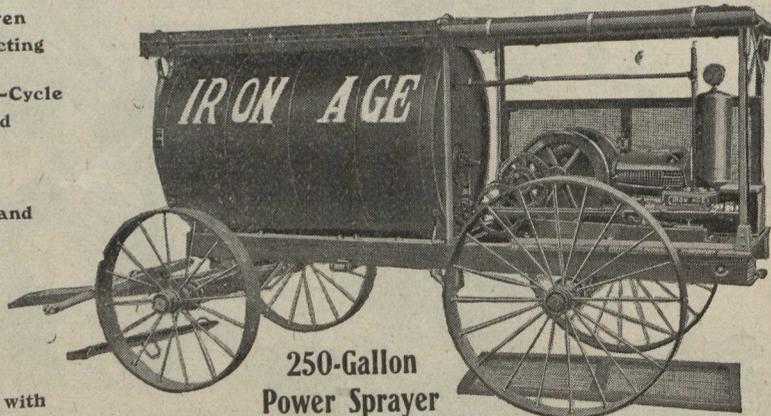
Bucket, Knapsack, Barrel, Power, and Traction Sprayers

They are built up in units so that you can buy what you need now and add to the outfit later if necessary. All have the best pumps in use on any sprayers—least slipage among eight of the best in a disinterested test. Solutions touch only brass or galvanized parts. Hemp packing, bronze ball valves, both easy to get at. Pumps outside. Power Sprayers are 50, 100, 150, or 250 gallons capacity. 200 pounds pressure with 6 or 8 nozzles.

Ask your local dealer about this line and write us for our new "Spray" book, spray information and copy of Iron Age Farm and Garden News.

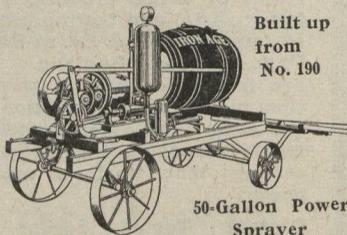
The Bateman-Wilkinson Co. Ltd., 460 Symington Ave., West Toronto, Ont.

- Gear-Driven
- Double-Acting Pump
- 2-H. Four-Cycle
- Air-Cooled Engine
- Outside Sediment Chamber and Strainer



Furnished with or without truck

250-Gallon Power Sprayer



Built up from No. 190

50-Gallon Power Sprayer

He referred to an orchard at Havelock, where five barrels to the tree were averaged. Such orchards, where special attention to the standards was paid, were valuable to the province.

WORK RECOGNIZED

Mr. W. T. Macoun, Dominion Horticulturist, spoke on the extension of the work in connection with the Experimental Farms. There are sixteen of these farms, and several more in prospect, entailing an expenditure of eight hundred thousand dollars each year. In Mr. Macoun's department there are now four assistants who are specialists in their lines of work. These include pomology, plant breeding, ornamental gardening, and vegetable growing. In plant breeding there is a wide field in the originating of new varieties hardy enough for the latitude of Ottawa, and at the same time equal to McIntosh Red and other standard sorts. Recognition has been given by the American Pomological Society to the work already done in originating varieties. Mr. Macoun had just returned from Washington, where he exhibited one hundred and forty varieties, all of Canadian origin. For these he had been awarded a silver medal by the Pomological Society, an honor given only in cases of exceptional merit.

COOPERATION ADVOCATED

A paper on what cooperation had done for fruit growers in Nova Scotia was read by Mr. M. B. Davis, who has recently been

EGGS

EXPRESS PREPAID—all the standard breeds of Chickens, Ducks, Geese and Turkeys. HIGH-CLASS STRAINS. Write today for catalog describing breeds—also poultry supplies. IT'S FREE.
J. H. RUTHERFORD, Box 62
Caledon East, Ontario

BEZZO'S

Famous Prize Asters

Plants ready last week in May. Everybody should plant them. Special prices to Horticultural Societies. Prizes at New York State Fair, Canada National Exhibition, highest awards at Berlin Horticultural Exhibitions, 1911-12-13. Write for prices.

C. MORTIMER BEZZO - BERLIN, CANADA



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AND **KNOW WHAT YOU GET**

FREEMAN'S FERTILIZERS

A SPECIAL FORMULA FOR EVERY REQUIREMENT.

Do not buy a "A Pig in a Poke."

Send for booklet showing just what Fertilizer you should use and the exact composition of it. Your copy will be sent for a post card.

The W. A. FREEMAN CO., Ltd.

223 HUNTER ST. E.
HAMILTON, ONTARIO.

GREAT CROPS OF STRAWBERRIES AND HOW TO GROW THEM

IS the title of a beautifully illustrated book of expert information written in every-day language by America's most successful strawberry grower. It explains how the Kellogg Pedigree plants are grown on the great Kellogg plant farms in Oregon, Idaho and Michigan. It contains pictures of the best varieties of strawberries, including fall-bearing kinds, and gives full descriptions. It tells how to grow big crops of fancy berries, and how to market them at big prices. Explains in detail The Kellogg Way.

OUR FAMILY STRAWBERRY GARDEN

Whether you have a small garden only or a big farm, you should grow your own strawberries. Kellogg's Big Red Strawberry Garden will produce all the delicious strawberries your entire family can eat, summer and winter. You can have shortcake, strawberries and cream, preserves, jam and canned berries, the year 'round for less than one cent per gallon. Our Book gives full information.

Strawberries

yield more dollars per acre and give quicker returns than any other crop. Set one acre to Kellogg's Pedigree plants this year, and put from \$500 to \$800 in the bank next year. Our Book tells you how. IT IS FREE.



R. M. Kellogg Co., Box 570 THREE RIVERS, MICH.

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 cents Also the TYCOS INCUBATOR THERMOMETER, absolutely accurate postpaid, 65c.

PARKE & PARKE Wholesale Druggists HAMILTON, ONT.

If you are a **MARKET GARDENER** it will pay you to look carefully over our Price List of

SEEDS

POSITIVELY, ABSOLUTELY our seeds will give you satisfaction.

Be friendly Write us about your wants

GEO. KEITH & SONS

Seed Merchants since 1866

124 KING ST. EAST - TORONTO

SAFETY FIRST

THE MOST Up-to-date

WARNING

Applies

To Those Contemplating Building

GREENHOUSES

And is Typical of the

PARKES

Up-to-date

CONSTRUCTION

Get our Prices on

Iron Frame, Pipe Frame and All Wood Also

Ventilating Apparatus and all kinds of Greenhouse Hardware.

Write for information and Question Blank to

PARKES CONSTRUCTION CO.

167 1/2 King Street E.

HAMILTON - ONTARIO

BUY BRUCE'S SEEDS

The most successful of the market gardeners in Canada, many of them customers for two generations, and some for three, buy Bruce's Seeds, because ever since this business was established by us **sixty-four years ago**, they found they could rely on them in every way, getting better results than from any other seeds.

To these men quality and germination is the big consideration, as their bread and butter depends on their crop.

We would say to the amateur, and also the farmer, who are not customers—

"It Will Pay You to Buy Bruce's Seeds"

for it takes the same time and trouble to plant and care for poor seed as for good, and poor seed means dissatisfaction and loss for a surety.

Write for our 112-page illustrated and descriptive catalogue of Vegetable, Farm and Flower Seeds, Plants, Bulbs, Poultry Supplies, and Garden Tools and Implements, etc. It will be mailed **FREE** to all applicants. **WRITE TO-DAY.**

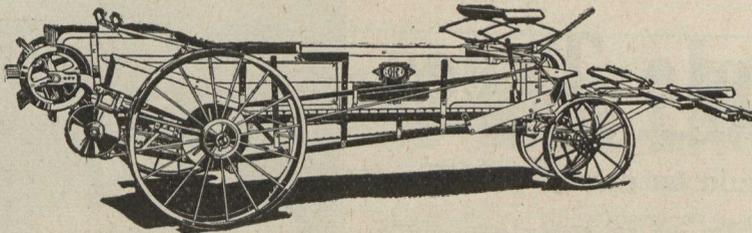
JOHN A. BRUCE CO., LIMITED

SEED MERCHANTS

HAMILTON

ONTARIO

International Harvester Manure Spreaders



THE I H C LINE GRAIN AND HAY MACHINES
 Binders, Reapers
 Headers, Mowers
 Rakes, Stackers
 Hay Loaders
 Hay Presses
CORN MACHINES
 Planters, Pickers
 Binders, Cultivators
 Ensilage Cutters
 Shellers, Shredders
TILLAGE
 Combination,
 Peg and Spring-Tooth,
 and Disk Harrows
 Cultivators
GENERAL LINE
 Oil and Gas Engines
 Oil Tractors
 Manure Spreaders
 Cream Separators
 Farm Wagons
 Motor Trucks
 Threshers
 Grain Drills
 Feed Grinders
 Knife Grinders
 Binder Twine

International Harvester manure spreaders have a score of good features in their construction. Each one is the result of careful field experiment.

An I H C spreader is low enough for easy loading, yet it has plenty of clearance underneath. The rear axle is well under the load, rear wheels have wide rims and Z-shaped lugs, insuring good traction under all conditions. Frame, wheels, and all driving parts are of steel. Apron tension is adjusted by a simple device. Winding of the beater is prevented by large diameter, and beater teeth are strong, square and chisel-pointed.

International manure spreaders are built in several styles and sizes, low or high, endless or return apron, for small farms or large. Examination will show sturdiness of construction in every detail. Repairs, if ever needed, may always be had of the local dealer.

Examine International spreaders at the dealer's. We will tell you who sells them, and we will send you interesting catalogues.



International Harvester Company of Canada, Ltd

At Hamilton, Ont.; London, Ont.; Montreal, P. Q.; Ottawa, Ont.;
 St. John, N. B.; Quebec, P. Q.



MAN WANTED

to operate greenhouse for Dominion Cannery Farms at Wellington. Must have expert knowledge of growing tomato plants in large quantities. Apply, stating experience, salary expected, etc.
M. B. CLARK - WELLINGTON, ONT.

It's easy to have a Beautiful Garden if you deal with

KELWAY & SON

The Royal Horticulturists
Langport, Somerset, England

We pay highest Prices For

RAW FURS

And Remit Promptly

Sixty Thousand trappers send us their Raw Furs. Why not you? We pay highest prices and express charges, charge no commission and send money same day goods are received. Millions of dollars are paid trappers each year. Deal with a reliable house. We are the largest in our line in Canada. Write to-day

FREE

HALLAM'S TRAPPERS GUIDE
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A book of 96 pages, fully illustrated. Game Laws revised to date—tells you how, when and where to trap, bait and traps to use, and many other valuable facts concerning the Raw Fur Industry, also our "Up-to-the-minute" fur quotations, sent **ABSOLUTELY FREE** for the asking. 489

Address **JOHN HALLAM, LIMITED** Mail Dept. 489 **TORONTO**
111 Front St. East,

CENTRAL NURSERIES, ST. CATHARINES, ONT.

Have a Fine Assortment of
Trees, Vines, Plants, Ornamentals, Etc.

For Spring Planting

For Satisfaction, Plant St. Riges, Himalaya and Ever Bearing Berries Our prices are right and so are the trees. Send for priced catalogue if you have none, also your want list for special prices on Apple Trees. We can please you. Try Seed Potatoes, Lincoln, New. Look over our Price List. No Agents. Wanted, a Nurseryman

A. G. HULL & SON



appointed an assistant to Mr. Macoun. In a detailed explanation of the workings of the United Fruit Company of Nova Scotia, Ltd., the speaker described the success which has attended its operations. Last year about three hundred and sixty-seven thousand barrels of apples were dealt with, and by scientific handling of the markets by the agents and by the chartering of special steamers, the growers sometimes netted handsome returns. The organization also bought supplies on the cooperative plan.

BEEES AND FRUIT GROWING

A paper was read by Mr. F. W. L. Sladen, of the Experimental Farm, Ottawa, on the importance of bees to the fruit grower.

The matter of undertaking cooperative work in the province was advocated by Rev. H. Dickson, and favorably considered by the meeting. It was left to the executive to investigate the possibilities of doing anything.

Opposing the Combines

A despatch from London, England, states that a movement is on foot among those concerned with the sale of Canadian apples in the London market to break down the combine which exists among London dealers under which Canadian apples are sold practically at any price the combine chooses to fix. Arrangements are being made on behalf of the apple shippers of New Brunswick, Ontario and British Columbia to institute an independent sale centre in London, solely for Canadian apples.

YOUR ORDER FOR

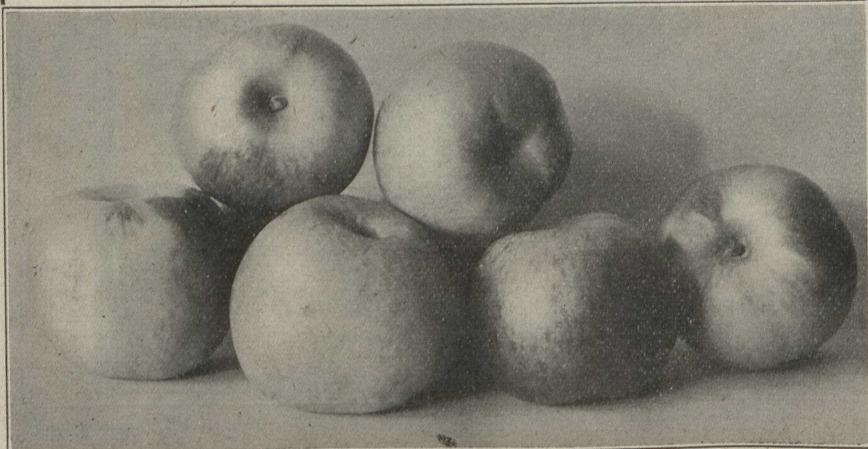
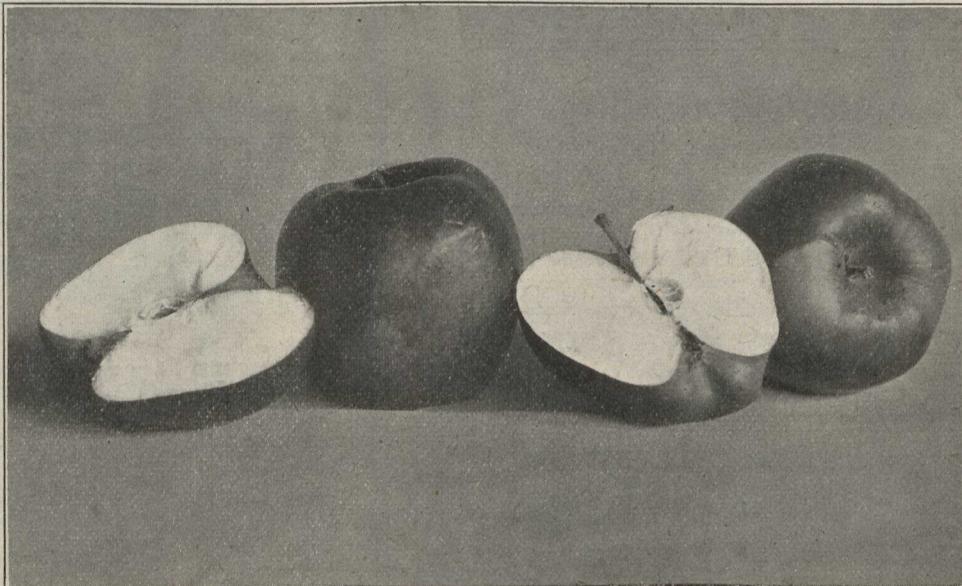
Apple Trees

Should be placed NOW

We expect to see an Apple-Tree-Planting Spring. The Apple Growers generally, last Fall received good prices for first-class apples and the man who does not own an Orchard would like some of that money, but he must plant the right kind of Nursery Stock to get it.

Make up your list of requirements and send it to us **now** while we have a full assortment on hand.

In addition to our enormous stock of Apple Trees we have a general line of other Nursery Stock.



E. D. Smith & Son
LIMITED

NURSEYRYMEN

(900 Acres)

WINONA - ONT.

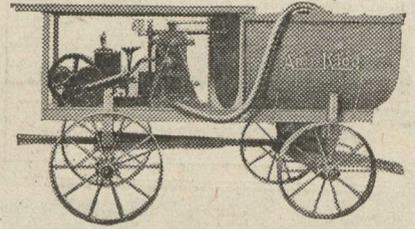
Catalogues &c., Mailed Free on Request

SPRAY WITH AN ANTI-KLOG

They give the highest efficiency through long hard terms of service. There is an **Anti-Klog** of the right capacity for those who have much and those who have little spraying to do.

They spray better—spray better longer—and represent more downright sprayer value—than any other spraying devices manufactured.

Ease of operation, simplicity, strength and a number of other individual features appeal to every user. The **Anti-Klog** nozzle makes it very difficult for any mixture to clog the outlet.



Guaranteed for 5 Years

You are absolutely protected when you buy an **Anti-Klog**, as each one is sold under an unqualified guarantee of 5 years' service.

Send for our new free catalog and give your dealer's name. You should now make preparations for spring spraying.

ILLINOIS METALS COMPANY

2420 WEST 22nd STREET

CHICAGO, ILL.

500,000 FEET BELTING FOR SALE

All makes and sizes, new belt list now ready. Also special list 100,000 rods Wire Fencing, Barb Wire, Gates, Saws, Roofing, Iron Pipe, etc., at 20% to 50% less than regular values. Send your name for these free lists.

IMPERIAL MFG. & SUPPLY CO.,
510 QUEEN ST. MONTREAL, QUE.

SKIPPED HILLS RAISE NO POTATOES

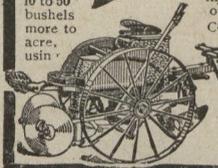
Every hill you miss in planting means money lost out of your pocket. No machine can plant perfectly unless there is hand correction of

IRON AGE (Improved Robbins) Potato Planter
(Now made in Canada)

misses and double 10 to 50 bushels more to acre, using

A seed piece in every space and one only. No pickets used—no injury to seed. Perfect placing of seed and uniform spacing. Can't you see that it must pay for itself? Write for booklet, "100 per cent potato planting."

We make full line Potato Machines, Garden Tools, Sprayers, etc.
The Bateman-Wilkinson Co., Limited
465 Symington Ave.
Toronto, Ont.



Strawberries

(Summer and Fall Bearing)

and All Small Fruit Plants



Strawberries and all Small Fruit Plants mean big and quick profits for you at a small outlay of money. We are headquarters for Summer and Fall Bearing Strawberry Plants, Raspberries, Blackberries, Gooseberries, Currants, Grapes, Fruit Trees, Roses, Ornamental Shrubs, Eggs for Hatching, Crates, Baskets, Seed Potatoes, etc. Best varieties, lowest price. 30 years' experience. Free catalogue is full of valuable information. Write today
L. J. FARMER, BOX 496, PULASKI, N. Y.

ENGLISH HAND-MADE LACE

MADE BY THE COTTAGERS OF BUCKINGHAMSHIRE.

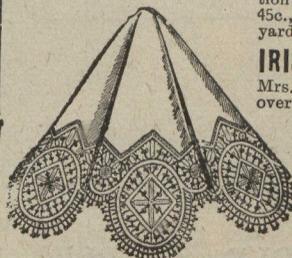
This is the old-fashioned lace made on the cushion, and was first introduced into England by the Flemish Refugees. It is still made by the village women in their quaint old way.

Our Laces were awarded the Gold Medal at the Festival of Empire and Imperial Exhibition, Crystal Palace, LONDON, ENGLAND, for general excellence of workmanship.

BUY some of this hand-made Pillow Lace, it lasts MANY times longer than machine made variety, and imparts an air of distinction to the possessor, at the same time supporting the village lace-makers, bringing them little comforts otherwise unobtainable on an agricultural man's wage. Write for descriptive little treatise, entitled "The Pride of North Bucks," containing 200 striking examples of the lace makers' art, and is sent post free to any part of the world. Lace for every purpose can be obtained, and within reach of the most modest purse.



COLLAR—Pure Linen. \$1.00.



DAINTY HANDKIE—70c.
No. 910.—Lace 1½ in. deep.

Collars, Fronts, Plastrons, Jabots, Yokes, Fichus, Berthes, Handkerchiefs, Stocks, Camisoles, Chemise Sets, Tea Cloths, Table Centres, D'Oylies, Mats, Medallions, Quaker and Peter Pan Sets, etc., from 25c. 60c., \$1.00, \$1.50, \$2.00, up to \$5.00 each. Over 300 designs in yard lace and insertion from 10c., 15c., 25c., 45c., up to \$3.00 per yard.

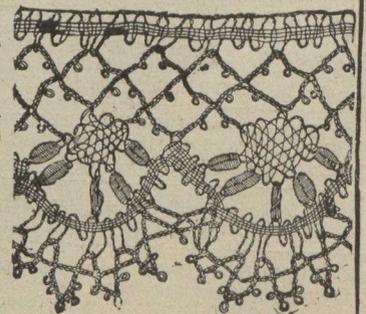
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Mrs. Armstrong having over 100 Irish peasant girls connected with her industry, some beautiful examples of Irish hand made laces may be obtained. All work being sold direct from the lace-makers, both the workers and customers derive great advantage.

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No. 122.—80c. per yard.

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—W. E. Calder, Grimsby.

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RELIABLE HELP, SKILLED AND unskilled, supplied horticulturists and others. Canadian Employment Bureau, Proprietor member of B. G. A., London, England, 65½ James St. South, Hamilton, Ont.

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IF YOU WANT to sell a farm consult me.
IF YOU WANT to buy a farm consult me.
I HAVE some of the best Fruit, Stock, Grain and Dairy Farms on my list at right prices.
H. W. Dawson, Ninety Colborne St., Toronto.

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WANTED—Young Man, single, with some experience, as beekeeper, to begin about May 20th. Must be strictly temperate, industrious and willing to work hard in busy season. State age, experience and wages expected, with board supplied, in first letter. — Ewart McEvoy, Woodburn, Ont.

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THOROUGH, PRACTICAL MAN desires position on fruit farm or otherwise. Three boys, ages 12, 14, 15, girl 16. Over 30 years' experience.—Chas. Turner, Simcoe, Ont.

20 Crops of Potatoes Av. 322 Bush. per Acre

\$500 AWARDED

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	Yield in Bushels	Complete Score Points including starch, size and cooking quality
\$100 1st Prize A. B. Cobb, Lee, Me.	502.6	690
50 2nd " O. B. Keene, Liberty, Me.	418.6	660
30 3rd " J. L. Demeritt, Sangerville, Me.	405.5	615
25 4th " Frank J. Hersey, Dexter, Me.	465.8	607
20 5th " D. L. Brett, Oxford, Me.	400.	525
15 6th " W. S. Hodges, Phillips, Me.	311.1	523
10 7th " R. J. Martin, Rochester, Vt.	331.8	520
Gratuity. Geo. E. Burditt, Rochester, Vt.	457.8	634

Southern Zone (Mass., R. I., Conn.)

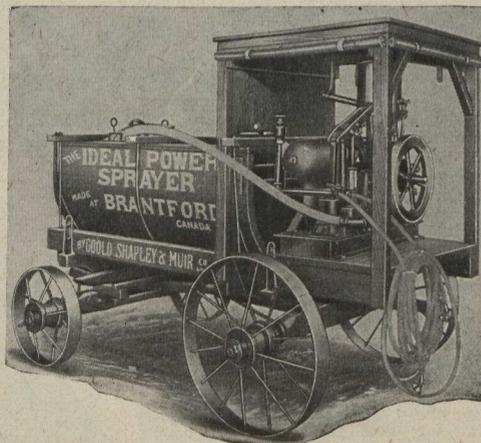
\$100 1st Prize A. W. Butler, Brockton, Mass.	363.1	589
50 2nd " Jos. Howland, Taunton, Mass.	344.9	574
30 3rd " Henry A. Wyman, Rock, Mass.	342.5	558
25 4th " Edwin L. Lewis, Taunton, Mass.	260.2	515
20 5th " W. C. Endicott, Danvers, Mass.	217.7	503
15 6th " Luther Holton, N. Franklin, Ct.	183.8	450
10 7th " Dudley P. Rogers, Danvers, Mass.	185.7	430

Send us your name for complete and instructive statement concerning the results of the contest and how these great yields of potatoes were obtained. No other fertilizer than the Stockbridge Potato Manure was used.

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D. Johnson Ought to Know!

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JOHNSON BROS.,

Fruit Growers, Shippers and Exporters
Forest, Ont., Dec. 26th, 1913.

Messrs. Spramotor Co., London, Ontario.

Dear Sirs,—The Model C power Spramotor that we purchased from you last spring has given us the best of satisfaction, much better than we expected.

It was kept running constantly every day for some ten weeks, and proved itself first-class in every way.

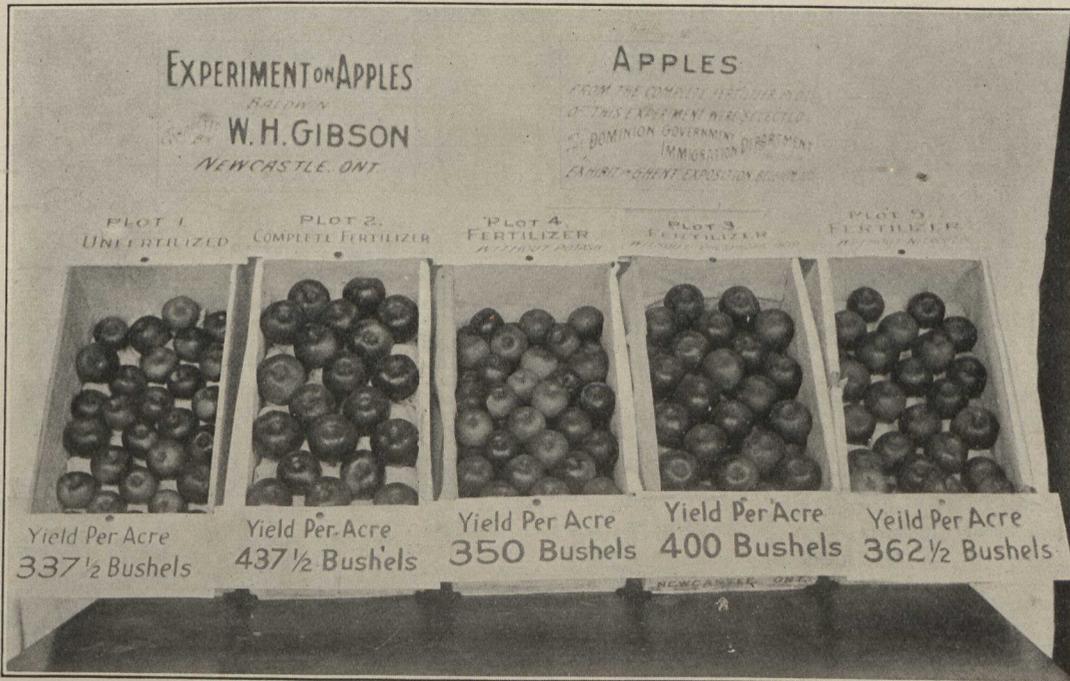
We were specially pleased with the Automatic Air Regulator, which was a surprise to us, and far excelled any other regulator that we have ever used or have seen.

The engine is strong and simple.

Yours truly (Signed) D. JOHNSON.

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PLOT 1 Unfertilized	PLOT 2 Complete Fertilizer	PLOT 4 Fertilizer Without Potash	PLOT 3 Fertilizer Without Phosphoric Acid	PLOT 5 Fertilizer Without Nitrogen
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Potash For All Fruits

Potash Improves Quality

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