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The Canadian Horticulturist

Vol. XXXVI

MARCH, 1913

No. 3

The Best Varieties of Fruit for Ontario Orchards

Prof. J. W. Crow, O.A.C., Guelph

Anyone who is at all conversant with conditions in the fruit industry will have noticed an important change in regard to the market demand for certain varieties of apples. Our markets are asking more and more each year for better varieties and better grades. Some of the varieties which were formerly in high favor are being discounted, and indications are that the sorting process will go on even more rapidly in the future. The classes of apples most in demand might be listed as follows: first, early apples; second, large-sized cooking apples; third, fancy dessert apples. It is so easy for one to be misunderstood when one undertakes to recommend varieties for certain districts, that I scarcely feel like making the attempt. However, a few remarks based on the above classification may not be out of place and may throw some light on the variety question.

EARLY APPLES

During the summer months and until middle or late August, our markets are short of apples. There is a good demand for early fruit, most of which is used for cooking purposes only, but the marketing season is comparatively short. It is true that Duchess, for instance, is counted a profitable variety in some of the northern districts, but it is also true that the growing of this variety could be made very profitable in those districts which can put early apples on the market at the earliest possible date.

In my opinion there is an excellent market for such varieties as Yellow Transparent and Duchess, and the best district in which to grow them is the northern tier of counties, including Essex and the southern parts of Kent, Lincoln, and Norfolk. The Niagara District can grow early apples to excellent advantage, and on account of the excellent marketing facilities which obtain in that district it is safe to say that early apples could be grown there in a very commercial way. Any district which undertakes to grow early fruit should possess good shipping facilities. These varieties are picked as soon as they are large enough for cooking purposes and they should go to market in baskets or in boxes.

The most economical apple for culinary purposes is the large one. If this

is of an attractive red color, so much the better. There is a market for this class of fruit from September to late winter, but an apple to sell well to this trade must be strictly first-class and of the best size and color possible. Such varieties as Alexander, Wolfe River, Belnheim, and Spy when well grown always command ready sale.

DESSERT APPLES

The first requisite in a dessert apple is quality, the second is color. The size may be large, medium or small. For the fanciest trade, the small apple is in greatest demand. Even of the large varieties such as Spy, the smaller grade, provided the color and quality are as good, is sometimes more in demand than the larger size. The best commercial dessert apples are Snow, McIntosh, and Spy. These three varieties can be grown to greater perfection in Ontario than in any other province or state on this continent, and I advise that they be made the three leading varieties.

In my opinion, the best chances for financial profit in apple growing lie in the production of high-class dessert fruit. The three varieties mentioned and a few others which might be mentioned as belonging to this class, if well grown, are always in demand and can be depended upon to sell at good figures.

The low prices of the past season have shown that some old favorites do not possess sufficient quality to command ready sale. Even the Baldwin was discounted heavily last season, and it is certainly not over-stating the matter to say that Baldwin does not possess sufficient quality to commend the best class of trade. I am quite aware that at the present time Baldwin is being more extensively planted in this province than any other variety. At the same time, there are districts in Ontario in which such inferior varieties as Ben Davis, Gano, and Stark are at the top of the planting list. I do not wish to advise in the matter, but if present indications count for anything, it is certain that profit in apple growing in the future will depend more upon quality than ever before.

Following are brief notes concerning varieties which may be added to the foregoing lists of dessert and cooking varieties of apples:

Cayuga Red Streak (commonly called

Twenty-ounce).—A large, early fall apple of splendid cooking quality and splendid color; extensively grown in Western New York, thrives splendidly in southern Ontario, and would grow much farther north, as the tree is decidedly hardy.

Rhode Island Greening.—An old standard and still highly desirable. In my opinion it is a safer variety to plant than Baldwin, and just here I should like to say that in selecting varieties it should be the aim of each planter to pick only those which are believed to be the most profitable sorts. If one looks over the list and selects the few of which one feels most certain, there is no necessity of going further or of planting varieties in any way inferior. Simply select the best.

Tolman.—Another old favorite which hitherto has not been in large demand on the market. It is now being asked for, especially for the north-west, as a sweet winter apple for baking purposes.

DESSERT VARIETIES

Gravenstein.—A September dessert apple of the finest quality, also first-class for cooking purposes. It drops somewhat badly, but possesses splendid color and is an all-round attractive and desirable variety where one of this season is desired.

Grime's Golden.—A splendid mid-winter dessert and cooking variety for southern Ontario.

OTHER VARIETIES

Besides those mentioned, there are a few varieties, such as King, Ribston, Golden Russet, and Wagener, which possess valuable qualities. King and Golden Russet are notoriously shy bearers unless planted on rich land or heavily fertilized. With good care, it might be possible to cultivate them profitably. Ribston is a late fall or early winter dessert apple of excellent color. The tree seems to be only moderately hardy. I should be glad to learn the experience of growers of Ribston over the province, as it is a variety which seems to possess every desirable quality. So far as I have observed, it is not widely grown except in one or two districts, and I should like to know if it cannot be cultivated over a much larger area of western Ontario.

Wagener is a mid-winter, high quality, dessert variety, considerably resem-



Good Methods Bring These Results

Varieties of Grapes*

F. G. Stewart, Homer, Ont.

Out of the scores of varieties of grapes we might plant, the six best varieties for profitable growing I consider are as follows in descending order of values: the Concord, Worden and Niagara, Moore's Early, Vergennes and Agawam.

The first two do equally well in sand or clay, but the Concord, which is a blue grape is the one most extensively grown, and the most profitable one we have. It is a good shipper, a hardy grower, and preferred by the women to any other kind. The first few inches of the new spring foliage is very rough and furry, and so this variety of grape resists the early spring frosts better than the smoother leaved kinds, such as the Rogers.

The Worden, a black grape, is also a hardy and vigorous grower. It is a good bearer, but although a higher flavored grape than the Concord, it is not such a good shipper, as the skin is thin. Like the Concord, its foliage is furry and able to resist the early frosts.

The Niagara is a white grape, a splendid bearer, but being a smooth-leaved kind, does not stand the early frosts as well as the Concord and Worden.

The Moore's Early is another black grape, hardy, of good quality, earlier than the other kinds mentioned, but not such a heavy producer. I would not recommend it for hard ground as it does not produce enough wood on such land.

The Vergennes, a red grape, is a heavy bearer, of good quality, ripening a week later than the Concord, and like them in being able to withstand the early spring frosts. In trimming this variety, no more than twenty-four buds should be left to a vine as each bud will throw out from four to five bunches, where other kinds would put forth but two or three at most. This kind is thus apt to overbear, and if it does the grapes will not color up properly.

The Agawam, a red Roger grape, is thick skinned, a good shipper and heavy bearer. It does best on clay, as it makes too much wood and foliage on light soils.

The Lindley does better in the heavy soil around Winona than in any other part of Ontario.

Fruit trees and vines are perennial occupants of the soil and do not yield the most profitable returns in ground which is over-rich in nitrogenous materials, and for these artificial supplies of potash are essential if fruit of highest quality is desired.

*A paper read at the annual convention of the Ontario Fruit Growers' Association in Toronto, November, 1912.

Best Six Varieties of Peaches¹

Wm. Armstrong, Queenstown, Ont.

I have been requested to name six varieties of peaches which would prove the best for an up-to-date commercial peach orchard. After over forty years experience in peach growing, and especially when I consider the experience of the past two or three years, I will recommend only three or four varieties as suitable for a commercial orchard.

There is a well defined season for each kind of fruit. Peaches maturing and offered for sale very early or very late in the season are seldom profitable when compared with standard varieties maturing when the market demands this kind of fruit.

VARIETIES RECOMMENDED

The varieties I recommend have been fully tested by me in Niagara Township and are as follows: Yellow St. John, Fitzgerald, New Prolific, Elberta; these four and no more.

The St. John is a well known early profitable, yellow flesh, free stone, highly colored, luscious dessert peach. It ripens about August 20th. The bud is more hardy than any of the Crawford type or family of peach, which it resembles. It has one undesirable feature, namely, after its eighth year it often has the bad habit of forming clusters of buds on the end of short spurs, which should be reduced by rubbing off more than half the buds on young fruit.

The Fitzgerald is also a free stone, yellow peach, maturing about the 15th August. It is more hardy in bud than the St. John, but not so high in color or large in size.

The New Prolific is the most profitable of all peaches, maturing during the height of the peach season about September 8th. It is not as high in color nor as large in size as the St. John, but more hardy in bud, a size cropper, free stone yellow peach. It requires careful trimming and liberal feeding.

The Elberta is well known, and requires little introduction, maturing about September 20th. It is a good long distance shipper and fairly hardy in bud.

Potash improves the quality and color of fruit, and aids in the formation of starch and sugar.

They used to keep the orchard as a pasture lot and headed the trees high to keep the cows from them, but orchard land is too valuable for pasture purposes and stock have no business in an orchard that is being worked for apples. They pack the soil and break the trees.—A. Nagelwoort, Brighton, Ont.

¹A paper read at the last annual convention of the Ontario Fruit Growers' Association.

bling Spy. The tree bears very early and is most productive. When well grown, the color is good and in most cases is even better than the color of Spy. I should be glad to know what readers of The Canadian Horticulturist think of this variety, and am anxious to learn with what success it is being produced throughout the province generally. I should also like to know if any are growing Spitzenburg to any extent, and if they are able to get good crops. This is one of the most desirable of winter dessert apples, and in addition to high quality possesses also splendid color. It is usually a light bearer; possibly this characteristic could be changed by proper care or feeding. For southern Ontario it might prove a desirable variety.

The chief disadvantage of Northern Spy is lack of color. In my opinion, it is time we made arrangements in our middle districts, such as the north shore of Lake Ontario, to hold a larger proportion of our Spies for the late winter trade. The Spy, grown in a short-season locality, is not an attractive market apple until well into the winter, and a green Spy on the Christmas market is a very poor sample of what Ontario can produce.

For planting with Northern Spy, there is probably no better variety than Blenheim. Blenheim should be, I think, one of our leading varieties. The fruit is large, very attractive in color, not subject to scab, and the tree is decidedly productive under good care. It is naturally rather late in coming into bearing, but would no doubt respond to proper treatment in the same way as any other variety, and can doubtless be made to produce good crops at a moderate age. Blenheim and Northern Spy are both in the front rank as dessert and cooking varieties.



Pruning and Spraying with Good Cultivation are Reclaiming Hundreds of Ontario Apple Orchards. A Simcoe County Orchard.

Spraying the Apple Orchard: What it Costs

R. S. Duncan, District Representative, Port Hope, Ont.

THE question as to whether it will pay to spray has long since been answered in the affirmative, so it will not be necessary to enter upon any argument in regard to this phase of the subject. As to its relation to hygiene, it is sufficient to say that spraying is absolutely essential to the health and vigor of the tree, for protection against insects and fungus diseases and to the production of clean fruit.

There are still a few growers who do not believe in spraying. We hope they are few. On the other hand many growers realize the importance of spraying, pruning, cultivation, and fertilization, and yet they fall down in spraying because they regard the work as disagreeable and expensive, hard to understand, and difficult to accomplish. A few general principles are easy to learn. It is not expensive, considering results. Spraying is an insurance. It pays, and pays well.

In order to obtain results it is necessary that the fruit grower spray intelligently. The proper mixtures should be used, applied at the proper time, and the spraying done very thoroughly with the right kind of an outfit—one capable of giving good pressure and not a makeshift appliance made solely to sell.

Apple orchards are attacked by many diseases and insect pests, which are steadily on the increase. These cause an immense yearly loss in the apple crop of Ontario. The farmer must know what he is spraying for; in other words

he must know the habits or life histories of these pests in order to know how best to combat them and attack them during the most vulnerable period of their life.

INSECTS AND DISEASES

The chief insects attacking apple trees and fruit are: San Jose Scale, Oyster Shell bark louse, blister mite, aphids, bud moths, codling moth, tent caterpillars, case bearers, canker worms, plum curculio, and railroad worm. There are a few others of minor importance. The chief diseases are: Apple scab, apple leaf spot, sooty blotch, bitter rot, black rot, canker, and blight. Practically all these insects and diseases can be controlled by spraying, with the exception of railroad worm, blight, and canker.

HOW TO CONTROL THEM

To control the scale insects and blister mite, spray with lime-sulphur, commercial strength, one to ten, just before the leaf buds burst. The scale insects can be controlled by spraying any time on the dormant wood with the foregoing mixture; but the only time to catch the blister mite is just before or as the buds begin to burst. Hence we "kill two birds with one stone." The little mites winter underneath the bud scales, and as soon as growth takes place in the spring they leave their hiding place and push their way through to the leaves where they enter the epidermis of the lower surface of the leaf and form blisters which later turn reddish brown. They don't affect the fruit directly, but

impair the function of the leaf in the manufacture of food and hence weaken the vitality of the tree.

The bud moth, canker worm, case bearer, and caterpillars may be controlled by spraying with a poison, two pounds Arsenate of Lead to forty gallons of water, just before the blossoms burst or as pink is beginning to show in the leaves. As this is also the time for the first spraying to ward off apple scab, and other fungus diseases, and to protect the young stems of the forming fruit, lime sulphur, one to thirty-five commercial strength, could be used with the poison for insects just named.

For aphids, it is advisable to examine the twigs and leaf buds, and if present to spray with kerosene emulsion, which is made by dissolving half pound of soap in one gallon of rain water and then adding two gallons of kerosene and stirring vigorously until the mixture is of the consistency of cream. Dilute one gallon with nine of water for spraying. The efficacy lies in the fact that every little louse should be hit with the emulsion; hence, the need for doing thorough work. A preparation known as "black leaf forty"—directions given on can for use—has given good results in control of aphids when applied along with the lime-sulphur for the second spraying. The writer has not used this material, so cannot vouch for its effectiveness.

Spraying with lime-sulphur, one to forty with two pounds arsenate of lead added to forty gallons of the mixture, if done thoroughly and immediately after the blossoms have fallen, will control codling worm and curculio. This is also the second spraying for the control of apple scab.

A fourth spraying about two weeks later will be effective in warding off scab, especially so if the season is at all damp.

The only remedy for twig blight is to cut out well below the affected area and burn. Be sure to disinfect the tools after each cut in order to prevent the spread of the bacterial spores. Canker on old trees should be cut out and the cut surface disinfected and given a coat of white lead and oil to prevent the entrance of spores.

The railroad worm adult lays its eggs underneath the skin of the apple about the first week in July—too late to spray for it. The only remedy is to pick up all fruit as it falls to the ground and get rid of it in some way. Pasturing with hogs or sheep serves the same purpose.

Proper equipment for spraying operations is necessary. A good pump, with all accessories in the way of strainer and hose, nozzles, fittings, and extension rods, together with a tower for tall trees, are essential to economical and

efficient work. For small home orchards a barrel hand pump will answer the purpose. For orchards of one to eight acres a double-acting hand pump which gives a pressure of from one hundred to one hundred and twenty-five pounds may prove satisfactory. Over eight acres, a power outfit is almost a necessity.

We have had the management of four demonstration orchards in the counties of Northumberland and Durham during the past two years, and it might not be amiss to get our methods. Our spray outfit consisted of a double-acting hand pump mounted on a waggon—not on a stone-boat—with a tower equipment for reaching tall trees.

Our tank was a home-made affair, holding two hundred gallons. We used two lines of hose with 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 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 to do as much of the tree 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. Medium-sized trees were sprayed by stopping twice. 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 most effective work.

We sprayed each orchard three times, using five to eight gallons of mixture on each tree for each spraying. We always cleaned our pump, hose, and nozzles by running clean water through them. Never leave liquid in pump overnight, because there is danger of freezing in cold weather and clogging up the nozzles. This point is worth remembering, as it very often is the cause of much delay and annoyance.

Each fruit grower who uses lime-sulphur should have a hydrometer in order to test the solution and know how many gallons of water should be added to each gallon of lime-sulphur. Instructions are given in the spray calendar, which can be had for the asking.



Methods of Pruning—The Open-centre Habit of Apple Trees

Points to Watch When Ordering Nursery Stock

Prof. J. W. Crow, O.A.C., Guelph, Ont.

I find that a great many planters value a tree according to its size. In my opinion, this is an error. Expert peach growers always refuse the largest trees, choosing rather one of medium height, or slightly above, and moderately stocky. In apples I think the same rule would hold good.

In a well grown block of stock, the large trees are not necessarily the best, and the statement is even more true in plums and cherries than in apples. It is much to be desired that our planters shall become acquainted with the advantages of younger trees. This is most important in the case of cherries and plums, as stone fruits are more difficult to transplant successfully, and younger trees can be more safely moved than those of two years of age or older. In ordering one year trees, one should specify trees not less than three and a half feet in height and at least moderately stocky for the size. I observe, too, that very many planters are unable to tell the age of a nursery tree. This is not usually a difficult matter, however, as the annual growths are for the most part plainly indicated on the tree itself and are readily observed.

ADVANTAGE OF YOUNG TREES

One of the chief advantages in the use of younger trees is the fact that a tree procured from the nursery as an unbranched whip can be headed at any desired height by the fruit grower and can be shaped by him so as to make a tree of better form than the ordinary two year old tree as received from the nurseries. The advantages of low-heading are many, and are for the most

part obvious. The disadvantages are not nearly so great as one would expect, for the reason that a low-headed tree tends to grow more upright, and cultivation is not interfered with nearly so much as one would expect.

Weeds and grass do not grow under low-headed trees to the same extent as under high-headed trees, and shade furnished by the tree itself also reduces somewhat the necessity for cultivation under the tree. With trees headed to fifteen inches or less, there is very little necessity for cultivating within two or three feet of the trunk. Anything required in that area can be done by hand at small expense. It is obvious that a tree with a fifteen-inch trunk is much more convenient to spray, prune, pick and thin than one with a longer trunk.

THE STOCK TO BUY

In selecting nursery stock, one should have these points in mind and should endeavor to buy low-headed trees or buy trees which can be headed low if desired. Transportation charges on the younger trees are less, and in moderate quantities at least they could be forwarded by express with much less danger of delay and consequent injury.

In purchasing trees, it is always wise to see the stock beforehand, if at all possible. In case one can deal through an agent whose reliability is unquestioned, it would be satisfactory to order through him, but if not, the best plan would be for a number of growers in a district to club together and send one man to purchase stock for the entire number.

The Use of Commercial Fertilizers Defended*

R. Innes, B.S.A., Manager Sandside Fruit Farm, Coldbrook, Nova Scotia

Fertilizers "are not always suitable to the land to which they have been applied." Unfortunately this is sometimes the case. However, one firm with whom the writer is familiar is paying particular attention to this point, and is placing experts in soil fertility in various sections of the province of Ontario to assist and advise their local representatives in recommending suitable mixtures for farmers to use on the various classes of soil they wish to fertilize. They also maintain a laboratory in which chemical and physical analysis of soils are conducted, simply for the purpose of endeavoring to eliminate the danger of misapplication of their fertilizer mixtures.

Dr. Dandeno says, "Plant excretions are the chief cause of infertility, and it is in the decomposition of such materials that the application of fertilizers of any kind proves of value." To the writer's mind continued cropping without replacing the plant food annually consumed is what leads to soil impoverishment and

resultant yields of poor quality. It is true that some plants excrete certain toxic substances which have been known to retard the growth of other crops, but, upon exposure to the air for a certain time by plowing or by treating with lime or some such neutralizer their injurious effects soon vanish.

"To supply a commercial fertilizer with prospects of success at least three things are necessary"—if Dr. Dandeno had stopped there he would have been all right, but he goes on to say—"first, a knowledge of the effect of the previous crop on the soil; secondly, a knowledge of the crop now to be grown and its relation to the excreta of the previous crop; and thirdly, a knowledge of the biology of the soil." We certainly should take into consideration the effect of the previous crop on the soil, the amount of plant food that has been applied previously, the nature of the soil, and the crop to be grown, but if a farmer has to wait until someone determines the relation of the crop to be grown and the previous crops excreta and the bacterial content of his soil besides, before he can feel safe in applying a fertilizer, he had better sell his farm at once as such information will

not be available for practical application for some time to come.

It is indeed amusing to farmers of Nova Scotia and the other Maritime Provinces to hear of such criticisms in connection with the use of commercial fertilizers. We all use, and with excellent results, on the average half a ton to the acre and so far haven't had any introduction to either the bacteria or plant excretions supposed by Dr. Dandeno to be so essential. If the farmers of Ontario are baffled in this question I venture to say it is due to a large extent to the publication of such ridiculous articles as the one we now have reference to.

"Certain fertilizers are adapted to certain crops and to certain soils." This, to the writer's mind, is one of the few reasonable statements in the doctor's article. Owing to this fact it is necessary for the fertilizer manufacturer to place at the disposal of the farmer mixtures of different analysis. Thus we find on the market a three-eight-six, a three-six-ten, a four-eight-eight, and so forth, varying in price according to their plant food content. It is necessary to determine just what essential element your soil lacks and then furnish it in the correct proportion by selecting a mixture in which the desired element is prominent. Always remember that the "plant food element" which exists in the smallest quantity governs the crop producing power of the soil.

WELL TAKEN POINTS

All the points mentioned by the writer of the article in question in connection with barnyard manure were well taken with the possible exception of a "neutralizing effect on all plant excreta." No one, not even a fertilizer manufacturer, condemns the use of barnyard manure, but there are crops which can be raised decidedly cheaper on fertilizers in addition to which they ripen earlier (as corn) and are of better quality (as potatoes). Farmers are, as a rule, accustomed to think of manure as a bulky article and want bulk for their money, but we should remember that a little of the substance required is better than a good deal that is not needed. It is reckoned that one ton of average commercial fertilizer contains at least twenty times as much plant food as a ton of the best barnyard manure, and may be applied with one-twentieth the labor.

"In buying and using commercial fertilizers patent medicine chances are taken." Most people when they get "stung" would rather not let other people know how they were taken in, but the author of the above quotation evidently does not believe in keeping it a secret. Of course, this is purely an assumption on the part of the writer, but it looks as if Dr. Dandeno has at one time or another been a victim of some

*This article, the first part of which was published in our February issue, is the continuation of a reply to an article on "Common Fertilizers" by Dr. J. B. Dandeno, of Bowmanville, Ont., that Horticulturist. The discussion is continued on page 72 of this issue.



A Well Sprayed Pear Orchard: That of Mr. Stirling at Kelowna, B.C.

—Photo copyrighted by G. H. F. Hudson, Kelowna, B.C.



Judging Plate Fruit Exhibits

The judges at the last Ontario Horticultural Exhibition in Toronto did not have an easy task placing the awards on the 1,400 plates of fruit exhibited. One of the judges, Prof. J. W. Crow, of Guelph, may be seen with an apple in his hand. Beside and beyond him is another judge, P. J. Carey, Dominion Fruit Inspector.

unscrupulous fertilizer salesman or else has "attempted" to do his own mixing! Speaking as a Nova Scotian and one who credits himself with at least an average practical and scientific knowledge of all kinds of commercial fertilizers, I would strongly advise all Ontario farmers, and in fact all those desirous of increasing their yields, to lose no time in taking advantage of the benefits to be derived from the use of these materials, and would impress upon the reader the necessity of doing his own thinking and not letting a man who is prejudiced against the use of fertilizers influencing him. Let us hear from someone else!

Making Geraniums Bloom

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

For two years past my young geranium plants, in fact they are large plants, refuse to bloom. I have tried all I know to make them do so—H. L.

The main reason for healthy geranium plants not flowering are that they are being grown in unsuitable soil, or have insufficient light and sun, or a too dry or gas-laden atmosphere, or an exhausted soil. Soil that is composed very largely of humus or leaf mould will often cause this trouble. This leaf mould or black soil from underneath trees of itself is not suitable for geraniums, or indeed for but very few pot plants. It induces a too rank, soft growth that does not produce flowers.

The best soil for geraniums—in pots especially—is a soil composed of three parts of well-rotted, fibry-rooted, tough sod about four inches thick, cut from loamy soil where the grass is short, enriched with one part of well-rotted barnyard manure or cow manure. These materials should be piled up out of doors

six or eight months until they are decomposed and ready for use.

If the soil where the sod was taken from is of a very light, loamy nature, no sand for lightening or tempering the soil will be necessary. One part of fine sand mixed with ten or twelve parts of the loam mixture will be an advantage if the sod was taken from a clay loam soil. This compost if properly prepared will suit almost any pot plant, especially geraniums. Loamy garden soil, or loamy subsoil from underneath sod, mixed with the proportion of sand and fertilizer given will make a fairly good substitute soil for pot plants.

Saucers of water placed around and under the plants will improve conditions when they are due to a too dry or gas-laden atmosphere. Saucers or pans of water on the radiators, or a steaming kettle on the stove will be a great help. The dry atmosphere of most dwelling-houses is often the main cause of troubles with house plants of all kinds. For a plant that has become too full of roots and the soil exhausted, repotting the plant into a larger-sized pot, or an application of some liquid fertilizer, are the best remedies to apply. If the plant has become tall and unsightly looking, it is best to treat it as described farther on in this article.

RENOVATING OLD PLANTS

Large plants will probably have to undergo a process of renovation before they will flower successfully. This is done by cutting the plants back severely to a part of the stem where the wood is moderately hard and woody, and by removing nearly or quite all the remaining foliage. Keep the soil barely moist until the young growth starts, which will usually be in four or five weeks from cutting back. Then take the plant out of the pot, remove the whole of the old soil without injuring the roots. Cut off nearly half the length of the roots, and pot the plant into a very sandy soil in a one or two size smaller pot. Use half sand and half potting soil with some broken pieces of flower pot for drainage. This is called "potting back," and is done to get a new root system started.

When the plant has developed young shoots with five or six large leaves on, and the root system is well started, repot the plant into a two size larger pot in good potting soil, as described in the first part of this article. Place nearly an inch of broken flower pot or similar material in the bottom of this larger pot for drainage. Do not disturb the roots of the plant in the operation, only to remove the old drainage. Pack the soil fairly firm when repotting the plant. Water the plant well once and set in a not too sunny window for a time, temperature about sixty-five degrees. Do

not give it too much water until well started into growth, keeping the soil moist but not too wet after the first watering. Later on more water can be given.

When the soil in this large pot has become exhausted, and the pot fairly filled with roots, give it some liquid fertilizer once every week or two. "Bonora," sold at seed stores, is a good fertilizer for pot plants. Old geraniums in pots that have become tall and unsightly looking can be renovated at any season of the year by the method described when proper conditions can be given them. For spring and summer flowering the plants may be cut back from now on. For winter flowering it is best to cut them back in July or August out of doors, taking them into the window early in September before frost.

The Fuchsia

H. Gibson, Fergus, Ont.

One of the best summer flowering plants is the fuchsia. A well-grown specimen is a sight worth going a long way to see.

Easy to cultivate and of extremely rapid growth, it is a plant that is well suited for windows or for the decoration of the verandah in the summer. They do extremely well exposed to the free air in the latter position, but care should be taken to protect them from strong winds, as the branches are brittle and easily broken. An eastern aspect is the one to be preferred; the sunshine of the early part of the day suits it much better than that of midday. Placed in a western position the leaves will curl as if scorched under the influence of the afternoon sun.

The month of March is the best time to start the fuchsia into growth. Bring them from the cellar or other frost-proof place in which they have been stored for the winter, put them in the light, and give water in small quantities, increasing the supply as the plants show signs of growth. As soon as it can be ascertained where the new branches are going to be, cut away at least half of the old top. Repot as soon as a sturdy growth is assured, using a soil composed of loam, leafmould, and a liberal addition of sand.

As the pots become filled with roots, they should be moved on to a larger size so that the plants are not checked in any way. A large specimen will require a ten-inch pot. Young plants should be potted on, as they fill the pots with roots. Older plants will not require moving on as often.

A plant which keeps up its reputation as an annual fit to stand any kind of weather is the corn flower (*Cyanus Minor*.)

Shade Trees, Their Beauty and Importance

M. E. T., Toronto, Ont.

THE sanitary value of trees is now very generally recognized. In the past this most important factor in the conservation of a healthful and temperate climate was sacrificed with ruthless hand. Through the waste of the forests winters have become colder, summers hotter; living springs have ceased to flow perpetually; fertilizing streams have disappeared; the earth is deeply frozen in winter and parched in summer, and finally new and grave diseases have appeared where formerly they were unknown."

The foregoing is an extract from an article written by Stephen Smith, M.D., LL.D., in 1899, while endeavoring to secure legislation empowering and requiring the Department of Parks in New York City to plant and cultivate trees, shrubs, plants, and vines in the streets, avenues, and public places of that city. Other cities in the States have followed suit, and since then a very general recognition has been given to the beauty, grace, comfort, and healthfulness of trees, and especially of shade trees in parks and on city streets.

After our last summer's experience one may well ask, can the temperature of the city during the summer months be modified so as to prevent that extreme degree of heat from which one and all suffered, and on which the enormous sickness and death-rate of the people depend? Vegetation plays an important part, but especially do trees, in modifying the climate of large areas—the temperature of even a clump of trees is cooler in summer and warmer in winter than the surrounding country. The thermometer will vary from twenty to thirty degrees in the sun and shade, and as much as ten to eleven in the soil, and the reverse is true in winter. Railroad engineers use far less fuel in passing through forests in winter than in traversing the same distance in open country. Who has not given a sigh of relief when on a hot summer's day he has passed under a tree's friendly shade?

We have not only shade to be grateful for—trees give off a large quantity of water from the surface of their foliage. The greater amount of leaf surface, therefore, the greater amount of vapor emitted. It has been estimated that an acre of grass emits six thousand four hundred quarts of water in twenty-four hours, and that the Washington Elm at Cambridge, Mass., a tree of moderate size, produced a crop of seven million leaves, exposing a surface of five acres of foliage. Thus vegetation tends powerfully to cool the atmosphere, and this effect increases in proportion to the increase in temperature. Carbon

is the great nutritive agent the tree needs, and this it gets from the air in the form of carbonic acid gas. In the process of assimilation oxygen is restored to the air. Man needs oxygen. Carbonic acid gas is a waste product of the animal system. Thus trees purify the air and the vegetable kingdom provides conditions by which the animal kingdom maintains life and health.

The tree is a great factor in the making of a beautiful city. Well chosen specimens—and these well kept and aesthetically planned—will prove of economic value. The beautiful city attracts visitors, and many visitors mean greater business activity, and this leads to the city's rapid growth and prosperity.

In the choice of trees for street planting several things are necessary and should be considered. Trees must be able to endure hardship and be among those most immune from insect attack.

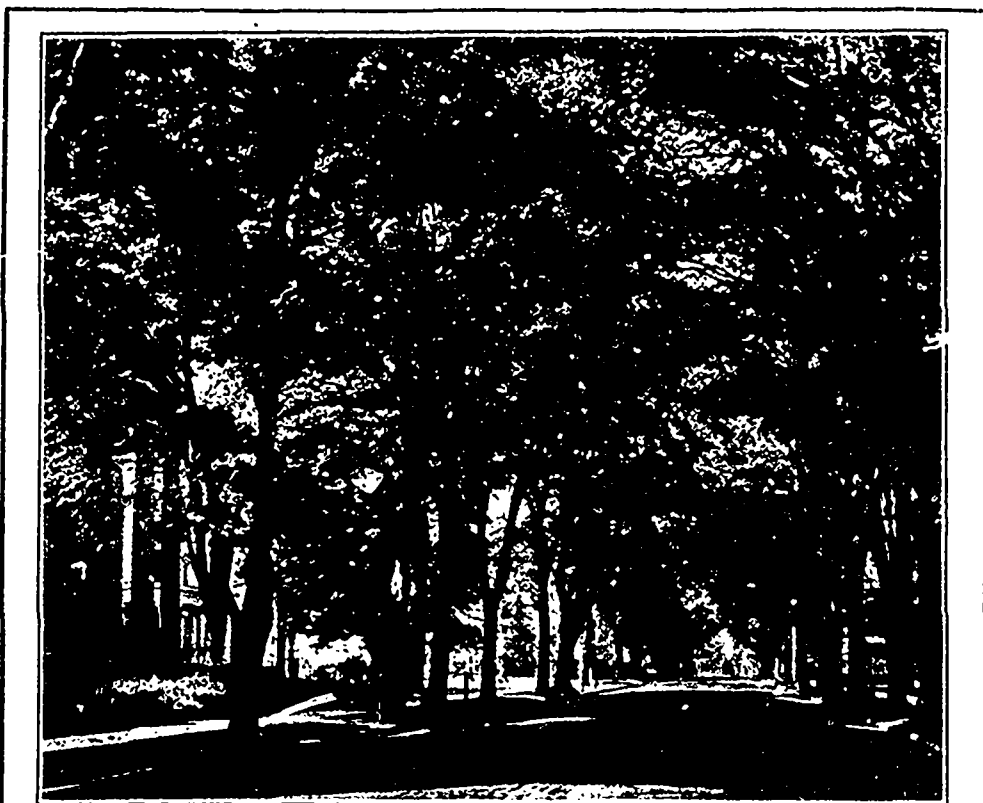
Other qualities, too, such as straightness and symmetry, cleanliness and longevity, and abundance of shade are desirable. The initial cost of planting such trees is small, but after a number of years who will estimate their value? One species on a street has given to many cities in the United States a grand effect. The welcome shade, too, is better secured by the uniform spacing of one species.

When new planting is being done it would be well to alternate trees of rapid growth with those which grow more slowly. This secures shade and beauty during the time such slow growing trees, as for instance the elms, take to reach maturity. After considering the nature of the soil, the width of street, the height of buildings on that street, let us plant our maples, elms, poplars, lindens, oaks, catalpas, and others similar.

The sugar, red and Norway maples



An Avenue of Pin Oaks, the Beauty and Restfulness of which Speak for Themselves



Elms, as Shade Trees, Have a Grace and Beauty all Their Own

are all delightful shade trees. The white or silver maple, a particularly graceful and pleasing species for park planting, is not so good as a street tree, it being very easily damaged. The Horse Chestnut, planted everywhere because of its beautiful appearance when in flower, is

undesirable as a street tree. The ground underneath is strewn first with the sticky bud scales, then the falling flowers—later the fruit is such an attraction to the boy that he damages the tree in his attempts to secure it. The tree, too, is particularly liable to insect attack.

A Plea for the Spring Garden

Miss M. E. Blacklock, Toronto, Ont.

THOSE who have only a few beds, gorgeous though they be, of tulips and hyacinths, do not know the joys of a spring garden, though they may think they do. Not that clumps of tulips and hyacinths are not a great addition to it, but geometrical beds of them are anything but lovable, and loveliness is the very essence of the spring garden.

The garden I am advocating would be quite unnoticeable a block away, but you can poke about in it and enjoy it and be continually finding something new and interesting. The first things to greet you will be the snowdrops, which are due here (Toronto) any time after the first of March, and last well into April and even May in late seasons. The Giant Snowdrop (*Galanthus Elwesii*) is the earliest and perhaps the most showy of the genus, and is much larger than the common one (*G. nivalis*), which follows it. The double form of the latter makes, when naturalized, a mass of snowy white. Snowdrops should be planted so that the bulbs almost touch

each other and then left undisturbed to form permanent clumps, which will increase in beauty year by year. In time they will become too thick to prosper, but not for a good many years. They can be bought here for one dollar a hundred, and are still cheaper in England, so the price is within the reach of nearly every one.

While the snowdrops are still in perfection the Spring Snowflakes (*Leucojum vernum*) are making their appearance. These are a little larger and have longer stems than the snowdrop. They have a small yellow blotch at the tip of each petal and are quite sweet-scented. Otherwise they resemble the snowdrops so much that the casual observer almost invariably mistakes them for snowdrops.

Next come the Siberian Squills (*Scilla Siberica*), in color a most charming blue. These should be planted in groups. Left untouched, they will give a solid mass of color during April.

Blooming contemporaneously with the Siberian Squills are several varieties of Glory-of-the-Snow (*Chionodoxa*), all of

them delightful, though very different, shades of blue. *C. Lucillae* is a new phila-blue, *C. Sardenis* a Gentian-blue, and *C. Gigantea* (syn. *C. Grandiflora*), with very large flowers, a lavender-blue. While these are all lovely little flowers, they are not so effective as the Siberian Squill. There is a beautiful white-flowered form of *Scilla Siberica* to be had now quite reasonably. Two other varieties of the smaller Scillas are pretty. *S. bifolia Alba* and *S. bifolia Carneae*, the latter is especially so.

THE HYACINTHS

The earliest of the Grape Hyacinths (*Muscari azureum robustum*)—pale blue, as its name implies, with a stiff, upright flower stem—adds to the array of the blue flowers with which nature delights to deck the April garden. All these bulbs flower about the same time as the crocus, and continue in bloom equally long.

Of the herbaceous plants the first on the scene is the single form of the white Rock Cress (*Arabis Alpina*). The double form of it comes on just as the single is waning.

For profusion of bloom there are few things that excel the Rock Cress, and it has the added charm of a faint almond-like fragrance. It is perfectly hardy here (Toronto), and will grow anywhere, though like most things it responds to good treatment. The flowers of the double variety taper up into a spike not unlike a miniature stock, and it lasts in bloom much longer than the single. Bulbs of the *Muscari Heavenly Blue* planted amongst its creeping stems, give a charming contrast of blue and white. This Grape Hyacinth, I may add, is the largest and handsomest of the family, though there are several other varieties beside it and *M. azureum* that are very well worth growing—a pure white one, Pearls of Spain (*M. botryoides album*), a white one tinged rose (*M. b. candidum*), and a pale lavender-blue (*M. b. pallidum*). The last two are little gems of delicate color, but alas! they are too expensive to plant in quantity.

The purple Rock Cress (*Aubrietia*) is another dear little spring flower. It comes in various shades of mauve, purple, crimson-purple, and even pale pink, forming low-lying masses of color. I am afraid it is not quite hardy except in well sheltered situations, but as it is easily grown from the seed, which is not expensive, it is well worth a trial. I have wintered mine now for four years, but I protect it carefully and grow it on a warm border, where no later ever lodges. It blooms early and combines delightfully with Golden Tulip and the white Rock Cress (*Arabis*), and remains in bloom a long time. The English rock gardens are brilliant with it through April and May.

The Perennial Border and a Few of Its Best Flowers*

F. E. Buck, B.S.A., Central Experimental Farm, Ottawa

THE flowers best adapted for use in a perennial border may be divided into groups in several different ways. Although I have prepared a list of what are generally considered the best for our Canadian climate and have divided this list into three sections as follows: "Best low growing flowers for the front of a perennial border," and "Best flowers of medium height for the middle of a perennial border," and "Best tall flowers for the back of a perennial border," and have given the different color, height and time of flowering in each of almost 130 different varieties, I do not intend reading such a list on an occasion like this, but shall content myself with very brief references to several well recognized groups of perennial flowers, discussing each group in its seasonal order.

FOUR FLOWER GROUPS

Early in the year when the eye is greedy for color after the long colorless winter, come radiant tulips stimulating everyone to an awakened interest in Nature. But lest they might shock us with their gay attire, they

bring along as companions the delicate creamy-white narcissi and the yellow daffodils. These heralds of the flower tribes should be always grown. They are inexpensive to purchase and last for several years in a perennial border before they need to be moved or renewed. Most of them come to us from foreign lands, and the tulips are generally called Dutch bulbs. They are not the very first flowers of spring, the snowdrops and crocuses appearing a week or two earlier, but on account of the great display of color which they produce it is well to think of them as forming the first great group of the season's flowers. They blossom from late April till June.

THE ARDENT FLOWERS

A second great group is that of the peonies, the old-fashioned "piney," changed in form, color and fragrance, but essentially the same in that quality of "ardent appeal" which in the old days gave to it its charm. The modern peony is a close rival of the queenly rose. Wonderful flowers are these beautiful named peonies. There are three varieties, one white called Avalanche, a red named Felix Crousse, and a pink named Magnifica, which, if there were no others to rival them, would rank among the im-

mortal flowers of the twentieth century. But about a thousand named varieties of peonies claim our attention and fill our gardens with magnificent masses of color during the month of June. They are ideal flowers for a perennial border.

While the peonies form the second of the great groups, the irises might rightly be given that place, as perhaps they would be by some people, and the peonies shifted up a place to group three. The iris is the "rainbow flower" and has few rivals. I am really sorry to pass it by. There are, however, so many beautiful flowers of this period that it is impossible to do more than just mention it as being worthy of a much longer reference. Of the other flowers, there are the quaint columbines, which are very numerous in variety and color; the sweet low-growing plants as violets, pansies, and forget-me-nots, and the woody flowers as the trilliums, spring beauties, spring anemones, Solomon's seal, lilies, lady's slipper, and many others that might be mentioned. The roses, of course, occupy a place by themselves. They come in at the end of June and last through July.

THE SHOWY FLOWERS

The phlox, or third group, I have called the showy flowers, because they come

*Concluding part of a paper on the "Perennial Border" read before the Quebec Pomological Society.



At the Central Experimental Farm, Ottawa. The New Perennial Border 450 Feet Long, by 12 Feet Wide

Note the great show of color in this picture which was taken August, 1912. The border looked at its best in the months of May and June, when great displays of color were in evidence from groupings of tulips, irises and peonies. Later color effects were produced by many selected plants, together with the beautiful perennial phloxes and fall astors. This border was planted in September and October of 1911.

in at a time when flower bloom is getting a little scarce, and the show they produce is wonderful. The word "phlox" means a flame. The phloxes are of American origin, and blossom from the middle of July till late in the autumn. The range of their colors is very great. Nothing can quite equal the clumps of the phloxes in a perennial border made up as they are of those magnificent panicles of bloom. Panicles perfect in form, pleasing in fragrance, and varied in tints. Phloxes are favorites with all classes of people.

The fourth great group might be better named, but I call it here the prevailing flowers, for several reasons, one being that most of them are not affected by fall frosts. They last from late August till late October. Most of them belong to the great family Compositae, which has prevailed over all obstacles, and now stands at the summit in the evolutionary climb.

This group has a wealth of color. The white Shasta daisies, the golden sunflowers, the many colored star-like asters are in this group. By means of them the perennial border is filled with color even after the first fall frosts have nipped the more tender flowers.

OTHER VARIETIES

A perennial border with only the four or five great groups of flowers which I have mentioned would be very incomplete. Certain flowers which grow in the perennial border give the extra finish, the charm, the color, the life. They make it an artistic whole, a masterpiece. They include the dazzling Oriental poppies. (How much the border would miss the dazzling brilliancy of their scarlets!) the soulful campanulas or bellflowers; the majestic delphiniums or larkspurs, the glittering gallardias and pyrethrums, or blanket flowers, as the first are called; the delicate gypsophila; the flaming torch lilies, commonly called red-hot poker; the formal foxgloves and hollyhocks; the rainbow iris; the fragrant pinks; the modest lilies; the plume-like spiraeas, and the glorious yuccas.

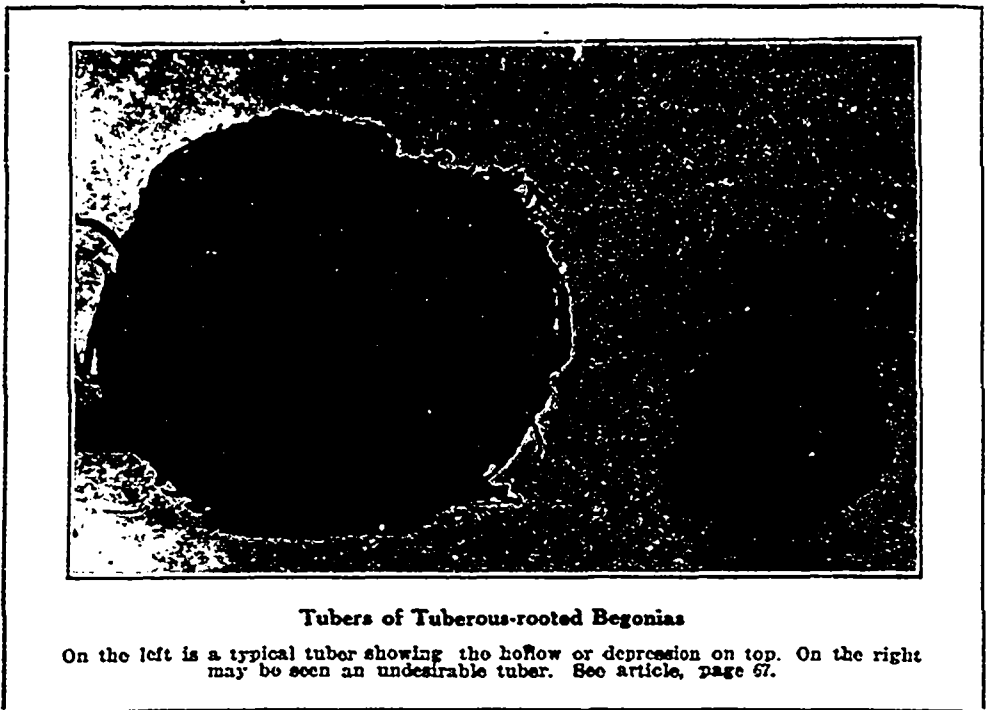
Growing Daffodils

R. S. Ross, Peterboro

"Can daffodils be grown from seed?" This question has been asked me recently.

In answer I quote from a book entitled, *Daffodils, Present Day Gardening*, by Rev. Joseph Jacob, (T. C. & T. E. C. Jack, 16 Henrietta St., W.C., London, Eng.).

Daffodil seed, when fully ripe, is black and shiny. As soon as it assumes this appearance, which will probably be some time early in July, it may be sown either in the open ground or in boxes or pans. Most raisers of seedlings prefer the latter plan, although I know one or two cultivators who think the former way the best, as they contend that the



Tubers of Tuberous-rooted Begonias

On the left is a typical tuber showing the hollow or depression on top. On the right may be seen an undesirable tuber. See article, page 67.

plants will sooner arrive at their flowering stage. I have not tested it myself, and am disposed to doubt it, as Mr. Engleheart, who ought to know what is the best, if any one does, always sows the seeds in boxes. Stout, wooden boxes of any convenient size may be used provided they are from six to seven inches deep, and have drainage holes at the bottom. The soil should be good, firm fibrous loam, with sharp sand added to make it light and porous. In filling up the boxes care must be taken to see that the drainage is good; then enough compost may be put in to bring the level up to within an inch and a half of the top. On this the seeds must be sown at equal intervals of one half to three-quarters of an inch, and they must be covered with soil an inch deep.

USE COLD FRAMES

It is best to put the boxes in cold frames, but the lights need not be used until frost begins, unless the weather is very wet. Then they may be put in when necessity requires, and, further, the plants may be protected by mats when the weather is particularly severe. The protection and culture in frames is not absolutely necessary. I have seen boxes just stood out of doors and exposed to all weathers, and the results have been good. The seed soon germinates, if it is sown directly it is ripe. Everything possible should be done to promote growth by seeing the soil is kept at the right degree of moisture, and that the growing period is as long as possible, by putting on the lights when there is a frost at night. The subsequent treatment consists in giving air on every suitable day, and top dressing the boxes with cocoa fibre when the grass-like seedlings appear. This keeps down

moss. At the end of two years they may be transplanted into beds in the open, an operation which is performed best when the young roots are beginning to be formed, say in June or July. They must be planted out straight from the seed pan and not in any way dried off. Attention to this matter is important, as it means very often the saving of a year in the plant coming to its flowering stage. In planting out, enough space must be left between the bulbs (which should for convenience of cultivation be arranged in rows) to allow them to grow and flower when they are pricked off. This will be in their fourth or fifth year, although some may not flower until their sixth or seventh. Frequent hoeing between the rows is very helpful to the growth of the young plants, therefore the rows should be clearly marked when there are no leaves as a guide.

The period of waiting will seem long before the first flower shows itself, but if an annual sowing is made, once this period is passed there will be a succession of flowering seedlings every year. It is a fact that the first flower that a young plant bears is not always a sufficient indication of what it is capable of producing. In some mysterious way the flowers improve as the plant gets older. Hence it is advisable to allow young plants that show any promise at all to bloom a second or third time before they are finally discarded. With regard to sowing out of doors a similar procedure must be followed. A sheltered bed must be chosen, and the seeds sown in hills about an inch deep. Transplanting into flowering beds should take place at the end of their second year. No protection is required, as the seedlings are perfectly hardy.

Tuberous Rooted Begonias: Their Growth and Care

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

FOR the amateur grower where only a few pots of these showy plants are required, it is best to purchase the tubers in March or April, rather than grow them from seed. When purchasing tubers get them as solid and firm as possible. Soft, pulpy tubers do not give good results as a rule. The tubers should be about one and a quarter to one and a half inches in diameter, or larger, to get good flowering results. Both single and double flowering dormant tubers can be purchased at all large seed stores.

STARTING THE TUBERS

There is no better material for starting the tubers in than pure sand of not too gritty a nature. Tubers can be started in sandy soil, or in chopped moss, but they do not start as readily or as satisfactorily as in sand. The tubers may be started singly in small three or four inch pots, or a number of them may be started in larger pots, seed pans, or in shallow, well drained boxes. A box three inches deep, and ten or twelve inches square, will hold ten or twelve ordinary sized tubers. Be sure and place the tubers the right way up in the sand. Usually the concave, hollow, or the flat side of the tubers should be uppermost, and the round or convex side downward. The top of the tuber should be just under the surface of the sand when set in position. The tubers may be set quite close together if a number are grown, so as to almost touch each other.

Water the tubers with tepid water, temperature of water about fifty degrees. Keep the sand well moist, not too wet. The temperature of the room they are grown in should be from sixty-five to seventy degrees. If a box is used, some half inch holes should be bored six inches apart in the bottom of the box. Artificial drainage, such as broken flower pot, coarse gravel, coal cinders, or lump charcoal about an inch in depth, should also be used in the bottom of the pot or box, to ensure good drainage. Good drainage is very essential at all stages of the growth of begonias. In about a month from starting them, the tubers should be rooted.

CARE AND CULTURE

When the tubers have a good root system started and roots about an inch in length and top growth just started, they may be potted singly in three or four inch pots in rather light soil. A soil made of six parts of good loamy potting soil, one part fine sand and one part of leaf mould well mixed, will make a good compost for the first potting. Water the soil well once after potting, but do not keep it too wet after, for a time. When top growth has well started more

water may be given. When the plants have become well rooted in the small pots they may be re-potted into the flowering pots. Six or seven inch pots can now be used, for very strong plants an eight or nine inch pot is not too large. Use nearly an inch in depth of drainage material, and a soil richer in fertilizers than ever before. Eight or ten parts of loamy, potting soil enriched with cow manure and one part sand, well mixed together, makes a good soil for them. Leaf mould (or black mould) is not good for them as it induces a too rank soft growth. If the soil is of a clayey nature a little leaf mould may be used.

Do not disturb the roots of the plant when re-potting only to remove the old drainage. Disturbing the roots of these plants after starting is often disastrous to them. Water them well once after potting, then keep the soil only barely moist until growth has well started again. Set the pots in a warm window and shade them from the hot sun at all times. Sprinkle the foliage overhead but very seldom, if at all, and only on a fine bright morning, as it will cause the leaves to spot and decay, if they are kept too damp. Water the plants with tepid rain water if possible. Put a stake to support the growth early, as the growth is very brittle and easily damaged.

FALL AND WINTER CARE

When the plants are through flowering and show signs of dying down, give them less water until the foliage is quite yellow, when no more water should be given them. The pots, just as they are, should now be stood away in a cool, not too dry room or cellar, temperature about forty-five degrees, so as to keep the tubers dormant. They will require no water until spring, unless the place they are kept in is very dry, and then only a slight sprinkling. In March or April shake the tubers out of the soil, and start them as before mentioned.

I have kept tubers in the way described for seven or eight years and flowered them successfully. Letting the tubers stay in the soil in pots is much better than taking them out of the soil in the fall and keeping them in sand, if room can be found for storing them in the way I have mentioned.

Tubers may be started indoors and the plants set out about the second week in June. They like a fairly rich, light loamy soil, well drained, and a not too sunny position. They are not very reliable plants for bedding out. The tubers should be dug early in the autumn, before frost, and the tubers packed in dry sand or soil in shallow boxes, and placed away for the winter in the same way as for those grown in pots.

If a large number of plants are required it would be best to get a packet of seed of a good strain and raise them from seed. The tubers will not be large enough to flower the first year from seed started in a window. By sowing the seed in February or March, tubers about half an inch in diameter can be grown. Sow the seed in a shallow, well drained seed pan or box with holes through the bottom to allow of free drainage. Place about an inch of broken flower pot or lump charcoal in the bottom, over this place a layer of moss or fibrous soil. Fill the pan or box nearly level full with finer soil, with half an inch in depth of very fine soil on the surface. A soil composed of four or five parts of loamy potting soil, one part sand, one part leaf mould, one part of fine lump charcoal, will make a good compost for the seed. The surface of the soil should be quite level and fairly firm.

SOWING THE SEED

Sow the seed broadcast, rather thickly on the surface. The seed is very fine and should be barely covered with a very fine covering of light material, put on carefully with the fingers and thumb. I have found a covering of one part of dry leaf mould, one part of fine sand, and one part of dust charcoal mixed well together, a good covering for the seed. A piece of glass whitened over lightly with white wash should be placed over the box. The glass should be tilted just a little to admit a small quantity of air. Later on, when germination starts, more air and light should be given, but the seed must not be exposed to the hot sun at any time. Water the seed very carefully with a very fine spray so as not to rinse. The box or pan may be stood in about two inches of water in a large tub, and watered by absorption if a fine sprinkler cannot be had.

When the seedlings are large enough to handle they may be transplanted into shallow, well drained boxes in a compost of four or five parts loamy potting soil, one part sand, and one part leaf mould. They can be potted later into three inch pots in the soil recommended for the large tubers in pots. The autumn and winter treatment of the small tubers is very much the same as given for the flowering tubers.

Careful attention to the ventilation of hot beds is one of the important means of making plants stocky.

Many house plants suffer from a neglect to water regularly. Some varieties that are kept in sunny windows require water every day.

Growing Tomatoes Under Glass

Archibald H. Walker, Macdonald College, Quebec

POSSIBLY the greater number of the readers of The Canadian Horticulturist have more or less knowledge of how the crop is grown under glass. This article is intended more for those who are not so well versed and just feeling their way. At the same time there may be some phase of this subject of interest to all.

During the past five years a large number of experiments have been conducted here with tomatoes. Those which I deal with are perhaps of more value to the grower than any other.

Experiments were conducted for three years to determine whether it were possible to have tomatoes from October until July without a break, and, if it were possible, whether fruit would be had in sufficient quantity to make it pay. We found, however, that while we had excellent fall and early winter and spring crops, our plantations intended for a winter crop were failures from a paying standpoint, therefore I have no hesitation in saying to those interested in tomato growing never to attempt planting with a view to commence picking fruit say by the middle of January, because you will surely be disappointed. The weather conditions during November and December are such that it is next to impossible to get any fruit as all growth is weak and drawn through lack of sunlight or even good daylight at times. Consequently the flower trusses, or rather what would have been flower trusses at a different season, were weak and the flowers, if any, imperfect, the result being a crop of foliage which so far there is no demand for on the market.

GROWING TWO CROPS

Experience has shown me that two crops can easily be taken from the same house in the year when handled in the following way. Seeds sown not later than July 1st will give plants fit to bench up from 3½ inch pots by August 1st, setting the plants 18 inches apart each way. "Nothing is gained by closer or wider planting." The first fruits are ripe by the second week in October, and the crop lasts until the middle of January. In the meantime another sowing has been made on October 25th, and the plants carried over in 3½ inch pots, and by the time you have the house cleaned out and benches in shape for replanting these plants are just the right size, averaging one foot in height. Ripe fruits are obtained from this planting by the third week in April, the crop lasting almost until fruit is obtainable from outdoors. Handled in this way the house is under crop almost the full twelve

months. The spring crop finishing up in July sometimes gives time to clear out the old soil and bring in the new.

Too rich a soil is not desirable as too rank a growth will be made. On the other hand good results are not obtained from a poor soil, especially when you intend to take both fall and spring crops from the same soil. What I would consider the best possible soil would be rotted sod, "loamy." Add to this a good sprinkling of bone meal. Such a soil will carry the crop through in excellent shape. For the spring crop simply dig in a fairly heavy dressing of well-rotted manure and another sprinkling of bone meal. Such a soil will carry your second crop nicely.

The question is often asked me: Does it pay to grow tomatoes under glass? I am not prepared to say at this juncture just what money there is in this crop per

square foot of bench area, as there are so many items to be considered, such as express charges, commission, crates, boxes, etc., but I will give the accurate weight of fruit taken from one house, the crop being just finished, the bench area of which is 725 square feet. The fruit weighs close to 1,900 lbs., being a little better than 2½ lbs. per square foot. The wholesale prices obtained were from 20 to 25 cents a pound. The spring crop from the same house should be just as heavy, with prices much about the same. This should give a total weight per square foot of something like five and a quarter pounds. I leave the reader to judge how this compares with other greenhouse crops.

In conclusion, I may say that I did not consider it necessary to explain all the details in connection with the handling of this crop. Should any one desire fuller information I will be glad to give such privately or through The Canadian Horticulturist.

How to Make and Handle a Hotbed

John Gall, Weston, Ont.

IN making a hotbed, the first step is to choose a good situation on the south side of a building, wall or close board fence, where the cold winds from the north will be broken and all the sunshine possible will be obtained. After deciding on the site, the frame should be made. A simple frame may be made out of two-inch planks. It should be constructed in such a manner that it can be raised if necessary should the plants get too close to the glass. The frame should at least be six inches higher at the back than at the front, in order that the rain will run off readily and that the plants get more sunshine. The sashes generally used are three feet by six. The most satisfactory material for use in hotbed sash is double thick, second quality glass: sashes composed of this material suffer comparatively little breakage.

A hotbed may be made either above or below ground. If above ground, it may be made in any situation where the water is not likely to lie. The one below ground is usually preferable if it can be made where the land is high and well drained. To make the latter, the soil should be taken out to the depth of about two feet and about three feet wider than the frame so that there will be room for banking.

The banking is a very important part of the construction of a hotbed, as the conservation of heat in the bed depends very much upon it. Much labor will be saved where the necessary excavation for the frame has been dug in the fall when there is no frost in the ground.

Horse manure is the best to use in making the hotbed, and it should be quite fresh, not cold and rotten, and not

already heated. It should be piled near where the hotbed is to be, and when it begins to heat it should be turned to make it of more uniform consistency. Five or six days after turning it should be quite hot and ready for use.

The bed is started from one end and the manure shaken in from a fork so that the long and short manure may be well mixed. When one layer is made it should be tramped well and then another layer started, and so on, tramping each layer well until the manure is the required depth. After the manure has been put in, the frame should be placed on, and then from four to about six inches more manure put in and banked well around the sides of the frame, both inside and out. Outside, the manure should be banked to the top of the frame and from twelve to fifteen inches in width. The bed is now ready for the lights. The frame should be so constructed that they will fit snugly. Shelters made of one-inch lumber, the same size as the sashes, are useful for covering them, as they help to conserve the heat in cold weather.

THE SOIL TO USE

In two or three days the sash should be removed, the manure given a tramp all over, making it level where necessary, and then the soil put on. To get the best results, the soil should be of a rich character so that it will not bake. The soil should be from five to six inches in depth over the manure, and it is better to have it a little deep than too shallow. The soil when it is put in should come near the top of the frame at the lower side, as the manure will sink considerably, and the near the



Tomatoes as Grown Under Glass in the Niagara District.

plants are to the glass, later on the stockier they will be.

In five or six days the hotbed will be ready for the seed, but it is necessary to wait until the manure has cooled a little and the temperature has fallen to between eighty and ninety degrees Fahrenheit. During this time, when it is hottest, some of the heat may be allowed to escape by raising the sashes a little every day. One should not be in a hurry to sow the seed, as if the temperature is too high the results will not be satisfactory. When the bed has reached the right temperature the soil should be spaded over a couple of times and the surface levelled and made fine with the

rake.

The bed is now ready for sowing. The seed is usually sown in rows about four inches apart and about the same depth as outside. When the young plants come up the frame should be kept sufficiently aired by raising the back of the sash to prevent the plants from getting weakly or spindly, when they are apt to damp off. Care should be taken to prevent their being chilled or frozen. The soil must be watered when necessary, care being taken not to overdo this, as the plants would then be likely to damp off. As soon as the plants are large enough they are pricked out into another sash or frame.

Growing Early Tomatoes

A. H. MacLennan, O.A.C., Guelph, Ont.

The whole problem of growing early tomatoes is to get fruit before anyone else. There are several factors essential for success: First, a day temperature of eighty to ninety degrees Fahrenheit and not below sixty-five degrees Fahrenheit at night. Good tomatoes have been grown at seventy-five degrees, nevertheless eighty to ninety degrees is the optimum temperature. Second, the grower must be near a market or at least have the facilities for easy marketing. Third, the seed should be planted in February in a hotbed or greenhouse.

The seed should be selected the season before and taken from those plants which show the greatest smoothness and have the earliest maturity. Proliferous in early tomato culture is a tertiary consideration. If the seed is to be purchased the grower should get the best

obtainable regardless of its price; but other things being equal, the home-grown seed is the best.

The best soil is sandy or a sandy loam with a porous clay subsoil, because this type of soil is earlier than others and because the plant must have an even and equal supply of moisture, otherwise it will "go down." This is overcome in greenhouses by sub-irrigation and is modified out of doors by drainage. The tomato is a large plant with a small and short root system, therefore the reason for constant and even supply of moisture and plant food. A small quantity of nitrate of soda may be applied to the plant in the early part of its life, but not later or it will produce stem and leaf to the detriment of the fruit. The nitrate of soda should not touch the plant, otherwise it will burn the tissues.

The soil should be in the finest possible tilth before setting the plants and farmyard manure should be plowed in the fall before. Or another plan is to sow rye in the fall so as to get about six inches growth to plow in in the spring. This will warm the soil by decomposition besides supplying humus and rendering the soil tillable a week earlier than usual.

GROWING YOUNG PLANTS

Among the methods of growing young plants are the following: Sow thinly six to eight weeks before field planting in hotbed or greenhouse in rows three to six inches apart, and set in the field without transplanting. This method will produce spindly plants with poor root system.

Another method is to sow ten to twelve seeds to one inch of furrow, rows two inches apart, seven to eight weeks before planting in field, transplant once one and a half to two inches apart each way.

A third plan is to sow as in previous plan nine weeks before planting, transplant two inches by two inches, then four inches by four inches as the plants crowd, into three to five inch pots.

A fourth is to sow ten to twelve weeks before planting and give three or four shifts; finally into five inch pots or quart berry boxes. The crown cluster of buds should be removed as soon as it appears. This will cause the axillary buds and branches to develop rapidly and each to produce flowers.

The cost of raising the plants increases with the number of times they are transplanted, but results show a more hardy, vigorous and healthy plant. When the last method is followed, the crown cluster of flowers should be removed as soon as they appear. This will cause the plant to branch and throw off its early vigor into the stem and leaf growth and form several flower clusters at the ends of the lateral branches. The plant should be set an inch or two deeper in the field than in the nursery.

Staking is not advised commercially, but if it is done there will be no culls and dirty tomatoes, and cultivation may be continued later; which may be emphasized as an important feature in the early part of the season owing to the plant's requiring a constant and even supply of moisture. The plants should be set about three and a half feet by four feet, or four feet by four feet, but if staked and pruned to one stem they may be set two feet by two feet, and ripe fruit may be expected in from six to seven weeks.

The tools we use in the garden are very few and cheap, but they need to be strong and able to stand the weather and not apt to break.—Dr. H. M. Speechly, Pilot Mound, Man.

The Canadian Horticulturist

Published by The Horticultural Publishing Company, Limited

PETERBORO, ONTARIO



The Only Horticultural Magazine in the Dominion

OFFICIAL ORGAN OF THE ONTARIO AND QUEBEC FRUIT GROWERS' ASSOCIATIONS

H. BRONSON COWAN, Managing Director

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2. Subscription price in Canada and Great Britain, 60 cents a year; two years, \$1.00. 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. Postage Stamps accepted for amounts less than \$1.00.
4. The Law is that subscribers to newspapers are held responsible until all arrears are paid and their paper ordered to be discontinued.
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6. Advertising rates \$1.25 an Inch. Copy received up to the 18th. Address all advertising correspondence and copy to our Advertising Manager, Peterboro, Ont.
7. Articles and Illustrations for publication will be thankfully received by the Editor.

CIRCULATION STATEMENT

The following is a sworn statement of the net paid circulation of The Canadian Horticulturist for the year ending with December, 1912. The figures given are exclusive of samples and spoiled copies. Most months, including the sample copies, from 11,000 to 12,000 copies of The Canadian Horticulturist are mailed to people known to be interested in the growing of fruits, flowers or vegetables.

January, 1912	9,988
February, 1912	10,437
March, 1912	10,877
April, 1912	11,788
May, 1912	12,112
June, 1912	10,946
July, 1912	10,986
August, 1912	11,148
September, 1912	10,997
October, 1912	10,971
November, 1912	11,162
December, 1912	11,144
	132,556

Average each issue in 1907	8,677
" " " " 1908	8,635
" " " " 1909	8,978
" " " " 1910	9,967
" " " " 1911	9,541
" " " " 1912	11,046

February, 1913 11,106

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 your 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 SUCCESS

Success in the operation of spraying will be obtained only when the operator knows when the material should be put on and how it should be applied. More failures result from lack of knowledge on these two points than from any others. The spray should be applied in the form of a very fine mist and the nozzle should be so manipulated that every part of the foliage and fruit will be uniformly covered with fine dots of the spray. It is not necessary that the foliage and fruit should be actually coated with the spray, but every portion should be thickly peppered with it.

As a rule the higher and inner portions of the tree are not sufficiently sprayed. The fact that the liquid may actually be dripping from the lower branches will not suffice to ensure satisfactory results as long as the upper parts or inner portions of the tree have not received the necessary quantity. One of the chief defects of hand pumps is the fact that the pressure maintained is apt to be insufficient. For this reason gasoline or other power outfits, supplying a pressure of one hundred and twenty-five to one hundred and fifty pounds, generally give the best results.

When applying the liquid consideration should be given to the size of the trees. Small trees eight to ten years old do not require more than three or four gallons to a tree. Larger trees may need five to seven gallons and even more. Some trees of considerable height need as high as fifteen gallons to ensure thorough treatment. Growers who neglect to watch such points as these have only themselves to blame if success does not attend their efforts. Application to the various experiment stations will enable any grower to obtain free of cost all necessary information dealing with the practice of spraying. When opportunities of this character are neglected and failure results growers need not look elsewhere for the cause.

EXPRESS RATES

The recently published statistics of the earnings of the various express companies in Canada show further reason why fruit growers should continue to press their demands for a thorough revision of existing rates and a material reduction in them. The gross receipts from operation of the three Canadian companies last year were practically eleven million dollars. When the express privileges, amounting to four million eight hundred and ninety-two thousand two hundred and forty-two dollars, are deducted, the operating revenue is shown to have been six million one hundred and two thousand one hundred and seventy-five dollars. As the operating expenses were four million eight hundred and eighty thousand one hundred and twenty, the net revenue was one million two hundred and twenty-two thousand and fifty-five. These earnings enabled the Canadian Express Company to show dividends on its capital liability of sixteen decimal six per cent., the Canadian Northern Express Company dividends of nineteen decimal two per cent., and the Dominion Express Company dividends of thirty-one decimal six. The average per cent. of the three companies was

around twenty-two per cent. in spite of the fact that their stock has been heavily watered.

These earnings were made out of the public. How, then, are the public treated by the express companies? Evidence abounds which shows that wherever they feel that they have the power the companies are ready to bleed the public white. Take, out of many examples that might be cited, one that was given by Mr. G. E. McIntosh at the recent short course in horticulture at the Guelph College. Mr. McIntosh stated that the express rate from Sarnia to Winnipeg is two dollars ninety cents. From Forest to Winnipeg it is four dollars twenty cents. Yet Forest is twenty-three miles nearer to Winnipeg by rail than is Sarnia. The explanation is that Sarnia is a competing point where shippers have their choice of different routes. Such discrimination should not be allowed to continue. It is evident that the express companies can stand material reductions in rates without hardship. Fruit growers throughout Canada owe it to themselves to continue to press for such reductions.

SOCIETY OPTIONS

Every year the directors of horticultural societies in Ontario have to struggle with the problem of arranging option lists which will be attractive to their members and a source of strength to their societies. Some societies succeed with this work better than others. This is due generally to the fact that they are fortunate in having members of wide experience on whom they can call for information and assistance. Many societies also succeed in obtaining better terms from seedsmen, at home and abroad, than others who do not go into the matter so thoroughly or buy on as large a scale.

Is there not here an opportunity for the Ontario Horticultural Association to assist the individual societies? A central committee might easily be formed composed of the most experienced horticultural authorities available who could obtain from the different societies a statement of the amounts they could afford to spend in premiums. With this information before it, such a committee could go into the matter thoroughly and prepare premium lists suitable for different societies according to their means. Such an arrangement would make it possible also for the association to purchase supplies in larger quantities and at correspondingly lower prices than could the local societies. There need be nothing in such an arrangement that would prevent societies from supplementing such lists should they so desire. We would suggest that this matter be brought up for discussion at the next convention of the association.

PARCELS POST A SUCCESS

Even the most enthusiastic advocates of parcels post in the United States did not anticipate that the system would be taken advantage of by the public to the extent that it has been since it came into operation at the first of the year. The flood of parcels that nearly inundated the post offices of the country with the establishment of the system has continued not unabated, but with increasing depth. According to a report from Washington the number of parcels transmitted through the mails in January reached the enormous sum of forty millions. The number was greater in the last half of the month than

in the first half, showing an increasing popularity for the new service.

The total number of parcels post stamps printed and distributed up to January the twenty-second was three hundred and thirty-nine million five hundred thousand, with a total value exceeding eighteen million dollars. In order to meet the demand the Federal Bureau of Engraving has been forced to print the stamps at the rate of twelve millions a day. One of the most beneficial results of the new service is the fact that the express companies have been forced to make many important reductions in their rates in order that they may hold their trade. Our Canadian Government, in view of the fact that the system in the United States is already a demonstrated success, should lose no time in dealing with this matter as thoroughly as its importance deserves.

INCREASING LAND VALUES

Have you ever noticed that when fruit growers demonstrate that fruit can be grown profitably in any section the main profit that results from their discovery goes to the landowner rather than to the grower? The larger the returns obtained from fruit in any district the higher land values rise. This proves a benefit to the man who has land to sell, but a hardship to all who desire to buy, as well as to those who do buy. This is because it makes it more difficult for men to obtain fruit land and compels those who do make purchasers to invest such large sums of money in their land they have but little left for their labor after fair interest charges have been allowed.

One of the worst features of this condition is the fact that there is always a tendency to anticipate increases in land values. The result is that land is apt to be held at prices which are greater than it can produce crops for profitably. This speculative element thus imposes an extra burden on the would-be grower. High land values are a benefit only to the man who has land to sell. They are a burden on the buyer and on the grower.

This condition is adding weight to the demand for a reform in our system of taxation which will make the land pay a larger share of taxes. Such a change would tend to destroy the speculative value of land and to force land held for speculative purposes into more general use. One reason why the western provinces have gone as far as they have in the taxation of land values is because speculation in land in the west has been carried to extremes.

The real fruit grower is not benefited by high land values. The only advantage he can reap from them is by selling his land. He then ceases to be a fruit grower. Even were he to attempt to start fruit growing again he would be penalized by the same condition. It is an encouraging sign of the times that this matter is being given more serious consideration all through Canada than it has been in the past.

The article in this issue dealing with the importance of shade trees on our highways is well worthy of serious consideration by all who are interested in horticulture and civic improvement. Considering the moderate expense involved nothing is more neglected in most municipalities than the planting of shade trees. We have reached the point in Canada where these matters should be given more attention. Our horticultural societies should assist in bringing this matter to the front.

PUBLISHER'S DESK

The illustration on our front cover was obtained in the orchard of Mr. Brown, Mill Road, Barrie. It shows one of many hundred old and formerly neglected orchards in Ontario that have been pruned and sprayed and cultivated during the past few years, and thus again been placed on a paying basis. It is typical of the revival in interest now manifest in the orchards of the province.

The April issue of The Canadian Horticulturist will be our THIRD ANNUAL SPRING PLANTING AND GARDENING NUMBER. Naturally its floral features will be emphasized. April is the month when the spring gardening fever seizes most of us. We long to get at work with our gardening tools and look forward with pleasurable anticipation to what the season has in store for us. Our April issue will be in harmony with this impulse of new life which comes with the spring. A feature of it will be a well illustrated article by Mr. W. H. Smith of Walkerville, describing the gardens of Walkerville. This is one of Ontario's most attractive cities from a horticultural standpoint. There will be another article by Mr. F. E. Buck, of the Central Experimental Farm, dealing with the Perennial Border and Its Arrangement. This also will be well illustrated. Mr. R. S. Rose, of Peterboro, will have a page of timely notes dealing with April work in the flower garden and giving timely cultural hints and suggestions. A first prize essay on Rose Growing by Mr. J. M. Hull, of Hamilton, will be a feature, as will be articles by Messrs. J. H. Bennett, of Barrie, J. MacPherson Ross, of Toronto, Wm. Hunt, of Guelph, and other well-known contributors.

The fruit interests of our April issue will also be strong. These will include an article describing the methods of successful pear growers by Allan G. Bland, of the Ontario Department of Agriculture and an interesting article describing the culture of Old Country Gooseberries, contributed by Mr. Wm. Dick, of Brant county, a successful grower of this class of small fruit. An article by Mr. R. S. Duncan, B.S.A., of Port Hope, will describe the satisfactory financial results that have followed the rejuvenation of old orchards in Northumberland and Durham counties. Other timely fruit articles will appear. A feature of the vegetable department will be an article by Mr. A. H. MacLennan B.S.A., of the Guelph Agriculture College, dealing with the sterilization of soils for the growing of vegetables. This article, as well as practically all the others, will be well illustrated. Our April issue will equal all former standards. Watch for it.

Members of Horticultural Societies are habitually slow in handing in their memberships to the secretaries of their societies. Most people seem to wait until the spring is so far advanced that they naturally begin to think of their gardens, and thus are reminded of their duty to their society, before they do so. This dilatoriness on their part makes it impossible for their secretaries to renew their subscription to The Canadian Horticulturist as promptly as they otherwise would. In consequence we are sometimes compelled to cut off the subscriptions of many mem-

bers of societies which have not been renewed simply because the people did not think about it in time. If, therefore, you have not renewed your membership to your local horticultural society, and do not want to miss a copy of The Canadian Horticulturist, we would suggest that you place yourself in touch with the secretary of your society without further delay and thus help him and help us and ensure for you the prompt receipt of The Canadian Horticulturist, of which we know you do not desire to miss a single copy.

SOCIETY NOTES

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

Superintendent's Report*

J. Lockie Wilson, Toronto, Ont.

Our army of civic improvers in Ontario is increasing year by year. Upwards of 12,000 members of horticultural societies is the record for 1912. The majority of these have become dissatisfied with conditions as they are. With a clearer outlook and a desire for better things, they are now using their utmost endeavor to improve their own home surroundings with lawn and vine and flower and to gladden the hearts of others, that they, too, may be encouraged and inspired to do likewise.

Eight new societies have been organized since our last annual meeting. They are all starting in to work for the betterment of their different localities with a substantial membership.

A number of changes were made at the last session of the Legislature in the Act relating to our horticultural societies. In cities having over one hundred thousand population two horticultural societies can now be organized, but in such case the maximum annual grant to each of such societies shall not exceed five hundred dollars. The grant of eight hundred dollars to cities having a population of over thirty thousand has also been repealed, and the legislative grant to societies which have been organized for over one year is now apportioned one-third on membership and two-thirds on expenditure. The grant to new societies for the first year of their existence remains the same as before, that is one dollar a member up to a maximum of seventy-five dollars.

The unit for division of the grant for 1912 was thirty-five and three-quarter cents on membership, and thirty and one-fifth on expenditure on the balance of the twelve thousand dollar, left after providing for the grants to new societies and the \$500 reserved for cities having a population of thirty thousand or over. This amount of eight hundred dollars, as stated above will not be considered after this year. You will be pleased to note that the efforts of the directors of the Ontario Horticultural Association to have the legislative grant increased have been successful, a further appropriation of two thousand having been made by the Government making the total now twelve thousand dollars.

*Extract from a report presented at last annual convention of the Ontario Horticultural Association.

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The Fertilizer Discussion Continued

That the discussion on the value of the use of fertilizers that has been in progress in the columns of The Canadian Horticulturist since the appearance of our November issue of an article on this subject by Dr. J. B. Dandeno, of Bowmanville, is being followed with interest, is indicated by the numerous articles on this subject we are receiving. Some of these letters appear in the front pages of this issue. The following additional letters, also, form part of the discussion:

HOME MIXING APPROVED

Editor, The Canadian Horticulturist: In the February issue of The Canadian Horticulturist, Mr. Innes, B.S.A., Manager of the Fertilizer Branch of The Wm. Davies Co., Limited, deals with the question, "Commercial Fertilizers." I take exception to his remarks regarding "home mixing," and his advising farmers to buy ready mixed goods. His statements are not in accordance with the practice in countries where commercial fertilizers are largely used, taking England and Germany for example. Nor are they in accordance with the recommendation of agricultural colleges or experimental farms of our country. Further I might add that in Nova Scotia, Mr. Innes's home province, more particularly in the Annapolis Valley, "home mixing" is extensively carried on.

The Federal Government demands that each sack of any fertilizer must be labelled with a guaranteed analysis of available plant food. Quoting Mr. Innes, "the guaranteed analysis does not in any way signify what materials are used to obtain the given percentages of nitrogen, phosphoric acid and potash." Continuing, he

says, "The degree of availability of the plant foods contained in any mixture is the most important factor to be taken into consideration when comparing the value of two fertilizers of the same analysis." From the foregoing statement it is easy to decide which is better, "home-mixed" or "ready-mixed."

In the "home-mixed" we arrive at the desired percentage of the different constituents, we also know the source of the different constituents and the "degree of availability." On the other hand with the ready mixed we know only the percentage of the different constituents, being entirely ignorant of the sources of the same further than the agent tells us, he invariably knowing little more about it than we know ourselves.

In his article Mr. Innes speaks also of "the poor results obtained by home-mixing." It would have been interesting had he cited some of these results. In the past few months I have interviewed several men on this identical question, men who have started mixing their own fertilizers, and they without exception were pleased with the results. It is a significant fact that few men who do their own mixing ever return to the use of the ready-mixed brands.

—Yours very truly,
T. O. Clark, B.S.A.,
Toronto, Ont

FERTILIZERS COMMENDED.

Editor, The Canadian Horticulturist: I have read with interest the discussion on fertilizers commenced by Dr. Dandeno and Mr. Emslie, and would like to say a few words from the standpoint of an unprejudiced layman. Frankly, I was surprised

Removal Sale

The Sale of a portion of our Nursery Land at Pointe Claire necessitates the removal of our main nurseries.

This land must be cleared next spring and we have decided to offer the stock at a discount of from 25% to 50%.

All stock is first-class and consists of

Thirty Thousand Fruit Trees of the hardiest varieties.

Ten Thousand Shade Trees.

Fifty Thousand Ornamental shrub and hardy Perennials, Paeonies, etc.

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Makes poor land fertile and keeps fertile land most productive.

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to find that in this country there was any person having had experience with fertilizers and who had given them a fair chance—and I would emphasize this point—who was not assured of their value. By fertilizers I do not mean materials untried on a credulous farmer—if there are any such farmers—from which wonderful results were promised, but which were about as valuable as so much sand.

I can lay no claim to rank as an authority on these lines. Mr. Emslie, as representative of a concern of such magnitude, is in a position to command respect, while Dr. Dandeno can only hold a Doctor's degree from Harvard as the result of some creditable research work. From his statements, one is led to infer that this work concerned plant physiology or pathology, in which case his opinions should carry some weight.

But when a man, no matter of what authority undertakes by a sweeping assertion to undermine an industry of such scope and value, not only to the manufacturer and farmer, but to the world in general—he takes a serious step indeed, and the burden of proof lies with Dr. Dandeno entirely. For years private individuals, manufacturers, and governments have been making extensive tests on soils and fertilizers.

The fertilizer and allied trades are not responsible for the term "Plant food." Scientists of greater repute than Dr. Dandeno can ever hope to attain, employed the term. Their experiments led to the deduction that plants contained carbon, hydrogen, oxygen, phosphorus, nitrogen, potash, in great amount, with small quantities of other elements. The inference was that they obtained them from one of two sources—from the air or the soil. How

they obtained it mattered little. As a matter of fact, nobody knows, any more than they know how or why a candle burns, or how the oxygen of the air acts on the human blood. Of course scientific answers may be given, but when one comes to the basic question, "How do you know?" it must be admitted that theories only can be advanced.

So it is in this controversy. Dr. Dandeno preaches the theory of bacterial action, though even at that he admits that all these bacteria can do is to act as agents for the transfer of chemical elements or compounds from soil or air to the plant. It would be interesting to hear on what facts or experiments—aside from negative fertilizer results—he bases his claims. In neither of the two communications published has he done more than utter sweeping generalities which, without corroborative evidence, are of little or no value.

FERTILIZER CHAMPIONS

The opposite side of the case has been taken, times without number, by government officials, interested parties, and these can be backed by thousands of farmers who have had results that warrant their championing fertilizers. For the one isolated case of negative results cited by Dr. Dandeno, thousands of experiments have shown improved yields from the use of fertilizer. Why this is, I don't undertake to say. But the question comes if the action is bacterial, why should barnyard manure not give better results alone than, say, Nitrate of Soda? By the way, I have yet to hear any advocate of fertilizer condemn the use of barnyard manure.

The farmers are just waking up to the fact that farming is one of the most scientific businesses in the world, and are

Douglas Gardens

Oakville, Ontario

We invite special attention, for Spring Planting, to the following:

PERENNIALS—Aquilegia (Columbine), Hardy Asters (Michaelmas Daisies), Astilbe (Spiraea), Shasta Daisies, Coreopsis, Delphiniums (Larkspurs), Hemerocallis (Day Lily), Hibiscus, Kniphofia (Torch Lily), Phlox, Pycnostegia (False Dragon's Head), and Spiraea (Meadow Sweet).

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BEDDING PLANTS—Antirrhinum (Snapdragon), China Asters, Geraniums, Salvias, and Stocks.

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JOHN CAVERS

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We breed our trees as much as possible from selected mother trees, and are now preparing to engage an expert horticulturist, who will devote his entire time and skill to selecting breeding trees. Will it not pay you to deal with an up-to-date firm? We know it will be to our mutual advantage.

OUR RODERICK CAMERON has returned from Great Britain and the Continent, bringing with him a splendid collection of the very latest creations in hardy herbaceous perennials, Roses, Shrubs, Evergreens, etc., from the best English, Scotch and Continental Nurseries, including the **MACKENDRICK COLLECTION OF ROSES**, embracing the finest of hardy sorts. The majority of these cannot be obtained elsewhere in Canada.

HORTICULTURAL SOCIETIES and others would do well to get our collections, as they have been chosen with great care by a man who has had a lifelong experience amongst the flowers.

THE AUBURN NURSERIES, Ltd.

SIMCOE

Head Office: **QUEENSTON**

OAKVILLE

This is the Book that will show you
how you can have a
**BEAUTIFUL OLD
ENGLISH GARDEN**

THE OLD ENGLISH GARDEN owes much of its charm to the beauty of its simple herbaceous plants.

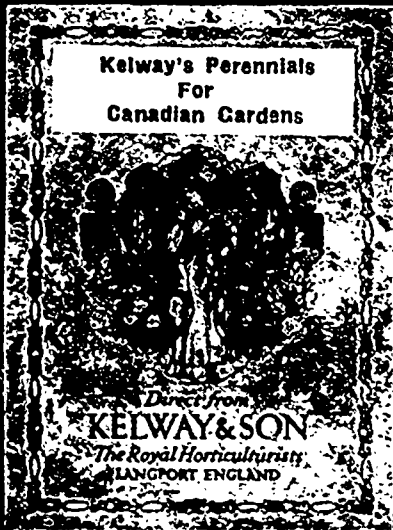
KELWAY'S COLOUR BORDERS of Paeonies, Delphiniums, Pyrethrums, Gailardias and the like will enable you to reproduce this picturesque effect under almost all conditions of soil and climate. Borders are planned to fill any space, and on receipt of dimensions, carefully selected plants are sent beautifully packed, labelled and numbered in order for planting.

The cost is \$6.00 for every 10 square yards.

Full particulars and illustrations are given in the Kelway Manual of Horticulture mailed free on application to

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CARE OF
The Canadian Horticulturist
Peterboro, Ontario

Write for a copy of this useful book & it comes to you by return mail free



commencing to apply the modern methods of scientific management and costs to the business. The farmer who puts on one side his returns from his crops against that sets the labor and other costs for each particular crop, instead of bulk for the whole farm, and charging his labor as worth nothing, is constantly on the watch for opportunities to increase profits by the two available methods, increased output and reduced material and labor charges. That man is finding the value of such aids as fertilizer. Furthermore, he is studying their methods of application. When he sees two plots of ground, identical in quality, so far as he is judged, from one of which increased returns are given from the use of fertilizers, and sees that increase is more than enough to pay for the fertilizer used, he comes to the inevitable conclusion that the fertilizer is worth using.

Now I am safe in saying that I know at least as well as Dr. Dandeno how the increased return was brought about. In other words, I do not know. Whether nitrogen, phosphorus, and potassium contained in the plant and presumably taken from the ground are a portion of what put in by means of the fertilizer, or whether they are part of the original soil is impossible to decide. Perhaps bacteria helped the plant to take up this material perhaps the material added as fertilizer acted as a catalyser—that is, helped reaction without entering into it—as it has been claimed that iron, manganese, chromium do. But the fact remains that the plot fertilized gave more and better crops; and the further fact remains on continued, even if decreased, fertilization, that plot will continue to yield satisfactory crops; whereas it has been proved beyond a doubt that continued crop without fertilization will soon result in decreased yields.

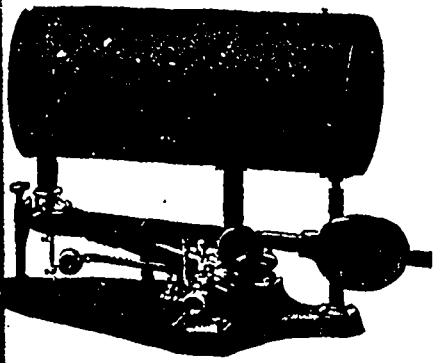
But after all, the discussion of the matter is aside from the point of issue. The farmer is trying to increase his production. He has found that fertilizer will help him to do that. If he can find anything as efficient, he is ready to employ it.

The iconoclastic utterances of Dr. Dandeno are not only without any proof, but give no hint as to a remedy for the evil. If Dr. Dandeno, instead of attempting to belittle the results attained by others, and befogging the minds of those who thought they had begun to see the way, would come forward with a substitute for present fertilizing methods, he would be of more value to the community. Perhaps he has one and I have forestalled his announcement of it. Perhaps his article and its discussion only lead up to a disclosure to the world of epoch-making discoveries. Let us hope so. For a man who could grow Dr. Dandeno's potato, crop them, put them up in packages ready for application—by hand drill or hypodermic—could command a market that he would drive the fertilizer men out of business in a month.

In closing, let me say that this article is not written for criticism. I have endeavored, in so far as is possible, to state personalities and statements that are not twisted to suit anyone's purpose. So if this comes to the eyes of Dr. Dandeno, the only answer requested is some facts or figures that will tend to substantiate his statements.

Leonard T. Acton, M.A.,
Larkston

RESULTS FROM FERTILIZER
Editor, The Canadian Horticulturist
gave me great pleasure in reading of
Dandeno's criticisms. I fancy



Where There is Condensation

—there is need for a Morehead Steam Trap. Condensation in steam lines is akin to matter out of place—means wasted energy.

If your lines are sluggish—if your houses are not of uniform temperature, write us. We guarantee to drain your lines perfectly—return the pure, hot condensation to your boiler without pump or injector, or make no charge for the trial. Obey that impulse—write now. Ask for Trial Trap.

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CANADIAN REPRESENTATIVES:—George W. Cole, Woodstock, Ont.; Robert S. Bickle, Winnipeg, Man.; H. E. Kirkham, Montreal, Que.; Robert Hamilton, Vancouver, B. C.

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We manufacture a special line for greenhouses. It is of good quality, flat, squarely cut and even thickness, virtues which cannot be dispensed with for lapping or butting.

Shall be pleased to quote prices on application to any of our Canadian depots:

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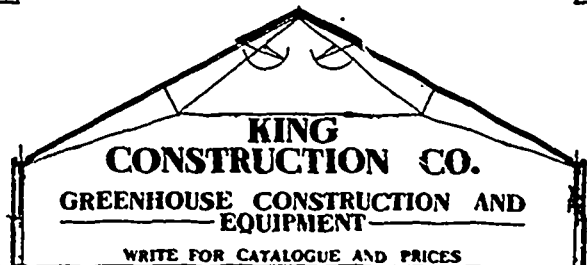
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Are the most

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Greenhouses that can be constructed. Years of actual test and the experience of large and small growers have gained for our houses the reputation of being the most satisfactory ever erected for vegetable or flower growing, or private conservatories.



Plans prepared for complete plants and equipment at a moderate cost: all or part of the necessary materials supplied and houses of any size erected under our personal supervision if desired by builder.

Write and tell us the kind of houses you desire to erect or ask for question blank and we will mail you our descriptive bulletin by return of mail.

THE KING CONSTRUCTION CO.
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Mention The Canadian Horticulturist when writing.

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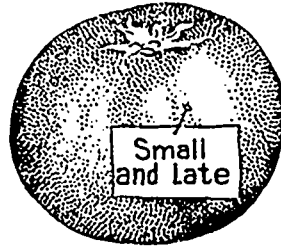
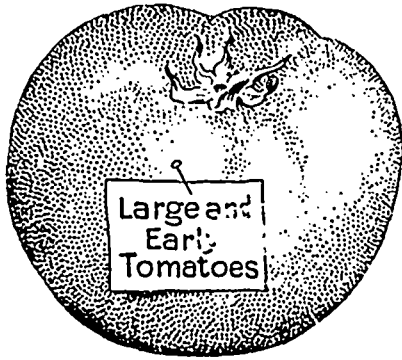
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Head Office: 53 St. Paul, MONTREAL

AGENTS WANTED



Progressive Jones Says :

"The Early Tomato Gets The Fat Price"

THEREFORE, we want the early tomato. I've just been reading a letter from F. G. Bridge of St. James Park, near London, Ont., who has had great success in growing early tomatoes. He says: "The

Harab FERTILIZERS

I purchased have done all claimed for them and more. Where I put Harab on Tomatoes, the fruit is larger and ripening early, and where I did not use the Fertilizer the fruit is very small and going to be late."

You can have just as great success with your tomatoes as Mr. Bridge, and scores of others, if you enrich your soil with Harab Fertilizers. Harab No. 12 contains just the amount of Nitrogen, Phosphoric Acid and Potash required to start the young tomato plant off right and push it to early maturity, increasing and improving the fruit as well.

My experience has shown that, while stable manures supply the humus to hold the moisture in the ground, they need the assistance of richer, well-balanced fertilizers to produce the biggest yield and to bring the tomatoes to early maturity. Mr. W. A. Thrasher of Sarnia states that he picked tomatoes ten days earlier from a plot treated with Harab Fertilizer than from an adjoining plot treated with stable manure.

I find from experience that soil fertilized with manure produces a large growth of vine, and while the vines may be loaded the fruit is undeveloped and ripens late, if at all. On the other hand where Harab No. 12 has been used, I find the vine development moderate, while the fruit is more plentiful, larger and ripens earlier.

Using the proper fertilizers means the early ripening of your tomatoes—and other vegetables—and the fat price for you. There are 14 different Harab Fertilizers,

each one the best for its particular purpose. The Harris Abattoir have published a guide book, showing the correct fertilizers for all kinds of vegetables, fruits, field crops, berries, flowers and lawns. I strongly advise you to write for a copy.



Yours for the fat price;

Progressive Jones

The Harris Abattoir Co., Limited, Toronto

14

will have to be exercised in selecting the fruit. In as far as the package and packing are concerned, Mr. Dobson has this part of the problem solved."

Mr. Dobson was also written for information but a reply from him has not been received.

Vegetable Growers Plan Their Work

Every branch of the Ontario Vegetable Growers' Association was represented at the annual meeting of the association held in Toronto early in February. It was decided to continue the experiments in the growing of potatoes and peas for seed distribution that have been conducted in Northern Ontario.

Standing field crop competitions, which have been conducted with success in the past, will be continued during 1913. The province will be divided into four districts and prizes will be offered in each district for the growing of celery, potatoes and onions. District prize winners will be eligible for entrance in a provincial competition which will be conducted at the Canadian National Exhibition Toronto. Four prizes will be given in each district ranging from \$10.00 to \$25.00 each.

The following officers were elected: President, C. W. Baker, Tamblings; first vice-president, W. J. Kerr, Woodroffe; second vice-president, F. F. Reeves, Humboldt Bay; secretary-treasurer, J. Lockie Wilson, Toronto; executive committee, the above said officers, together with Thos. Delworth, Weston; representative to the Canadian National Exhibition, Thos. Delworth; representatives to the Horticultural Show, W. J. Rush, F. F. Reeves, Thos. Delworth and James, Dandridge.

A resolution was passed expressing protest against the action of certain seed dealers who have endeavored to prevent the growers from purchasing seed direct from other growers. The resolution expressed the belief that such action on the part of the seedsmen partook of the nature of a combine in restraint of trade.

Recent Catalogues

A number of excellent catalogues have reached The Canadian Horticulturist during the past few weeks. These include Kelway's Manual of Horticulture, which possibly is not equalled by any other publication of the kind in the world, "Cel Acres Gladioli," by B. Hammond Tracy, Wenham, Mass., "Hardy Herbaceous Plants," sometimes known as "Old Fashioned Hardy Garden Flowers," from E. I. Smith & Son, of The Helderberg Nurseries, Winona, Ontario; "Reann's Seeds," issued by The Wm. Ronnie Co., Toronto, Ontario; "Bruce's Seeds for 1913," distributed by John A. Bruce & Co., Limited, Hamilton, Ontario; D. M. Ferry & Company's "Seed Annual for 1913," address Windsor, Ontario; and "The Seed Annual," of Dupuy & Ferguson, Montreal, Quebec.

British Columbia

The Dominion Government has acquired a tract of thirty-five acres in the Upper Columbia River valley and will establish an experimental fruit farm there for the purpose of testing various varieties of small and large fruits, grains, clovers and potatoes. The farm is located at Lumiere, about eighty miles south of Golden. Penticon fruit growers are forming



REX

Lime Sulphur Solution Arsenate of Lead

THE ORIGINAL FRUIT TREE SPRAY

There were sold during the season of 1912, 50,000 (fifty gallon) Barrels REX LIME and SULPHUR SOLUTION, and 1,500,000 pounds REX ARSENATE OF LEAD.

THERE'S A REASON

For such an immense sale of REX goods. It is the "HIGH" Quality of the raw materials we are compelled to obtain to manufacture our perfect solution. This costs us more than 25% per barrel over the materials that our competitors see fit to use.

This will not permit us to compete in price with opposition, but we know we can give you 100% more value, and you have no sediment or mud, or waste material to pay for.

The Growers of the Half Car Load, FIRST PRIZE BOX APPLES, awarded to Northumberland and Durham, that were shown at the Fruit Show in Toronto, in November last, ALL USED REX SPRAY SOLUTIONS.

REX Lime Sulphur Solution, is the original LIME SULPHUR Solution placed upon the market. Made to-day as it was made Fourteen years ago. Always clear, without sediment or waste material, and every barrel being of the same Beaume test as any other barrel of Rex.

REX—Guaranteed to contain at least 25½ to 26½ per cent. Sulphur in Solution.

DON'T Waste your Money in using Home-Boiled or Solution with Sediment, which destroys your Pump Pistons and Cylinders.

REX Arsenate of Lead contains larger percentage Arsenate-Oxide with least amount of moisture. No water on top of packages, and readily mixing into the solution, staying longest in suspension without settling, while spraying.

To have perfect Fruit it is necessary to use the highest class materials, which means you must use REX.

Send for Free Information on Spraying and Care of Orchards

CANADA REX SPRAY COMPANY

BRIGHTON

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LIMITED

FACTORIES AT

Brighton, Ont.
Omaha, Neb.

Rochester, N.Y.
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Benicia, Cal.
North Yakima, Wash.

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BASIC SLAG

Renovates Old Worn Out Pastures Without Re-Seeding

There are thousands of farmers in Ontario whose pastures have been worn out by the continued grazing of dairy stock. Such lands have been drained of fertility and now grow only poor, worthless vegetation. Clover has entirely disappeared. This need not continue. A dressing of Basic Slag applied broadcast at the rate of 1000 lbs. per acre will bring such pastures back into good heart, and double or treble their capacity for stock carrying. The effect of such an application should be apparent for four or five years.

Basic Slag is being used in thousands of tons in the Maritime Provinces and Quebec, and the consumption in Europe amounts to over two million tons per annum. It is therefore no untried Fertilizer. Every farmer from the Old Country knows about Basic Slag, but for your own satisfaction ask the Department of Agriculture Instructor for your district, or the editor of any farming journal as to its merits. Basic Slag is the ideal Fertilizer to apply to stiff clay lands, to wet, marshy fields and to all soils which have become sour. If you have any such pasture buy one ton of Basic Slag and broadcast it over two acres, applying it at the earliest opportunity—the sooner the better.

Until our selling arrangements in Ontario are completed, you can be supplied direct from the Factory at \$20.00 per ton, freight prepaid to your nearest station—cash with order.

Make this experiment and you will feel grateful to us for bringing the merits of Basic Slag under your notice. An interesting pamphlet giving particulars of the results obtained by leading agriculturists from the use of Basic Slag, will be forwarded by post on application to

THE CROSS FERTILIZER CO., Ltd. SYDNEY, N.S.

Or to their Sales Agents for

Western Ontario, MR. A. E. WARK, Wanstead
Eastern Ontario, MR. A. L. SMITH, 220 Alfred St., Kingston

your readers will smile at his logic regarding the whip and the horse, also the currycomb and the steer. How is it that he a student of great ability, no doubt, but tell us "that in carrying on experiments for eleven years with an orchard at the General Experimental Station the result was that the trees in the experiment would be practically as well off in every respect had an ounce of fertilizer been used?" Following that statement, I read the remarks of Dr. P. Stewart, another clever student who has evidently made a study of the use of fertilizers, and he shows plainly that the application of fertilizers in an orchard had the effect of increasing the crop of apples.

Dr. Dandeno, in concluding his remarks says "the plant must answer." This is a very wise conclusion when doctors differ. In my case I am only too willing that the plants shall give the answer. I planted a portion of my garden to late potatoes. Before planting, I worked in a dressing of potash fertilizer at the rate of fifteen hundred pounds to the acre, and I took off a crop of good sound potatoes equal to four hundred and twenty bushels to the acre, and when digging them my neighbor said he never saw a better crop. Thanking you for the space, I will conclude with a very old saying—

"Starve the land, starve the plant;
Feed the land, feed the plant."

Chas. Jas. Fox, South London

Ontario Peaches in Great Britain

It having been announced in the daily press that the shipments of Ontario peaches to London, England, last year were not nearly so successful as those made the year previous. The Canadian Horticulturist wrote to the fruit divisions at Ottawa and Toronto for reliable information. The despatches in the daily papers claim that many of the cases on arrival on the market in England had as much as twenty-five per cent. of their contents either partially or wholly damaged.

Mr. W. W. Moore, Chief of the Market Division, of the Dominion Department of Agriculture, reported that the shipments had been practically all made by Mr. C. Dohson, of Jordan Station. Mr. Moore wrote in part:

"The total quantity of peaches exported was 8,443 single layer cases, compared with 3,934 cases in 1911, and 3,743 cases in 1910. We received reports on the condition of all the consignments landed in Great Britain last season, and they were favorable in every instance. I would not be surprised to learn, however, that the peaches did not stand up well after they reached the hands of the receivers, because our weather conditions in 1912 were unfavorable to the production of keeping qualities in tender fruits."

Mr. Hodgetts wrote as follows: "The reports from our London Office were that there was more rot present last year than during the previous two seasons. This was accounted for, I believe, by the fact that sufficient care was not exercised in selecting the fruit, quite a number of the peaches being too green during the earlier shipments of Elberta and others too soft at the later stages. There is no doubt but that these shipments can be made to pay a very good profit, and owing to the increased production of peaches a considerable quantity of high-class fruit could be shipped to the English markets to relieve the congestion here. The greatest care, however,

**SPECIAL GUARANTEED
Lime-Sulphur Hydrometer**

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

Sent Postpaid on receipt of 80 cts.

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**Watch
Them
Grow**

—the vegetables and flowers and field crops that spring from Ewing's Reliable Seeds! They are lusty and vigorous, true to name and strong in the qualities that make each particular variety popular.

The new 1913 Catalogue of



offers a selection that cannot be beaten—the good old favorites, and all the new and improved varieties that have made good.

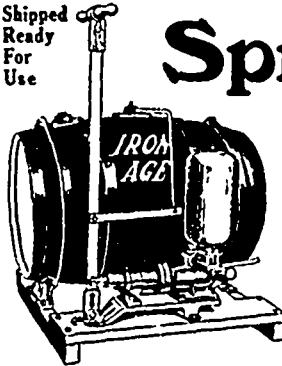
Write for this Catalogue—it will certainly help you to choose the right seeds for bumper crops next year.

Then, if your dealer cannot supply you with the Ewing's Seeds you want, order from us direct.

**WM. EWING
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Seedsmen
McGILL ST.,
MONTREAL.

Shipped
Ready
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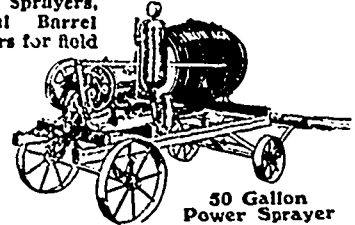
Sprayers \$4 to \$400



No. 190 - 50 Gallon Horizontal

For large or small orchards, market gardens, potato farms, grain, mustard, tobacco, home and garden work, poultry plants, whitewashing, cleaning, cold-waterpainting, etc.

Bucket and Knapsack Sprayers, Horizontal and Vertical Barrel Sprayers, Traction Sprayers for field crops. Power Sprayers, 50, 100, 150, 250 gal. Furnished complete or in part to build up Sprayers already in use. Forty combinations.



50 Gallon Power Sprayer

IRON AGE

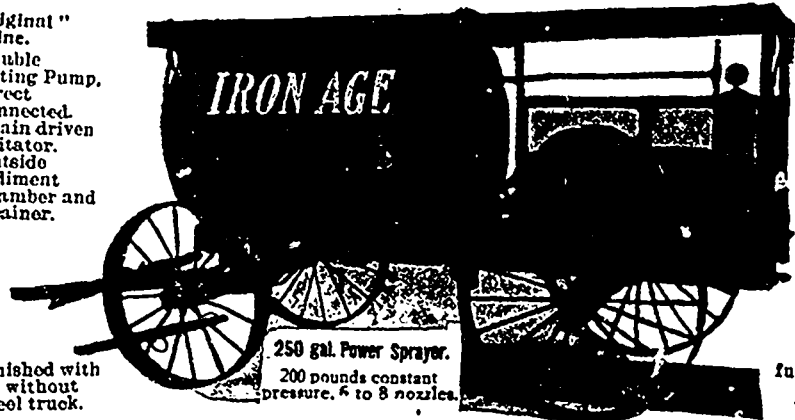
(Now Made in Canada)
sprayer—this has been shown by disinterested tests when necessary. Ask your dealer to show them and write for new booklet "Spraying Vines, Trees and Bushes."

Sprayers have outside pumps—no corrosion, pleasant for handling; easy to get at. The pumps have the greatest efficiency, that is, the least slippage of any pumps in use on any vines, trees and bushes.

We also make full line Potato Machines, Garden Tools, etc.

THE BATEMAN-WILKINSON CO., Limited
460 Symington Avenue, TORONTO, ONTARIO

2-H.
"Original"
Engine.
Double Acting Pump, direct connected. Chain driven agitator. Outside sediment chamber and strainer.



Furnished with or without steel truck.

250 gal. Power Sprayer.
200 pounds constant pressure. 6 to 8 nozzles.

Tower furnished if wanted.

**Chick
Success**

The raising of chicks is not difficult when conditions are right. Try our way, and make this your most successful season—Feed

Pratts Baby Chick Food

for the first three weeks. No feed on earth will give the youngsters such a vigorous start, and the cost is but 1c per chick.

In boxes and bags, 25c up

Pratts White Diarrhea Remedy

25c 50c

prevents and cures the bowel troubles which are so common and cause such heavy loss. Just drop the tablets in the drinking water for all broods up to one week of age.

Pratts Poultry Regulator

should be mixed with the daily ration after the third week. It induces rapid growth and early maturity by keeping the digestive system in perfect condition.

25c, 50c, \$1; 25-lb. Pail, \$2.50

"Your money back if it fails"

Our products are sold by dealers everywhere, or

Pratts
160-Page
Poultry
Book 10c
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**Pratt Food Company, of Canada,
Limited**
TORONTO - - - ONTARIO

For the Land's Sake use
(REG. U. S. PAT. OFF.)
Bowker's Fertilizers

They enrich the earth and those who till it. Fertility plays such an important part in profitable farming that no farmer ought to take chances with his fertilizer. A reliable company and a high grade brand mean full value for the money, a full ration for the crop, and a full return at harvest time.



Bowker's Fertilizers are soluble, active, sure. They are backed by forty years of experience, the best materials, the best facilities and prompt service. Suitable for every crop and adapted to every pocketbook.

We want Agents in unoccupied territory. Write today for prices and terms; this may mean a good business for you if you act at once.

Write anyway for our illustrated catalogue and calendar before you buy your

spring fertilizer. We want you to know what we can do.

BOWKER FERTILIZER COMPANY

73 Lyman Street, Buffalo, N. Y. 39 Chatham Street, Boston, Mass.

Original and largest manufacturers of special fertilizers.

Consider Now

what it will cost and how much money you will save on your next season's fertilizer bill if you should buy your

Nitrate of Soda

and other Farm Chemicals and mix them yourself.

Your own brand MIXED AT HOME will be better than any patent brand and is sure to have in it just what you want.

Book of formulas and full instructions for Home Mixing will be sent

FREE OF COST

Dr. WILLIAM S. MYERS
 Director of Chilean Nitrate Propaganda
 17 Madison Ave., New York

No Branch Offices

is to be known as the Southern Ontario Fruit Growers' Association. The majority shipped through the various packing companies on a commission and consignment basis. The capital stock of the company will be one hundred thousand dollars in shares of one hundred dollars each. No shareholders will be allowed to vote proxies, or to have more than one vote, no matter how much stock they may hold.

In the vicinity of Cranbrook, the fruit growers have ordered some fifty thousand trees for planting this spring. An additional twenty thousand trees have been ordered by the growers near Marysville and Wardner. In these sections considerable areas of land formerly held under lease have been opened up for settlement and extensive planting of fruit trees is expected to result.

Lambton County

During the last few years a great deal has been heard about Lambton County as a coming fruit-growing district of great importance, but in order to realize its value it is necessary to drive up and down the concessions viewing the rich fertile plain and noting the signs of increasing prosperity. Only a few years ago stock raising was the great industry of Lambton County, and for that purpose large tracts of land were set apart. This method of farming continued for many years, resulting in our farmers buying out one another until the country was thinly populated and large herds of cattle, feeding upon luxuriant grass, were in many parts the signs of prosperity.

During the last few years an awakening has taken place. The people are finding that in their rich, deep plains they have the finest fruit producing land in Canada. Individuals in various parts of the county have proven it by their success in practically every department of fruit growing which has resulted in arousing great interest in that line. Hundreds of acres of orchards were planted last year and the and large areas already planted in previous seasons are unrivalled in beauty and production.

It may be a surprise for many readers to see THE CANADIAN HORTICULTURIST to be that Lambton is destined to become a peach-producing district. Peach growing is no experiment here, as they have been grown successfully for over forty years in a small way. Orchards varying in size from one to ten acres had for many years been supplying the home demand until a curl leaf appeared among the orchards and not knowing how to overcome it the fruit growers became discouraged, and finally through neglect and decay the peach orchards passed off the scene, but with the knowledge of how to overcome the "curl," planting has been resumed, and hundreds of acres of peach orchards are being planted with every assurance of success. In fact, orchards here have for years been annually producing thousands of baskets of the finest peaches.

Lambton is specially favored in its geographical position, as practically the entire of the county is south of the 42nd parallel, the Niagara district, and, in addition, to the west of the county, which lies to the north and west of the county, wards off the cold spring and fall and moderates the winter. The advantage of this is the fact that the coldest days of the winter of 1911 in the north of the county were below zero, and the year before that the winter was even colder. Lambton has some thirty-five thousand acres of deep, rich sand and gravel, specially suited for the growing of peaches.

FIRST FOR QUALITY AND RESULTS

THOMSON'S VINE, PLANT AND VEGETABLE MANURE



UNRIVALLED

For Vines, Tomatoes, Cucumbers; Flowering, Foliage and Fruit Bearing Plants, Vegetables, Lawns, etc,

The result of many years' practical experience

PERFECT PLANT FOODS

Sold by Seedsmen and Nurserymen all over the world. Also

**THOMSON'S SPECIAL
CHRYSANTHEMUM AND TOP-DRESSING MANURE**

A Splendid Stimulant Sells Well—Pays Well

Write for our special offer to the Canadian Trade. Also for Agents' Circulars, Pamphlets, etc. to the Sole Makers

WILLIAM THOMSON & SONS, Ltd.
Tweed Vineyard, CLOVENFORDS, SCOTLAND

DON'T SACRIFICE!

If you have good apples to sell and you think you should get more than you are offered, do not sacrifice them. Ship them to Toronto. The Toronto market alone will require immense quantities of apples between now and spring.

We have cold storage facilities and can store your apples till a favorable price can be realized, thus protecting your interests. Write or wire us to-day.

DAWSON-ELLIOTT CO.

90 COLBORNE ST. - TORONTO

Strawberry Plants

After more than twenty years' experience in raising strawberries, I have found the Williams and Parson's Beauty the most productive and the best for the market. I am prepared to offer for early spring delivery. All plants of last year's growth of these varieties. Also 250,000 plants of the following splendid kinds:

- FOUNTAIN
- WOLVERTON
- MICHEL'S EARLY
- SENATOR DUNLAP
- LATE GIANT

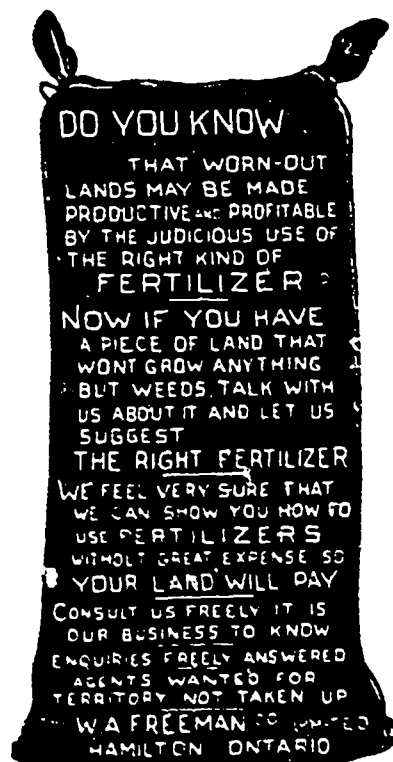
Price for any of these varieties, \$5.00 per 100 or \$10 per 1000.

Have the best varieties of Red and Black Strawberries at \$10 per 1,000; \$1.50 per 100.

IF INTERESTED WRITE ME

WILLIAM WALKER, Box 15, Port Barwell, Ont.

Fertilize Your Lands



GLADIOLI

GROFF'S "AMERICA" is now the leading commercial variety, in Europe, as well as in this country.

GROFF'S "PEACE" will be equally popular, when as well known.

GROFF'S "DAWN," "WAR," "PEACH-BLOW," "AFTERGLOW," and many other varieties will follow.

We have over 1,500 of choice GROFF Hybrids under number.

We are also testing many of the newer varieties originating in Europe, and anything worthy will be added to our list. Few of them in the past have secured a permanent place.

CATALOGUES UPON APPLICATION.

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while apples, pears, plums and grapes be grown on practically any of the six hundred and fifty-nine thousand acres. The killing of the peach by frost has never been known here, while the San Jose Scale never yet made its appearance.

APPLES LEAD

Apples, however, are still the leading fruit of Lambton, and many thousands of trees are being planted every year. In the past the apple orchards were neglected, and but little interest was taken in them, but now all is changed. The apple orchards are being ploughed up and the trees pruned and sprayed and many of the finest apple orchards of the province are to be found here. Some of the annual output of thousands of barrels besides large quantities of other fruit varieties chiefly grown are the Halden Spy, R. I. Greening, King, and Golden Russett.

In addition to the larger fruits berries and vegetables are extensively grown, and find a ready market in the north, which direct communication is given by boats sailing straight north from the port of Lambton.

Up to the present the county has been free from real estate booms. Its success is due entirely to the development of its natural resources. Here land suitable for growing peaches or any other kind of fruit can be bought at prices ranging from five dollars to one hundred dollars an acre according to its situation, and practically all of which is ready for planting.

Lambton has no less than six cooperative fruit growing associations, all working in harmony with each other and promoting the best they can the fruit growing industry. In addition to this there are three canning factories with the prospect of others next season, also ten large up-to-date evaporators, which are rushed to their most capacity to handle the lower grade apples.

In view of the success already attained and climatic conditions possessed, we look forward with confidence to be in the future a second Niagara, a district which we have the greatest admiration, gratefully acknowledge the public spirit of its leading citizens, to whom we owe much for their unflinching efforts to lead us to the highway to success. — D. J. Forest, Ont.

At the short course held last month at the Guelph Agricultural College, at which were present representatives from the several cooperative fruit growers' associations, it was agreed that Ontario should have a central organization for the purpose of handling the fruit crop in larger quantities. The fruit grower would thus realize better returns without any increase in cost to the grower. The following were appointed to a committee to bring about this organization: P. W. Hodgetts; Rebt. Thompson; Catharines; Elmer Lick; Oshawa; Carey, Hamilton; C. W. Gurley, of Port Hope and Adam Brown, of Owen Sound. They will get to work at once and report to the local associations early in the year.

The Canadian Horticulturist is in receipt of a magnificent calendar for 1914 "The Grecian Idol," after the painting of Henry Ryland. It is being distributed by Gro. T. Dickerson, 1 Broadway, New York, United States representative of the firm of T. Dickerson, Chatham, Ontario, the ornamentals, and nursery and tree stocks of this firm are of the highest quality the calendar referred to in the firm's business is bound to be sold rapidly.

THIS WASHER MUST PAY FOR ITSELF.

ALAN 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 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 not "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.

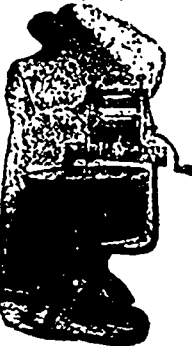
Let me send you a "1900 Gravity" Washer on a month's free trial. I'll pay the freight out of my own pocket, and if you don't want the machine after you've used it a month, I'll take it back and pay the freight, too. Surely that is fair enough, isn't it?

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 wear and tear on the clothes alone. And then it will save 50 to 75 cents a week over that in a woman'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 'till 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.

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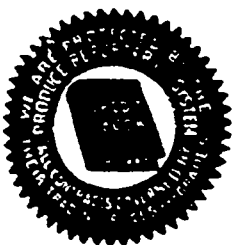
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References: The Canadian Bank of Commerce, (Market Branch) and Commercial Agencies.



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Built by a practical soil-tiller and manufacturer and backed by over 40 years' experience. Fully guaranteed.

No. 41 is the most efficient tool you can use for all broad cultivation—orchard, vineyard, or hopyard.

It is equipped with fruit tree shield, and side hitch for low trees. Carries teeth, sweeps, furrowers, plows, etc. Works deep or shallow, and cuts from 4 to 6½ feet wide. Convertible into disc harrow and alfalfa cultivator. Its special weeder attachment is the most efficient weeder ever invented.

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Quality Alone Insufficient

Speaking recently before the members of the Northumberland and Durham Fruit Growers' Association, Mr. P. W. Hodgetts, Director of Horticulture for Ontario, pointed out that Ontario apples need more than quality alone to enable them to hold their own in the markets of the world. In this connection he said:

"True, our apples lead all others for quality; but quality alone will not suffice. Look at the apples at present displayed in Toronto store and restaurant windows and selling at from two dollars to two and a quarter a bushel box. These apples are from the western States, and have no quality whatever, but they have good appearance and were well packed.

"There is no false prejudice in the west against the methods of packing. Some of our very best districts are offenders in this respect. We had a market commissioner in the west last summer, and he reported from day to day the condition of the fruit on arrival. Here are some extracts from letters received from him by our departmental commissioners reports

"Western States apples coming to Winnipeg in fine shape.

"Ontario shippers could sell here if they would use boxes.

"Edmonton dealer says that Ontario growers must use a boxed package or no market entirely.

"Washington and British Columbia apples are shipped in fancy box packages, the fruit in tiers and each apple wrapped in paper. Winnipeg market demands boxed packages. The small demand for Ontario apples is due to inferior quality.

"There are just enough bad packers in Ontario to give us a reputation as a second rate fruit country."

Mr. Hodgetts cited the case of one prominent Ontario buyer who went west last summer to sell the pack of one apple association. He wrote back to Ontario saying that he had been unable to sell a single barrel of Ontario apples west of the Manitoba boundary.

RATES AND DELAYS

Mr. Hodgetts also dealt with the old problem of exorbitant haulage rates and vexatious delays. He compared the rates accorded Nova Scotia and American shippers to those given Ontario growers, and showed that discrimination was practiced and traced the progress of different cars of fruit across the continent to different Canadian western points, some cars taking as high as fifteen or more days.

"I believe that the time is not very far off when our best varieties must be boxed," said Mr. Hodgetts. "We must be prepared to forward at least mixed cars of boxed and barreled apples to those western points. In the western States they are using barrels at all. The British Columbia growers are asking the Dominion Government to adopt for Canada the American grading of 'extra fancy,' 'fancy' and 'choice' in place of our present grading, one, two and three, and they also wish to effect among our packers the use of the United States box package. Those western buyers seem to have more faith in box than in barrel fruit. I would advise you to put at least your best fruit in boxes, and perhaps you might then put No. in barrels."

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A curved surface is stronger than an angle unless heavily braced, therefore, the curved eave makes the most rigid house. Combine these enduring points with no gutter to cast shade and you

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Some ORNAMENTAL SHRUBBERY this spring. A few dollars will add immensely to the appearance of your lawn.

Canadian Grown, thoroughly acclimatized. No Agents' commissions to pay, cutting the price in half.

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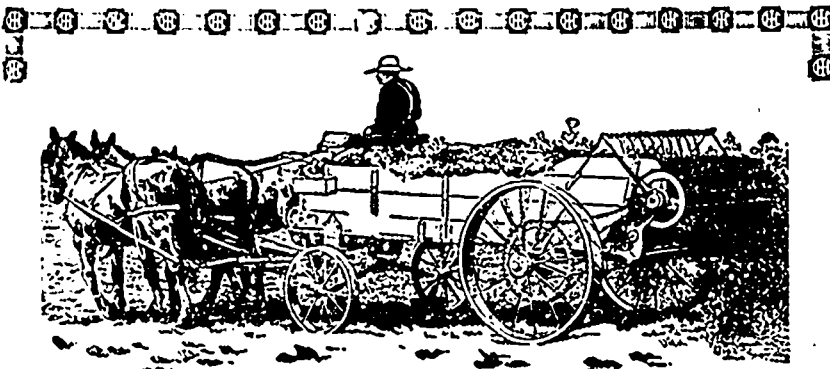
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EIGHT years ago the farmers in a central state raised average crops that ran three bushels less to the acre than they now get. Suppose each acre of farm land in this country were so tended that it produced an equal increase. How much more money would farmers have, with which to buy the luxuries of life that they earn and deserve?

What others have done, you can do. Your share in this prosperity depends entirely upon yourself. The first step for you to take is to fertilize your land properly with manure spread by an

I H C Manure Spreader Corn King or Cloverleaf

Manure cannot be spread as it should be unless a machine is used. An I H C spreader covers the ground with an even coat, light or heavy as may be needed, and pulverized so that the plant food elements in the manure combine with the soil to best advantage.

The spreader that does this work as it should be done must have many excellent mechanical features. The apron should move without jerking; the beater should meet the load at exactly the right point to pulverize the manure without too greatly increasing the draft of the machine; the speed changes of the apron should be positive whether the spreader is going uphill or down, otherwise the spreading will be uneven. All these features are provided for in the construction of I H C spreaders.

The I H C local agent carries in stock the machines best suited to your locality. See him for catalogues and full information, or, write the nearest branch house.

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Okanagan Valley North

Charles Webster, Armstrong, B.C.

The Northern Okanagan is understood to mean that part of the valley north of Okanagan Lake, or rather north of Vernon, which town is a couple of miles from the head of the lake. This division is the best that can be made as north of Vernon irrigation is rarely practiced there being a satisfactory rainfall. The contour of the valley is much the same as at the southern end. In place of the lake the northern valley has rich bottom lands, which are very prolific vegetable and hay soils.

February gave us some unusually cold weather, which may result in some winter injury where tender varieties have been planted. As the trees went into winter thoroughly ripened, injury may not occur. A large fruit crop is not expected, as the whole Pacific slope had a heavy, full crop last year. About the first week in March spring work will open up. The snow goes then, or shortly after.

Armstrong, and the strong bench lands tributary to it, is a heavy shipping point. It has a branch of the Kelowna Farmers' Exchange (cooperative) and two large privately owned exchanges. The shipments of produce for the past summer and this winter will total close to one thousand cars. The Canadian Northern Railway is to build through the valley, probably this summer.

The Armstrong Fruit Growers' Association buys a variety of supplies for its members at cost and looks after fruit interests generally. It is in affiliation with the B.C.F.G.A. The parent Association has for some years made a practice of supplying pure bluestone to its members. The local organization has a kick about the bluestone supplied to them last fall. Undoubted authorities pronounced it sulphate of iron. A refund is being asked for.

The fruit packing schools have been continued this winter through the province by the government. A betterment is seen in the scarcity of packers as well as in the parks made by exhibitors at the fall fairs. A knowledge of packing enables growers to place properly packed fruit in the hands of personal customers and not too far distant storekeepers, at a reasonable price. Anything that will lessen the cost of fruit to the consumer here in the west is a consummation devoutly to be desired. The practice of feeding a bunch of avaricious middlemen is limiting consumption.

A canning factory is much needed. Beans, corn, peas, pumpkins, citrons, and so forth, can be produced in quantity and all small fruits succeed admirably. The lack of a canning factory to use the local or regular refrigerator car service to ship them out, make them other than satisfactory crops for the grower.

Grimes' Golden appears to be a most satisfactory apple for some part of the district. True, it is not a red fruit, but its lusciousness, waxy gold color and correct dessert size, will eventually find for it everywhere the reception it deserves.

The St. Thomas Horticultural Society has adopted a somewhat unusual method of interesting the public in flowers. An exhibition was held last season in the window of the Woolworth Company. The Company placed receptacles for the flowers at the convenience of the exhibitors. All kinds of garden flowers were eligible for entry.

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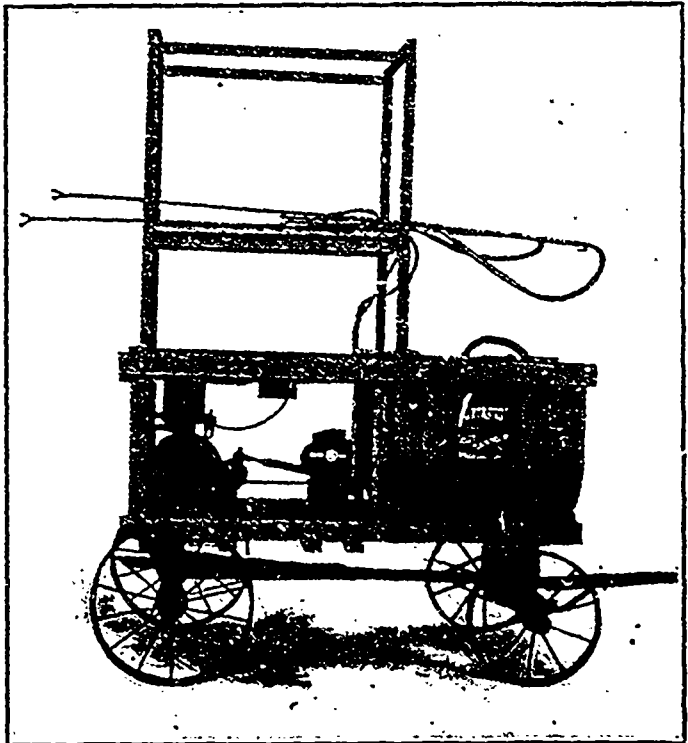
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Selecting good seed has a great deal to do with the ultimate success of growing flowers or vegetables. The love of flowers should inspire those who cultivate them to select the choicest and most reliable seeds. Gardening for profit or pastime

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CARTER'S TESTED ENGLISH SEEDS

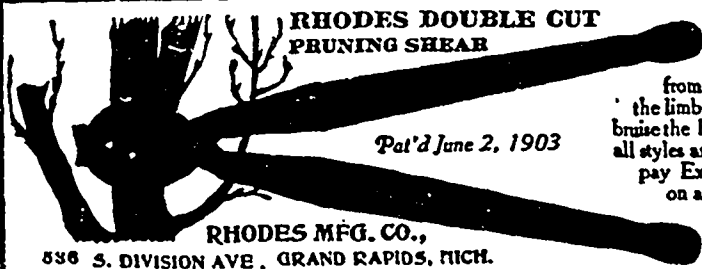
These famous seeds are known, sown and grown the world over. Wherever used they have made extraordinary records for productiveness. Your flowers and your garden vegetables for next season will be the admiration of all who see them and a source of pride and satisfaction to yourself if you sow Carter's Tested Seeds this Spring. Order from the catalogue. Write for a copy at once, so you can order early.

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AGENTS Experience Unnecessary. Make Money Evenings or Spare Time. Write Quick.

New Brunswick

Interest in fruit growing in New Brunswick is rapidly increasing. New orchards are being planted and better care is being taken of the old orchards. The Fruit Growers' Association reports a great increase in the number of orders for trees and that the number of spraying outfits and quantity of spraying material purchased showed an increase between 1911 and 1912 of 1,080 per cent. Last summer and fall a number of prominent English capitalists visited our fruit districts, as well as some fruit growers from British Columbia, where land values are much higher than they are here.

The Provincial Department of Agriculture realizes that the time is ripe for development of the fruit industry, and this year continued the series of orchard surveys that was started in 1911. The surveys consist of a farm census, and are being conducted with the object of gathering information of value to the fruit growing industry, including such points as best varieties, methods of cultivation, insect and fungus pests and their control. All the farms fronting on the western bank of the St. John River, from Fredericton to Woodstock, a distance of sixty-two miles, have been surveyed. Assistance is also being given in the planting of orchards and in the examination of bearing orchards and orchard sites.

The twenty-one illustration orchards are fully equipped with spraying machines and materials and are making good progress, as are three special demonstration orchards. Recently the Department of Agriculture made an extensive display of fruit grown in the province in the City of Montreal, where it attracted much attention and proved a valuable advertisement for our fruit interests.

Railway Charges Injure Fruit Industry

Speaking recently before the Agriculture and Commerce Committee of the Dominion House of Commons, Mr. D. Johnson, president of the Ontario Fruit Growers' Association, said that the reason there are so many United States apples in Canada is because the United States shippers have a better transportation rate. United States shippers, for instance, have a rate of fifteen cents a barrel between Medicine Hat and Winnipeg. Ontario shippers on the other hand pay seventy-nine cents or six cents more. The railways always raise their tolls, no matter what the market price.

The fruit growers in Ontario are losing the trade of Saskatchewan and Alberta through railway discrimination. Express rates are killing the trade in peaches, plums, and other small fruit. During the past ten years practically nothing has been done to increase the refrigerator service. The express rate on fruit from Sarnia to Winnipeg is two dollars and fifty cents a hundred. From Forestburg to Winnipeg it is three dollars and fifty cents.

PRUNING SAW

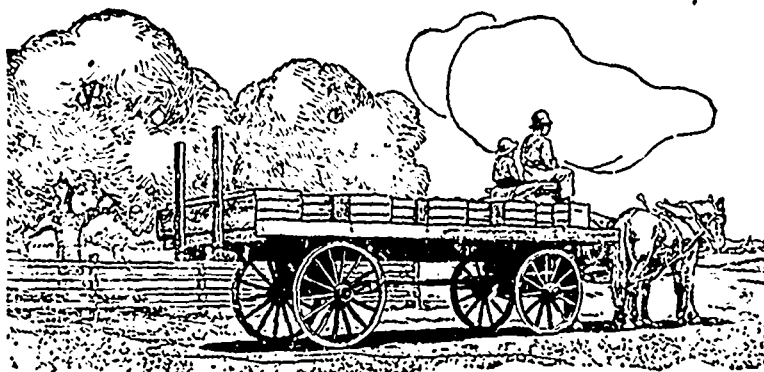
Operates from ground. No breaking of limbs by climbing. No moving of ladders. No sawing of wrong limbs. Can reach topmost branches and shape tree better than by old methods. Will save its cost in one day. Nothing to get out of order. Will last for years. Thousands in use. Recommended by all. If your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

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Com

IHC Wagons Are Tough

DID you ever notice, when one of the wheels of your loaded wagon dropped into a rut or bumped over a stone, how the seat springs gave and rebounded, almost throwing you off? That is an indication of the shock and strain that the rigid spokes and axles have to stand whenever the wagon is traveling over a rough road or through a field. Even on a smooth road there is always the crushing strain of the load, affecting every part from the top box to the lowest point of the tire. I H C wagons



Petrolia Chatham

take these stresses and strains as a matter of course. They are made to stand just that sort of work. From neckyoke to tail board they are built of selected, air-dried lumber, strong and tough, bending to strains but coming back as straight and true as ever when the load is removed. Besides being tough, I H C wagons are light running. The wheels have just the right pitch and gather, and run true. All skeins and skein boxes are paired. The running gear is assembled by skilled workmen whose wages depend as much on the quality as on the quantity of the work they turn out. Machine work, being more uniform and a great deal faster, takes the place of hand work wherever

possible. Consequently, I H C wagons are practically all of the same high standard of quality throughout. You cannot do better than to equip your farm with I H C wagons. The I H C local agent sells the wagon best suited to your work and your conditions. See the wagon at his place of business and get catalogues and literature from him, or, address your request to the nearest branch house.

Eastern Canadian Branches

International Harvester Company of Canada, Ltd
(Incorporated)

At Hamilton, Ont.; London, Ont.; Montreal, P. Q.;
Ottawa, Ont.; St. John, N. B.; Quebec, P. Q.
Built at Chatham and Petrolia, Ont.



Farm Davies' Way

The PROFITABLE Way The ONLY Way

Characterized by Better Seed—Better Rotation of Crops—The use of Davies' Mixed Fertilizers—The Triumph of Scientific Methods—Production Doubled—Profits Multiplied.

To increase the profits per acre, you must increase the production per acre—to increase the production per acre, you must increase the fertility of the soil—this can be accomplished by the intelligent use of Davies' Fertilizers in connection with modern farming methods.

Rotation of crops, Drainage, Intense Cultivation, Proper selection of seed, are all important factors in increasing your yields per acre, but absolutely the most important factor of all is the liberal application of "Factory Mixed Fertilizers."

Davies' Fertilizers furnish the essential "plant foods" in varying degrees of availability, and thus your crop is fed throughout its whole growing period. You have also some excess fertility left to "build up" your soil for the next crop.

Do not waste time in this matter—buy "Davies Mixed Brands" in the first place and be among the thousands of satisfied customers who are using them.

Our Booklet, "Farm Davies Way," contains valuable information regarding Fertilizers in general and "Davies" in particular. It is yours for the asking.



Demand Davies "Mixed Brands" from your dealer. There are twenty-five (25) of them, varying in analysis to meet the requirements of your particular soil and crop.

We sell "Potash Salts," "Nitrate of Soda," and all "Raw Materials," only to meet the demand from those who have never used our "Mixed Brands," and who can only be persuaded of the disadvantage of "Home Mixing" by hard-earned experience—we always consider them future customers for our "Factory-Mixed Goods."

Patronize our Agents

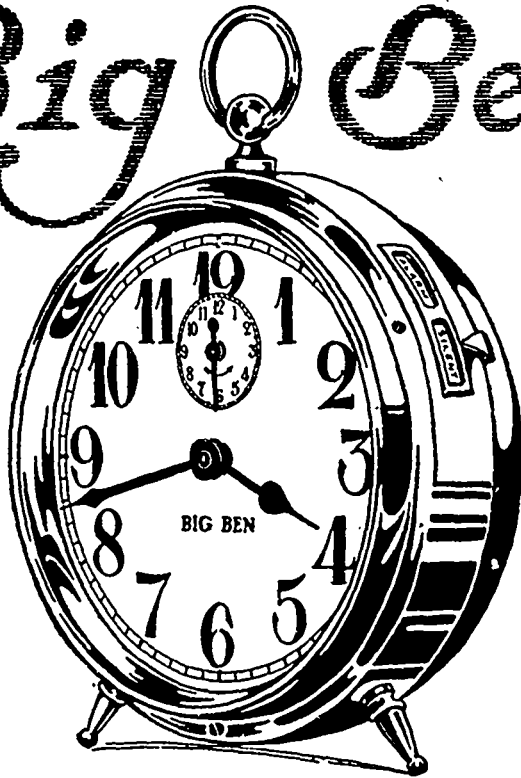
THE WM. DAVIES CO., Limited

Commercial Fertilizer Department

WEST TORONTO, ONT.

R. INNES, B. S. A., Manager

Big Ben



The Men Who Make Big Ben

About 26 years ago a German clockmaker came from the East to La Salle, Illinois.

His only baggage was an idea—the plan of an automatic process he had invented, and which would make more alarm clocks and better alarm clocks than hand labor could ever hope to turn out.

With the backing of some local merchants and with a handful of clockmakers, a small factory was started on the edge of the town. —Beginnings were hard, competition intense. They weathered storms that would have knocked the fight out of weaker hearted men.

But when success at last came in sight they had built one of the best equipped clock plants in the world and one of the greatest names in the

American clock industry—Westlox, La Salle, Illinois.

Today, the Westlox people number 1,200. Every week day of the year they turn out 10,000 alarm clocks—alarm clocks of every description and style—their name "Westlox" is on every one of them and *Big Ben* is the king of them all.

Big Ben is the ideal of the Westlox people. He is their conception of what a perfect alarm clock should be. He is only two years old, but in this short time 6,000 Canadian dealers have already adopted him.

Only the finest materials are used in his making—he is strong, massive and punctual. His face is frank, open, easy to read. His keys big, handy, easy to wind. He rings steadily for five minutes or intermittently for ten. He calls you every day at any time you say. If you have him oiled every other year, there is no telling how long he will last.

Big Ben's price is \$1.00 at any dealer's. If you cannot find him at your dealer's, a money order sent to Westlox, La Salle, Illinois, will bring him to you, carefully packed and express charges paid.

per twenty-three miles shorter, the rate is four dollars sixty cents a hundred. The express rate on fruit from Forest to Sarina was thirty cents a hundred. It was shipped from Forest to Boston at half the rate.

COOPERATION NEEDED

Mr. Johnson advocated cooperation and said that for lack of it about twenty per cent. of the apples grown and brought to maturity in Ontario this season had gone to waste, rotting on the ground. At the same time apples were very expensive and very scarce in the west.

Mr. Douglas of Strathcona asked if there was not a good deal of satisfaction with the Ontario apples in the west.

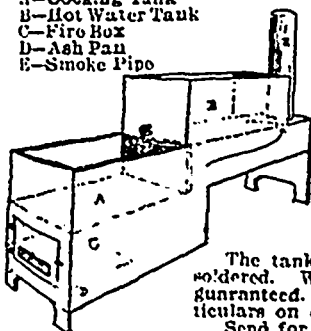
Mr. Johnson admitted that there was and confessed that when he was in the west two years ago he was ashamed to own the apples he was from Ontario. As a means of improving the pack of Ontario apples Mr. Johnson said:

"I would propose prosecuting the man who packs bad fruit. There should be inspection at point of shipment. There are many, of course, who don't know they are packing badly. They should be taught and then if they persist in crooked packing they should be prosecuted."

Better Inspection Desired

That the farmers of Ontario are beginning to realize the importance of better fruit packing is shown by the discussions that are taking place at fruit institutes and similar meetings. At a meeting recently of the Farmers' Club at Redwoodville, Prince Edward county, a resolution was passed which reads in part as follows: "We, the undersigned fruit growers, realize the importance of the apple-growing industry of this county. During the past there have been upwards of one hundred and fifty thousand barrels of apples shipped from this district in one season. We realize that there has not been the uniformity of packing and quality that we desire, that the inspection and sales as brought into force in 1912 has been a move in the right direction, but that inspection as it has been conducted does not materially benefit the individual grower, and in fact is unjust to the grower."

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



Make Your Own Spray

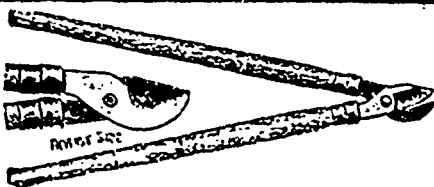
Home Boiled Lime Sulphur is being used in increasing quantities by leading fruit growers and fruit growers' associations. They find that by making their own spray they can effect a considerable money saving, and at the same time produce a preparation that will do the work thoroughly.

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

The tanks are made of heavily galvanized steel, thoroughly riveted 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 AND MACHINE CO., Ltd., TWEED, Ont.



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. 097 guaranteed pruner at \$1.25 per pair, via parcel post, prepaid; cash with order. CRONK & CARRIER MFG. CO., ELMIRA, N. Y.

THE STRATFORD EXTENSION LADDER

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

It is **LIGHT, STRONG, EASILY OPERATED AND DURABLE**

IF Interested write for Catalogue

THE **Stratford Mfg. Co.**

STRATFORD, CANADA

Makers of Ladders for every conceivable purpose



buyer and the packer, inasmuch as the packages of apples are beyond his or their reach before they are inspected, and it becomes responsible for him or them to locate the cause or defects.

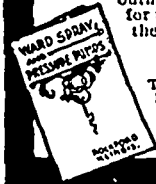
"We believe that inspection of apples should be made at the point of shipment, in order to do justice to the grower, that apples should not leave the country unless they are up to standard. Thus the grower, buyer or packer could readily see where the apples complained of were at fault, and the pack could be improved. We therefore request and petition that arrangements be made for inspection of apples at the port of shipment."

Roderick Cameron Returned
Mr. Roderick Cameron, late Superintendent of Parks for the City of Toronto, and now landscape expert for the Auburn Nurseries, Limited, has returned from an extensive trip on the Continent and Great Britain. Some twenty-four years ago Mr. Cameron became associated with the late Mr. Wilson, of Queen Victoria Park, Niagara Falls, and together they succeeded in making the Park one of the beauty spots of Canada. Mr. Cameron has brought from the Continent and Great Britain an exceptionally fine collection of flowers, shrubby and conifers. The collections include a full line of paeonies, of some two hundred and fifty sorts, lilacs, spiraeas, clox and especially herbaceous perennials and roses. Mr. Cameron will devote his time to the landscape department of the



Ward Spray Pumps

When the time comes to spray, you MUST do it then or never. A few days or a week's delay may mean the loss of hundreds or even thousands of dollars. You absolutely cannot afford to take chances on a spray pump that may get out of order just at the critical time. You want the strongest, surest, most reliable pump you can get even if it does cost a few dollars more than the other kind. The name Ward on a spray pump is the mark of absolute reliability and highest efficiency. Honestly built of the best materials. Capable of high pressure to give a fine mist spray. All working parts made of brass, insuring long life to the outfit. Perfectly constructed to handle all kinds of mixtures and work right under any and all reasonable conditions.



TYPES FOR EVERY NEED—Barrel outfits, double action hand pumps and power outfits of various capacities. We can supply pumps only, or outfit complete ready for use, including tank, wagon and accessories. In the Ward line you'll find the very pump that best meets your needs.

Write Today for this Free Catalog and Spraying Guide

The buying of a spray pump is too important a proposition to go into blindly. Know which is best before you buy. Drop us a line now for our free book which gives complete information about Ward Pumps and is a valuable guide to profitable spraying.

WARD PUMP COMPANY 511 So. Water Street Rockford, Ill.



SMALL FRUIT PLANTS

Gooseberries—Josselyn! Josselyn!! Red Jacket, Downing, Pearl, Houghton, Curran!
Raspberries—Herbert! Herbert!! Herbert!!! Guthbert, Marlboro, Franklin's Orange, Golden Queen, Strawberry.
Garden Roots—Asparagus, Rhubarb. Write for Catalogue.

Fleming, Nurseryman, Box 54, Owen Sound, Ont.

FROM WINTRY NORTHERN BLASTS TO SUNNY SOUTHERN CLIMES

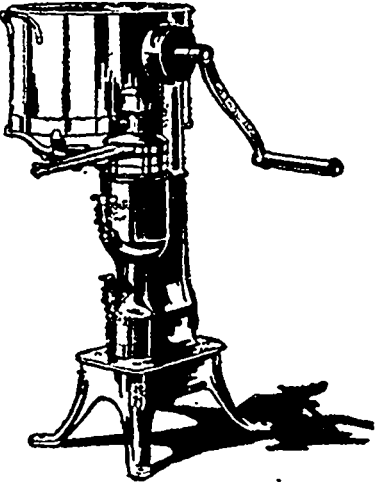
Farming, Stock Raising and Fruit Growing are highly profitable in Virginia and North Carolina. Because of mild winters, long growing seasons, good markets and high prices for farm produce, \$15.00 an acre and up buys improved farms and old plantations near railroad stations on the Norfolk & Western Railway. Abundant rainfall, modern schools, good roads, low priced lands and best social conditions, make the New South very attractive. Write for our beautifully illustrated magazine, maps, excursion rates, timetables and other literature.

F. H. LaBaume
Agr'l Agent
121 N. & W. Ry. Bldg
ROANOKE, VA.

Pay the Price of the Best —No More—No Less

ECONOMY in buying a cream separator does not begin nor end with the price. You may easily pay too little and just as easily pay too much.

Learn the difference between gears that work without back lash and those that have it or develop it soon. Learn the importance of a self-adjusting bowl spindle bearing, and learn to know one when you see it. Discover the difference between brass and phosphor bronze as a material for bearings. Buy a separator with an oiling system that cannot fail you even for a few minutes of a run. When you find the separator that comes up to your specifications—one that with proper care will do good work for a long time—buy it. You will find it marked



I H C Cream Separator Dairymaid or Bluebell

I H C cream separators turn easily and they are easy to run because the working parts are accurately made and the bearings are sufficiently lubricated. The shafts and spindle are the strongest used in any separator. The shaft and spindle bearings are supported by the frame, but have no contact with it. The contact is between the steel spindles and phosphor bronze bushings. The gears are spirally cut so that there is no lost motion between them. They are entirely protected from grit and milk, and at the same time are easily accessible for cleaning.

See the I H C local agent and ask him to give you a demonstration of the efficiency of the machine as a skimmer and to go over with you and explain carefully all of its good, mechanical points. You can get catalogues and full information from him, or, write the nearest branch house.

CANADIAN BRANCH HOUSES

International Harvester Company of Canada, Ltd

(Incorporated)

At Brandon, Calgary, Edmonton, Estevan, Hamilton, Lethbridge, London, Montreal, North Battleford, Ottawa, Quebec, Regina, Saskatoon, St. John, Winnipeg, Yorkton



Why Goulds Sprayers Are Best



The bigger and better crop-producing qualities of good spraying are appreciated by all keen fruit men. Now the question is, "Which is the best Sprayer?" To spray thoroughly—to get every crack and crevice, leaf and limb uniformly sprayed—you need a sprayer that is practical, easy to use, does the work quickly, never gets "out of whack" and lasts a long time. All of these qualities are found only in a

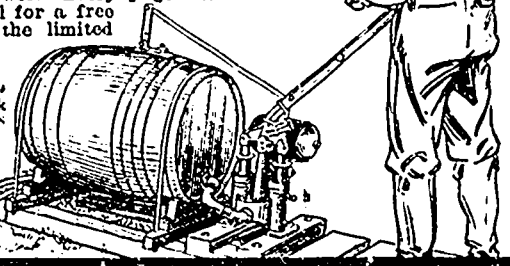
GOULD'S RELIABLE SPRAYER

Spraying the Goulds way is the result of years of "know how." The pump works easily, the nozzles spread the liquid all over the tree or plant without clogging, and the agitators in the barrel keep the solution well mixed. Spraying with a Goulds Reliable Sprayer is easy, quick work, and twice as effective as any other kind.

GET OUR FREE SPRAY BOOK

Our Book, "How to Spray—When to Spray—Which Sprayer to Use," contains a wealth of information for every fruit grower. Every page will interest you. Drop a postal for a free copy NOW—while the limited edition lasts.

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17 W. Fall St.,
Seneca Falls, New York
Largest Manufacturers
of Pumps for Every
Purpose.



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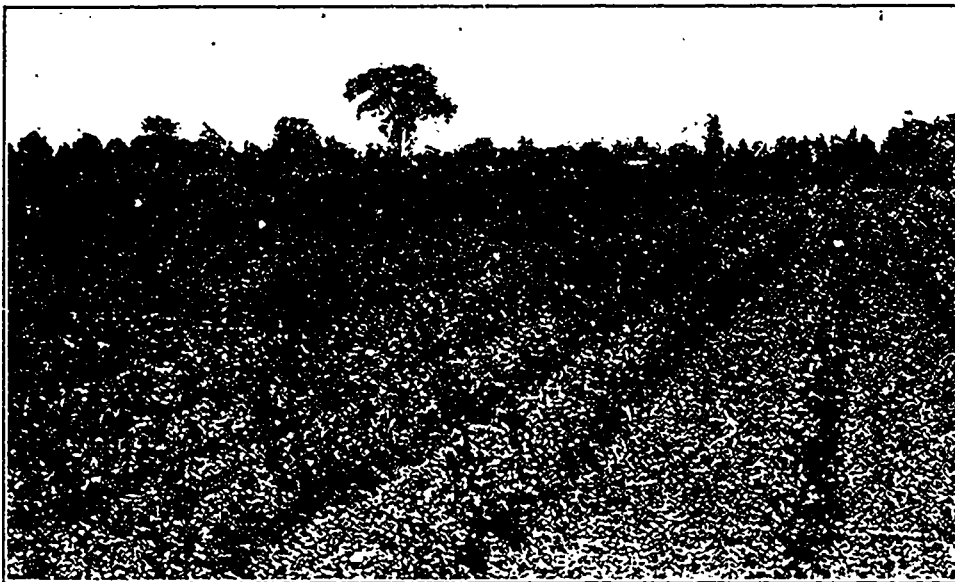
Editor, The Canadian Horticulturist. I have pleasure in sending you one dollar to cover a two years' subscription for your most excellent journal, commencing with your Christmas number which I most particularly desire to possess.

For a long time now, I and others interested have been in the habit when visiting the City (that is London) of calling at one or the other of the Canadian offices with the object of looking over and as a rule picking out a few "tips" from your paper, practically unobtainable from local publications.

I may say that I have just returned from a five weeks' visit of inspection of various districts in Canada, taken with the object of transferring my family and one or two others in the early spring to your country. After spending some time visiting the well advertised districts, such as Niagara I finally fixed upon Bleinheim, Essex County, Ontario, which to my mind offers greater advantages than anywhere else visited, including British Columbia.

With best wishes for the continued success of The Canadian Horticulturist.

Yours faithfully,
James Wilson.



CORNER OF CENTRAL NURSERIES

We ship direct to planter with good results. 53rd Year. If interested in Trees, Vines, Ornamentals, Shrubs, Roses, etc., send for our Free Illustrated Priced Catalog. It tells you about our Successful and Reliable Stock. **NO AGENTS**

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125-Egg Incubator and Brooder Both For \$13.75

If ordered together we send both machines for only \$13.75 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 \$13.75 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.

FREIGHT AND DUTY PAID



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STRAWBERRY PLANTS FOR SALE

Amanda, Paul Jones, Lea, King Edward, Charles L., Norwood, Arnout, Ekey, Mascot, Meteor, Twilley and all the old standards—Herbert Raspberry and Asparagus Plants.—Send for Price List

E. B. STEVENSON, "Maple Bank,"
270 Grange Street, - GUELPH, Ont.

Northern Grown Trees

Apple, Pear, Plum, Cherry, Peach, Grapes, Small Fruits, Ornamentals, Evergreens, Roses, Flowering Shrubs, Oilmbers, Etc. Everything in the Nursery line. Catalogue free. Send list of your wants for prices.

J. Wismer, Nurseryman,
Port Elgin, Ont.

Pronunciation of Plant Names

The following pronunciations of common plant names have been adopted by both the Ontario and Canadian Horticultural Associations. They discard many that are commonly used, and are of interest to all lovers of flowers:

Agave: a-gá-ve (a in second syllable as in art), not ag'-ave.

Aloe: al'-o-é, not al'o.

Arbutus: ar'bút-us, not ar-bút'-us

Aristolochia: ár-is-tol-ó-ki-a, not ár-is-tol-ó-chi-a.

Clematis: klem'-á-tis, not klem'-tis nor klem'-í-tis

Cyclamen: sík'-la-men, not sí-klá-men.

Cyperus: sí-pé-rus, not sí'-per-us.

Dahlia: dahl'-i-a (a in first syllable as in art), not dáy-le-a.

Deutzia: dóit-zi-a, not doot-zi-a.

Edelweiss: á'-del-vis, not idle-wise.

Galadivus: glád'-i-ó-lus, not glád'-i-lus nor glád'-i'-o-lus.

Gypsophila: gip-soft'-il-a, not gip-soft'-il-a

Hemerocallis: hé-mer-o-kal'-lis, not hé-mer-o-kal'-lis.

Hydrangea: hi-dran'-jé-a (a in second syllable as in arise), not hi-drán'-jé-a, nor hí-de'-a-range.

Kniphofia: ní-fó'-fi-a, not ní-fó'-fi-a

Kochia: kók'-i-a, not kó'sh-a.

Lonicera: lon-i-sér'-a, not lon-i-é-r-a

Nephrolepis: né-fro-lép'-is, not né-fro-lép'-is

Oenothera: é-no-thé'-ra, not é-no-thé'-ra

Papaver: pap'-á-ver, not pap'-á-ver

Scabiosa: ská-bi-ó'-sa, not skái-ó'-sa

Schizanthus: skiz-an'-thus, not skiz-an'-thus.

Vase: váze, not vanz, váce, no-váz

Viola: ví'-ó-la, not ví-ól'-a.

Weigelia: ví-, or wi-gé'-li-a, not wí-gé'-li-a.