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VOLUME 24, No. 3
\$1.00 a Year

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MARCH, 1916

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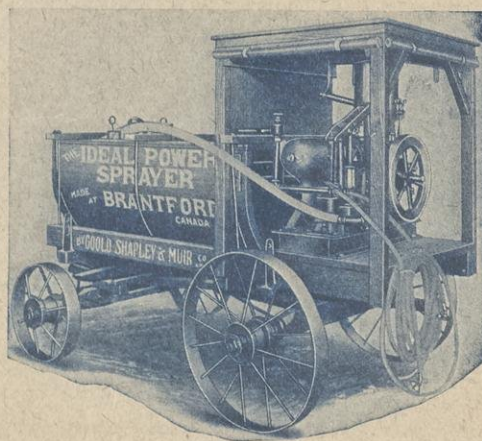
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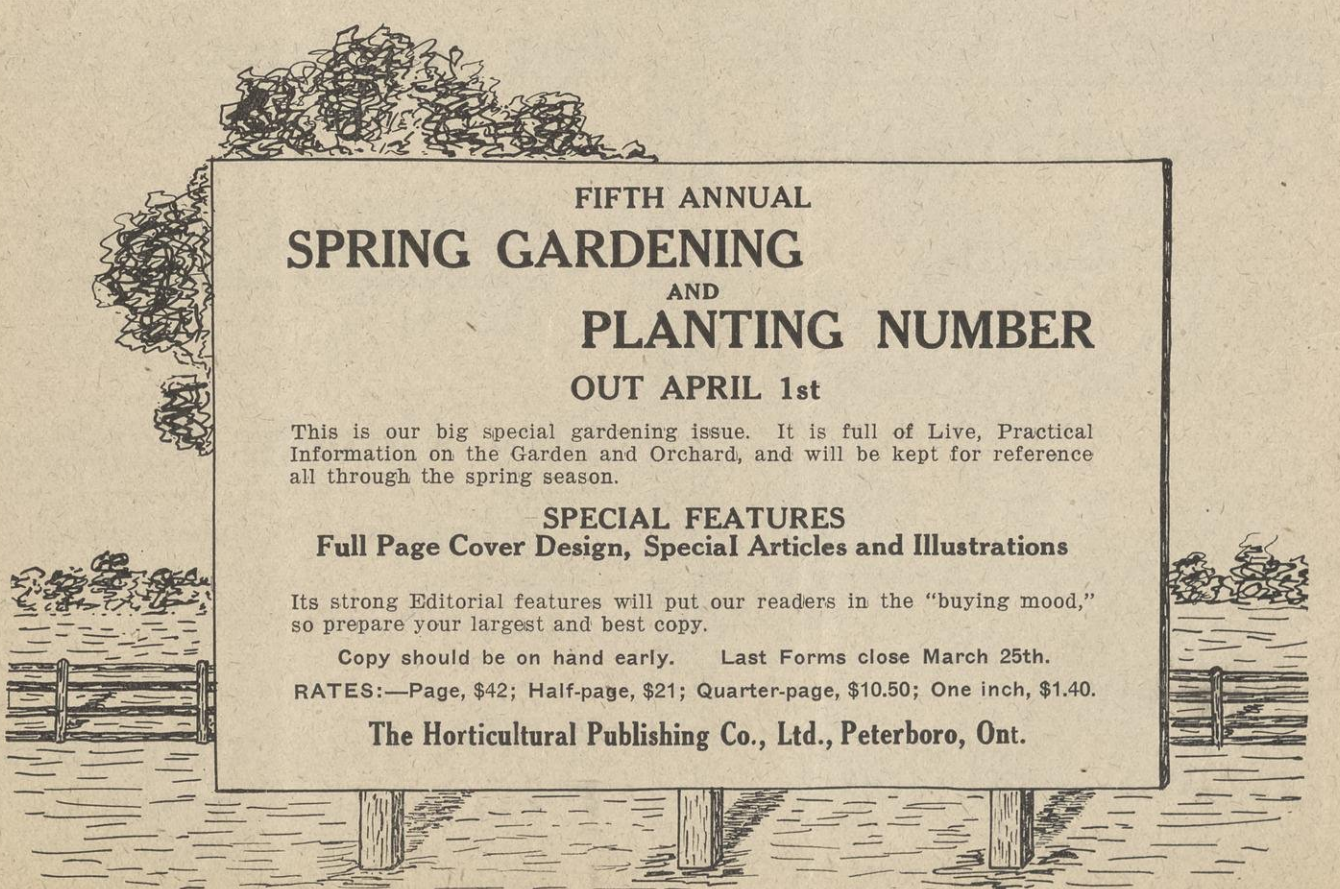
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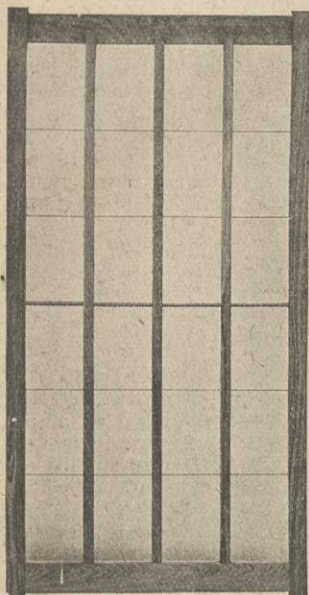
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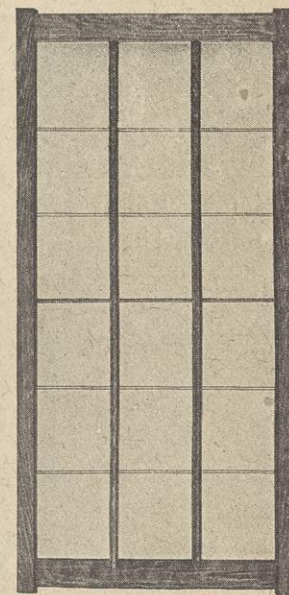
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CONTENTS FOR MARCH.

All Three Editions

Spraying Operations in an Ontario Orchard Cover

All Editions.

Seventeen Years' Experience in Fruit Growing, Jas. Marshall, Hamilton	53
The Production of Vegetables from Seed, A. J. Logsdail, B.S.A.	54
Problems of the Fruit Grower, S. J. T. Bush	55
Pruning Trees to Promote Production, M. B. Davis, B.S.A.	57
The Development and Propagation of the Lilac, John Dunbar	61
Ginseng Growing	62
Better Net Returns for Local Associations, A. J. Grant	68
Apples in Boxes and Barrels, C. W. Baxter	72
Precooling Tender Fruits, Edwin Smith, Grimsby	73
Shipping Immature Fruit, F. Carpenter	76
Poultry Yard	80

Fruit Edition Only.

Sucking Insects of the Apple, W. H. Brittain	59
March Reminders	60

Floral Edition Only.

Planning the Home Lot, F. E. Buck, B.S.A., Ottawa	59
Pruning Shrubs, H. E. Thatcher	60

Fruit and Floral Editions Only.

Starting Seeds in the Hot Bed, Henry Gibson	63
The Informal Planting of Home Grounds, Miss M. Yates	64
New Plants and Flowers, Wm. Hunt	65

Apicultural Edition Only.

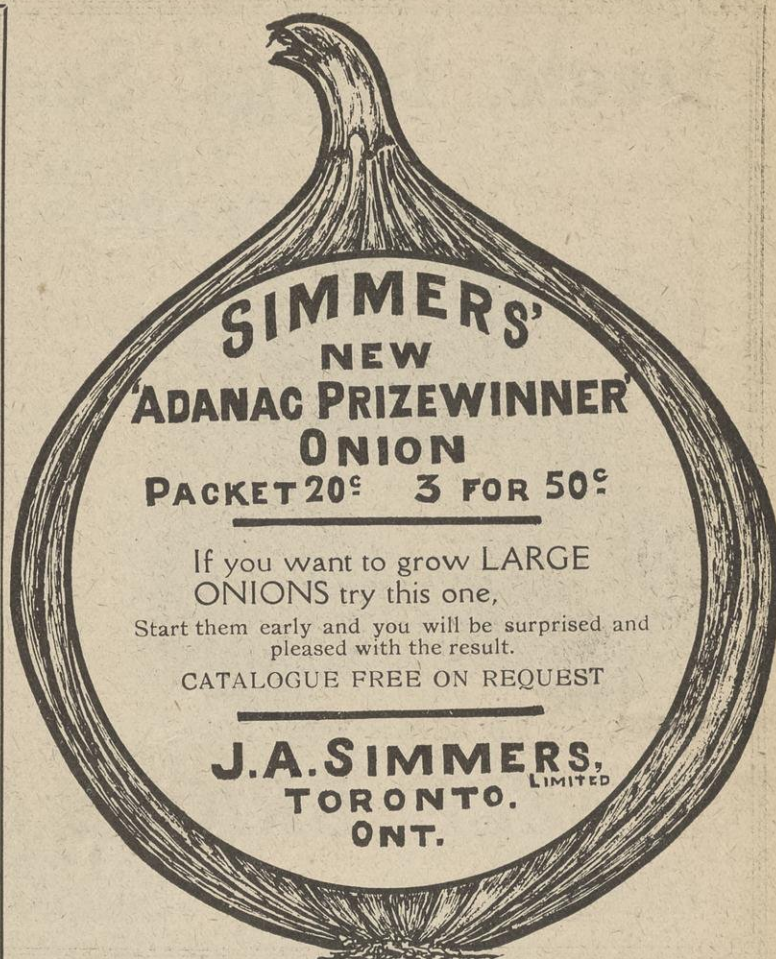
Spring Management in the North, Jas. M. Munro	63
Cleaning Up European Foul Brood, A. E. Crandall ..	64
The Apiary in Spring, F. W. L. Sladen	64
How Victoria County Bees Are Wintered, W. W. Webster	65
March in the Apiary, Morley Pettit	66
Manitoba Beekeepers' Convention	66
Protection Required Against Disease, Jas. Armstrong	67
Cooperative Experiments in Apiculture in 1915, Morley Pettit	67

General.

Editorial	66
Society Notes	67
Publishers' Desk	67

INDEX TO ADVERTISEMENTS

Baskets	69
Beekeepers' Supplies	70, 71, 72
Classified Advertisements	x.
Clocks	vii.
Cold Storage	73
Commission Merchants	80
Colonization	75
Cultivating Machinery	76, 78, 79
Education	
Engines	v.
Fences	77, 83
Fertilizers	iv., 75
Flower Pots	76
Furs	
Greenhouse Material	iv., 73, 83, viii., xii.
Household	
Irrigation Systems	78
Machinery	80, x.
Nursery Stock	iii., 73, 74, 75, 76, 77, 78, 81, 84, viii., ix.
Paint	84
Poultry Supplies	x.
Pruning Supplies	74 ix., xi.
Seeds, Plants and Bulbs.	iv., v., vi., 69, 74, 76, 78, 81, 84, viii.
Silo	viii.
Sprayers and Spraying Materials	ii., iii., vi., 69, 74, 76, 78, 80, 82, xi.
Stone Boat	76



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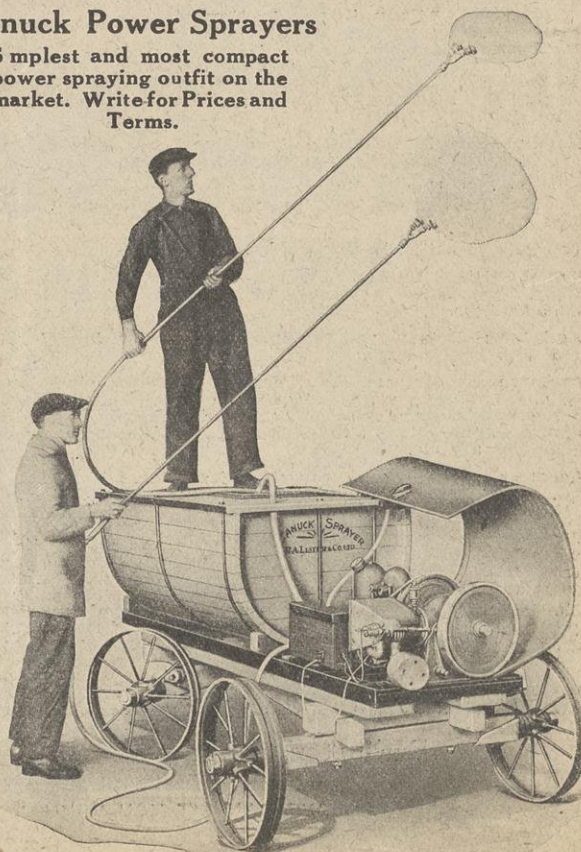
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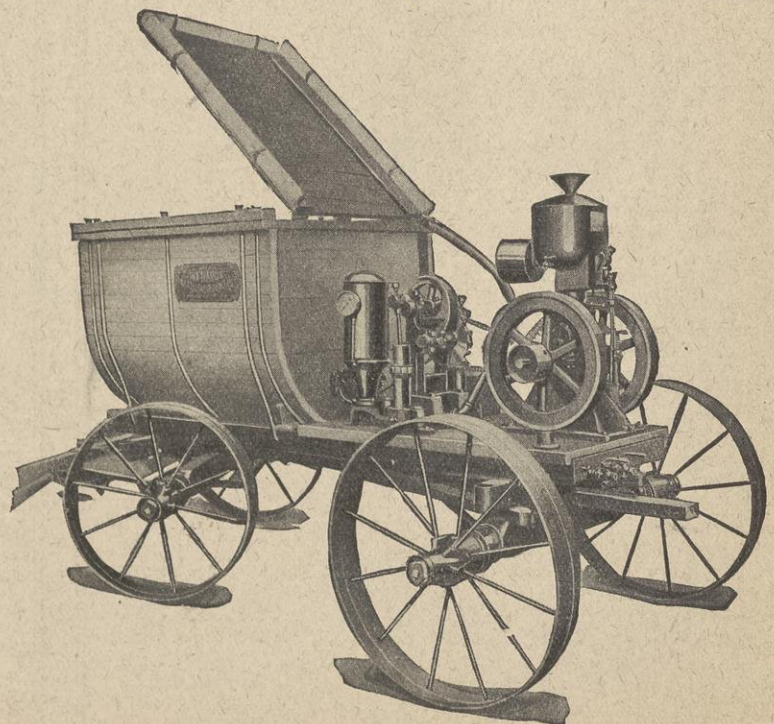
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Vol. 26

PETERBORO, MARCH, 1916

No. 3

Seventeen Years' Experience in Peach Growing

James Marshall, Hamilton, Ont.

FOR seventeen years I have been experimenting in peach culture.

The farmers in this neighborhood who had attempted to raise peach trees did not have much success. The

ing noticed this, I gradually kept planting trees each year on higher land, and now I have my peach orchards planted on the highest fields on the farm.

The last trees I planted were put out in the years 1912 and 1913 in the spring of each year. The rows are five sixteenths of a mile long, north and south, and one-fourth of a mile long, east and west. The trees are planted sixteen feet by twenty-two feet apart. If I were planting again I would plant them eighteen by twenty-two feet apart, as the young trees are now closing in some, where sixteen feet apart, and we require plenty of room for spraying purposes.

The site for a peach orchard should be within three or four miles from a large lake, which does not freeze over. If possible, have it on an elevation, and to the south of the lake, rather than to the north of it, as the severity of the cold is ameliorated by the northerly winds passing over the open water. In the Niagara Peninsula, we have two lakes, Ontario and Erie, one to the north and the other south. They are a little over thirty miles apart. I read in a fruit paper that peach trees should not be planted at more than an elevation of two hundred feet above the level of a

lake. I beg to differ with this, as our elevation of orchard is probably nearly five hundred feet above the level of Lake Ontario, and the trees here that do the best are those on the highest hills.

Many growers say that sandy or gravelly soil is the best for a peach orchard. These soils generally afford good natural drainage, while many clay soils have a wet subsoil. If sandy or gravelly soils have a wet subsoil, peach trees will not thrive there. Underdraining two and one-half or three feet deep is not sufficient for peach trees, as the roots will strike into the moist soil, which is injurious. If any person is determined to grow peach trees where there is a wet subsoil, they might possibly do so by underdraining about seven feet deep, and placing the drains not too far apart, provided that the site is favorable in other respects. My experience has been with clay soil, fairly heavy, there being no sandy soil on the farm. Most of our trees are planted on a limestone ridge, the trees doing well with two feet of soil on rock, where there are natural drains or sink-holes. Where the soil is deep, and rather wet, we make deep underdrains, and run the water to sink-holes. We also plow up



A one-year-old St. John peach tree in bearing in the orchard of Jas. Marshall, Hamilton, Ont.

trees did not live long, and the growers became discouraged. Thus when I started there were scarcely any peach trees being planted in this section.

The first thing to consider in peach growing is to secure a suitable site for the orchard. If the trees are planted in low-lying land, where fog and heavy dew is seen in the mornings, the site is not suitable, no matter how rich the soil is. The trees may grow fast and rank, but when three or four years planted, they are likely to die. I made this mistake seventeen years ago last spring, and the only peach trees that are alive yet and bearing well are those which were planted on the higher land, having a slope towards the north. Hav-



A portion of the peach orchard of Jas. Marshall, Hamilton, Ont.



A well-loaded Triumph peach tree in the orchard of Jas. Marshall, Hamilton, Ont.

each and throw the soil towards the trees, which affords better surface drainage, as it is injurious to the trees for the water to lie around them.

I contend that peach trees thrive better where they are on an elevation, with a deep gorge, mountain face, or a large tract of land lying down much lower than the orchard, as the cold, frosty, night air runs down off the ridges and leaves the warmer air on the higher land. Any person may notice this condition when driving through a hilly country at night during most of the year.

There are about 5,500 peach trees in one of my orchards, and about 500 pear, plum and cherry trees in one corner, where the land is low, and sloping towards the south, there being a little over 6,000 trees in the orchard. All told, I have about 11,000 trees. Some early kinds of peaches, such as May Flower, Sneed Triumph, Admiral Dewey, Belle-of-Georgia, and others, bear well when planted two or three years. Early Crawford's, and those of the Crawford type, bear well when planted four or five years.

The spring frosts do little or no injury to the peach trees or fruit buds. The time when they are injured is in the winter, chiefly in February, when we have low temperatures. Ten or twelve degrees below zero does not seem

to injure them, and even if it goes fifteen degrees below, we may have a good crop; but in 1914, when the temperature was twenty degrees below zero, the peach crop was a failure, and the only failure in eight years.

We allow corn, or even weeds, to grow in the orchard the latter part of the summer, in order to ripen up the trees and check the later growth. (We do not grow corn or other produce after trees begin to bear.) This hardens and prepares the trees for winter, as intense frost and dry weather in winter will injure any late or tender growth. We nearly always plow down weeds or grassy growth late in the fall and do not leave a cover crop to protect the trees, as it is only a harbor for mice. The plowing of soil prevents root freezing, as it breaks the connection between the frosty atmosphere and the subsoil, and the air spaces caused by plowing also prevent the frost from injuring the roots. I very seldom have trees winter-killed, in fact, only one year when I did

not plow in the fall, and there not being much snow, the hard clay ground froze deeply.

Mice often girdle fruit trees in the winter under the snow. Some recommend tramping the snow firmly around the trees after every snowstorm, but I consider it an absurd proposition. It might do where a person has only a few trees, but if there were on an average fourteen snowstorms each winter, and if a person walked fast and tramped the snow hard after each snowstorm in an orchard such as mine, it would take fifty-six days to do the tramping, and the mice would very likely often get ahead of the trampler. It is a good way to tar-paper around the trunk of each tree, but I think it is much better to take a spade and bank the soil firmly around each tree in the fall, soon enough to let the soil settle firmly around tree. This also prevents water from standing around trees, and it can be worked down in the spring and thus cover weeds or grass.

The Production of Vegetables from Seed*

A. J. Logsday, B.S.A., Experimental Farm, Ottawa

IN growing the seed of root crops, care should be taken to select roots that are uniform in shape, typical of the variety that they represent, and in sound mature condition. With such roots as turnip, it is advisable to twist rather than cut off the tops when storing, for by cutting off the tops too near the crown of the root, one is liable to remove the eyes from which the flower shoots grow in the spring. With beets and mangels this is not so likely to occur, as the eyes are deeply set. Such roots, after they have been selected, can be stored in either a root cellar or pit. The pit is often the more convenient, as it can be made in a corner of the root field.

In pitting roots, the pit should be so constructed as to afford a dry bottom, good drainage, and good ventilation. Successive layers of straw and soil should cover the roots. Straw drafts along the top of the pit should be made for ventilation, and such precautions as possible to keep rats and mice from making the pit their winter quarters.

Seed of certain market garden crops, such as the seed of Paris Golden Yellow Celery, is now quoted at between twenty and thirty dollars a pound. Such is only an example of the present market quotation of many of our seeds. Judging by the experimental work in our small trial lots during the past un-

favorable season at Ottawa, it seems to me that there is an excellent opening for many a man with a good practical knowledge of market gardening and a realization of the essential factors in seed production to initiate and ultimately build up an exceedingly profitable business in home seed production.

Acclimatized seed produces better results, nine times out of ten, than similar seed introduced from distant countries. By the term of "seed" I refer strictly to seed, not to roots, scions or cuttings, though even in these instances there are many examples of the superiority of home-grown stock. The exception that I have in mind is that of potatoes, but a potato is nothing more or less than a root cutting.

Sweet corn is another crop that is particularly worthy of attention by Canadian growers. The majority of our sweet corn seed has been and is produced in areas to the south of us, which possess longer summer seasons than our own.

The continual importation of seed year by year excludes the possibility of ultimately acclimatizing and appreciably shortening the season of growth of these varieties. At the same time it also precludes the possibility of producing earlier maturing varieties than are generally found on the market.

Sweet corn seed has been successfully matured, improved, and selected at Ottawa for a number of years. If this

*A paper read at the last annual convention held in Toronto of the Ontario Vegetable Growers' Association.

can be done as far north as Ottawa with our comparatively short summers, similar work can be carried on throughout the province of Ontario, and if the growers would take this matter up, even in a small experimental way, the old adage, "Many hands make light work," would produce wonderful results within a few years.

Owing to the quantity of field corn grown for general horticultural purposes, the areas selected for the growing of sweet corn seed should be distant from field corn by about four to five hundred yards, as corn intercrosses very readily, owing to the fact that it produces enormous quantities of light, powdery pollen that is carried by the wind. Sweet corn that has been pollinated by field corn can be readily isolated in the ear of grain, but such segregation of seed greatly increases the cost of production and tends to introduce factors that will ultimately destroy the pure type of the variety.

Corn can be covered with light factory cotton, provided the screens are not placed too close around the plants, affording a fairly free circulation of

air; but if the grade of cotton be too heavy or the enclosed corn too confined, the pollen seems to lose its vitality, and practically no seed is produced. At Ottawa, seed has been successfully secured in breeding cages made of a light grade of cotton, but in a number of instances no seed at all was secured when the grade of the cotton was a trifle too heavy.

Another crop from which a considerable quantity of seed has already been saved (but the amount might easily be doubled or trebled) is that of the tomato crop. Tomato seed is easily extracted from ripe mature fruits by passing the pulp through a quarter-inch mesh screen, thereby removing the coarse cores and skin and breaking up the texture of the pulp containing the seed. If the pulp is then stored in glass bottles until slight fermentation has set in, the seed can be cleanly separated from this pulp by washing it with a stream of water on a screen of 1-12-inch mesh. The size of this mesh is that of the ordinary netting used on fly screen doors, and is large enough to hold the seed on the top of the screen.

For thirty years we have been favored and protected, and during all that time we have had very few failures of a crop, and usually have received good prices for our fruit, but the past season brought to many, particularly peach growers, a rude awakening, and removed large quantities of conceit from some who had become convinced from continued prosperity that their success was wholly due to their individual wisdom.

There are many "problems" confronting the fruit-grower, but we have reached the point in our experience now where the one great problem is how to raise fruit at a profit. Heretofore it has been a question of how much profit, but the good old days are past and gone, and we are face to face with the problem of making any profit at all. Very few, if any, peach growers in the United States made any money last year, and hundreds of them would have actually been ahead of the game if they had not harvested a peach. Millions of bushels of peaches rotted on the trees in the United States last season, and the situation will be the same next fall providing there is a full crop in all sections. Our own hope as peach growers now lies in the activities of Jack Frost and disease. Three years ago I told the peach growers of New York just what would happen the first time we had a full crop in all sections, and the past season saw the prophecy fulfilled with a vengeance.

The peach business has been overdone. For the past ten or fifteen years the nurserymen have been unable to fill their orders for trees. It having been discovered that the Elberta peach would live and thrive to a greater or

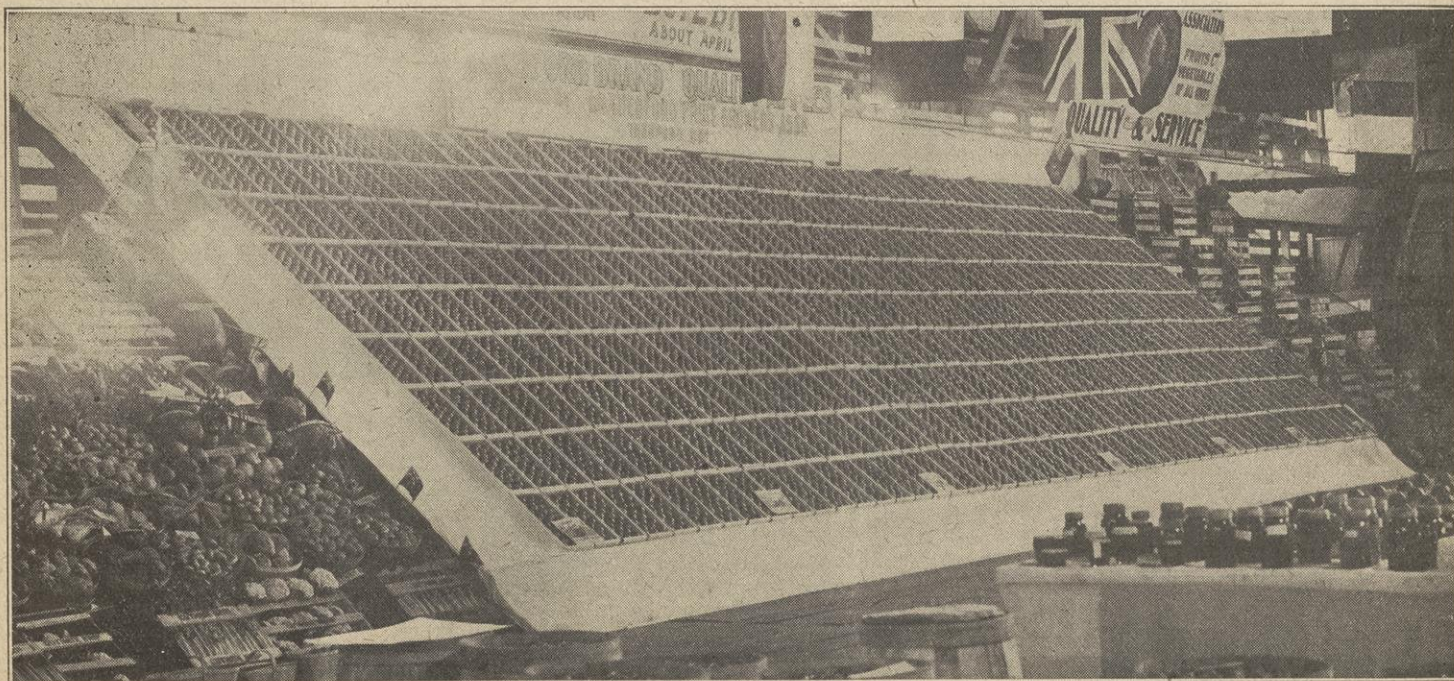
Problems of the Fruit Grower

Seth J. T. Bush, Morton, N.Y.

I HAVE been engaged in raising fruit commercially for thirty years, and during that time have gathered some information on the subject of more or less value, but the older I grow the more convinced I become of the fact that a man can learn something

every day. Whatever success I may have attained in fruit-growing has been due largely to the fact that my orchards are located along the southern shore of Lake Ontario, where soil and climatic conditions are well-nigh perfect, and where the good old lake tempers the wintry wind to the shorn trees and stays the icy finger of Jack Frost.

*Extract from an address delivered last month at the annual convention of the Niagara District Fruit Growers' Association.



An exhibit of apples made by the Thedford Fruit Growers' Association last November at the Lambton County Horticultural Exhibition.



Pruning operations in a plum orchard in the Niagara District.

less degree on almost any kind of soil, it has been planted by the million in almost every state in the United States as well as in Canada, with the result that with a full crop over the country, the markets are glutted continuously from July to November.

It is more than a question of distribution now; it is equally a question of high grade, standardized sorting and packing—of the most efficient cooperation among the growers—central packing houses economically operated—precooling and first class refrigeration and transportation—in other words, the application of the very best up-to-date business methods to our business from start to finish.

I would hesitate to advise anyone to plant peach trees. The day of big profits is past and gone. Occasionally, if from 50% to 75% of the crop happens to be destroyed throughout the sections of greatest production, we may get good prices, but it is a gamble, pure and simple, from now on, and to many of us it is but a part of life's great lesson; we prospered year after year, until we got the idea that we were pretty smart—taking to ourselves all the credit, when, as a matter of fact, our good fortune was being handed to us on a platter, so to speak, by a kind Providence.

From now on it looks like "the survival of the fittest."

The situation is going to be helped more or less by the expected decided diminution in fresh plantings, which I hope will really amount to a complete stoppage, and by the fact that many orchards are going out from age, while many others will be either badly neglected or cut down.

Thousands of peach trees were cut down in New York last fall, and I un-

derstand that the same was true in several other states, and the old expression, "the more the merrier," applies very nicely here.

It is a strange paradox that while hundreds of cars of fine peaches last season failed to return freight charges to the grower, and hundreds of thousands of half-bushel baskets of fine fruit were sold in the large markets for from 15c. to 25c. per basket, and in some cases the fruit actually got into the five and ten cent stores, some of my friends in Boston, New York and other cities were unable to secure any first-class peaches from their grocers for less than \$1.00 to \$1.25 a basket. When such a thing is possible in such a season as the last, there is an Ethiopian in the wood pile.

I expect to see these conditions confront the apple and sour cherry growers, as these fruits have been planted everywhere, and far more extensively than the peach.

You will probably see an apple crop produced in the United States within the next ten years, so large that it will be difficult to give the fruit away, to say nothing of selling it at prices that will permit the grower to break even on his expense of production and harvest. I am hoping that this will be within the next ten years, but it is mighty likely to occur within the next five.

Look at the apple situation. All the information obtainable last August and September indicated that the apple crop of the United States would not exceed one-half the crop of the previous year, which was a very large one, and growers and speculators acted accordingly, with the result that high prices were paid and consumption thereby checked instead of being en-

couraged. On December first everyone was astonished to find that there were one million more barrels of apples in cold storage in the United States than there were the year before, and that instead of our having half a crop we actually had a bumper crop as compared with former years.

This situation is explained, at least in part, by the production of the young orchards, running from a peck to a barrel to the tree, which were not given serious consideration, if they were considered at all, in making up the estimates. There are millions of these young trees, and they are going to "have a lot to say" about the volume of the crop every year from now on.

The fact that we are cut off from any export business this year has been a serious handicap, as had that outlet been open as formerly, a large volume of the supply could have been disposed of through that channel. Also, had the true state of affairs with relation to the size of the crop been known last fall the movement would have been started at a much lower price with the result that the crop would have moved rapidly into consumption at reasonable prices, and we would not now be confronted with the calamitous situation of the cold storage plants being from fifty per cent. to seventy-five per cent. full of apples at this late date.

You may think that I am a pessimist, pure and simple, but I do not wish to be so regarded. I cannot conscientiously refrain from speaking the plain truth and warning innocent people who are being misled and victimized by the hundreds of attractive pictures in the newspapers and magazines portraying the easy life and overflowing purse of the average fruit-grower.

The only inference to be drawn from these glowing accounts of farm life in general, and fruit-growing in particular, is that the whole business is a "cinch"—that all that is needed is a few acres of land somewhere, sufficient money to purchase and plant the trees, and patience to wait two or three years before they can begin drawing cheques. The "cheque drawing" time always comes sure enough, but to the majority it will be a long road to "big profits."

Cut out dead wood in fruit and forest trees now.

Go over the plum trees and cut out all black knot.

Some pruning may be done on warm days late this month.

Either cut off any cedar apples on trees near the orchard or cut out the trees.

Piece grafting of apples and some ornamental stock may be done late in March.

Pruning Trees to Promote Production*

M. B. Davis, B.S.A., Experimental Farm, Ottawa

A consideration of methods of pruning divides itself into three main divisions, first, the pruning and training of the young tree before it reaches bearing age; second, the pruning treatment of the bearing tree, and third, the best treatment for many of the older, thick planted, high tree orchards that are so common in many districts to-day.

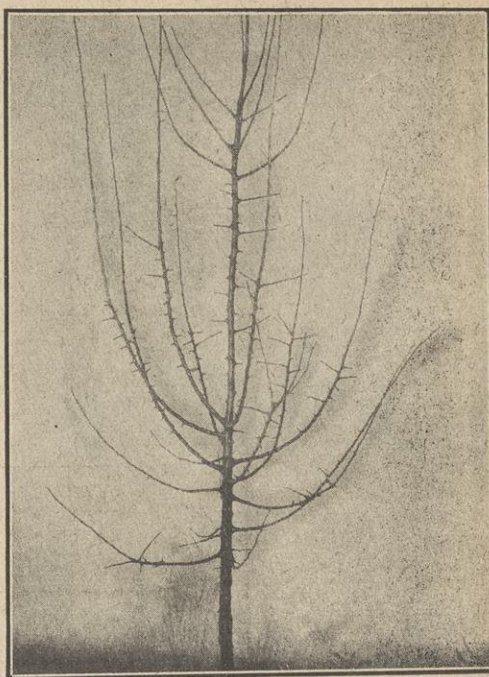
It may be well, first, if we ask ourselves why we prune, for there are those who contend that pruning is an injury rather than a help. On the other hand, there are those who go to the other extreme and think that butchering their trees is the only treatment worth while.

We prune primarily to obtain better fruit and in so far as our pruning practices help along that one point, just so far is our pruning a success. We do not, or at least should not, prune to obtain a beautiful or sightly tree. A tree possessing beauty alone does not add dollars to our pockets, so that look at it as you may we prune only to obtain better fruit. If left alone, with plenty of room in which to grow, a tree will, all other things being favorable, produce an abundant quantity of fruit, for nature will see to it that her pruning is sufficient to keep the tree in excellent bearing condition, but what of the quality? The quality will invariably be of a low grade, for nature, when it produced the apple did not have

man in mind, but merely produced the fruit as a means of enclosing the seeds in an attractive little parcel which would nurture and protect them until carried and scattered over the face of the earth by some fruit loving animal. Thus we come to the ultimate conclusion that we prune only to obtain better fruit from our trees.

There is no operation in the orchard which requires greater care or greater thought and study; there is no operation which in the long run has as much to do with orchard profits as pruning. I sometimes think that we fruit growers have gone clean mad over spraying and some other operations and in our madness have forgotten the first and fundamental road to success, proper pruning.

The different types of trees that we may grow may be roughly divided into three classes. One is the pyramidal form, another is the open centres, and the one that I recommend for Nova Scotia conditions is a combination of the two. The first or pyramidal form, which consists of a central leader, with branches radiating off from it, gives too large and too high a tree for your conditions. It shuts out too much sunlight, thus making the production of clean, well colored fruit a more difficult task than it should be. Now there is probably no fruit section under the sun where all the available sunlight possible is needed more than in the two fruit growing valleys of Nova Scotia; furthermore, there are few sec-



This shows a centre leader type of tree.

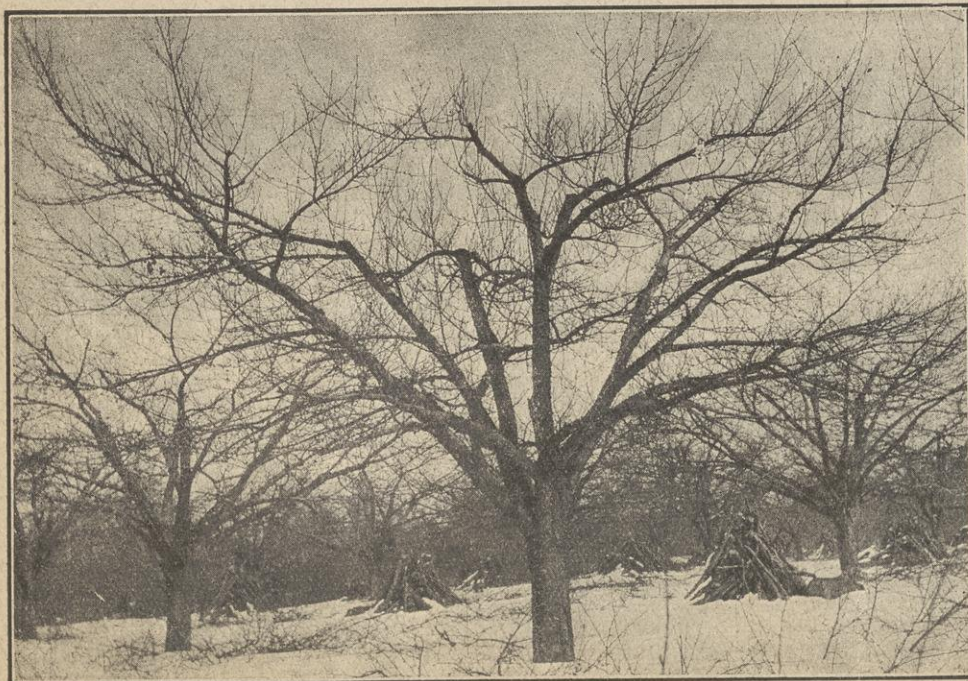
tions where insect pests, and fungous diseases naturally thrive any better than in your climate, so that the first factor in directing the shape of the tree is sanitation, and the central leader type cannot be called a sanitary type of tree. The open centre tree, while possessing admirable sanitary qualities, does not possess the strength of the central leader type, so that a combination of the two is more desirable.

The combination type consists in allowing the central leader to grow for the first year until five or six good branches arranged in a whorl and well spaced can be selected to form the framework of the tree.

By well spacing these scaffold limbs the tree is stronger than if all the limbs should arise from a small area where they would each be pulling against the other and would break down under heavy winds or heavy loads of fruit. The central leader is not allowed to grow to any great height, so that you have a type with the combined advantages of the pyramidal form and the open centre and with their objections eliminated.

Having decided on the form our tree shall take we are now ready to follow the pruning, year by year. The first year, or the year the tree is set out, it will be necessary to head back all branches in order to give the roots an opportunity to get a hold and to make our trees stocky instead of long and willowy. In recent experiments conducted by the Station at Kentville, trees cut back when planted made a growth of 4.82 inches the first year and twenty inches the second, while trees not headed at all made a growth of one inch the first year and only 2.4 inches the second year.

*Extract from a paper read at the recent annual convention of the Nova Scotia Fruit Growers' Association.



This Northern Spy tree was dehorned two years before this photograph was secured. Note how the cuts were made and the new growth and suckers forming on barren arms.



Wealthy apple trees not pruned at planting time. This is a good way to get trees with long barren arms.

During the first two years of a tree's growth prune for wood. This adds to the importance of this first cutting back. To enable us to form a good, strong, well-balanced head we must have abundant wood growth and pruning during the first four or five years should be directed towards that end. After that age our pruning practices are radically changed.

In heading back, head back the strongest branches the most and the weakest the least, in order to give a correct balance to the tree. This may be contrary to the popular opinion, but that is because popular opinion has confused the results of heading back a tree as a whole with the results from heading back separate branches.

This will probably be about all the pruning required the first year, although the tree should be looked at during the latter part of June, and if any branch is growing at the expense of the rest, it should be nipped back, bearing in mind the one aim, to get a stocky and well-balanced growth to select from. The first real pruning to our newly-planted orchard comes in the second spring.

As the tree is to be the modified leader type, it is pruned so that the central branch will maintain the lead, and five other branches at most will be selected, as previously stated. All other branches are removed and the five selected branches are cut back a considerable distance, cutting the weaker ones the least. As these main branches will probably have some laterals on them, it is advisable to remove these at this time.

This second year much can generally be gained by adopting a system of summer pruning and continuing both summer and spring pruning for a number of years. By spreading the pruning over two periods like this, the shock to the tree is at no time excessively great, so that it is more easy to maintain a correct balance. Furthermore, a whole season can often be gained by

summer pruning. Early in summer the branches cut back in the spring will have put forward considerable growth. As soon as this growth has reached a stage where laterals can be spaced on it, pinch back the branches and you will thus gain a season.

It is a common practice to let the terminal growths grow until the following spring, when it is found necessary to remove, say, a foot or more of new wood. This means a waste of energy, for you could have cut back to that same point in summer and would probably only have had to cut off six inches or so of new wood. The idea is to economize in the energy of the tree and relegate as little of it as possible to the brush pile, thus conserving it for use by the tree itself and incidentally gaining a season in your pruning. By the following spring each of the branches pinched back in summer will probably have a number of laterals attached to them. All these laterals but one for each main branch are removed,



Wealthy apple trees cut back at planting time. This induces laterals and a stocky growth.

thus leaving twice as many branches as there were the previous spring. Select, of course, the best spaced and strongest branches in every case.

In selecting these laterals make sure that the lateral is not cut the same length as the main branch, or the result will be weakened crotches, for if lateral and main branch both bear equal quantities of fruit one will be pulling against the other. On the other hand, if one is large and stronger the weaker will have to yield to its pull and no strain at all be placed on the crotch.

We now arrive at the summer of the third year after planting, and as the trees are well established and in good condition, a considerable amount of new wood should be put forth. This new growth is again cut back, the same as the previous year and new laterals thus forced out. In this way another season is gained by summer pruning practices and we arrive at the fourth spring after planting with a strong, stocky tree containing well spaced and well balanced lateral branches. This

spring it will only be necessary to clip back too long or rangy laterals and thin out the undesirable and cross branches from the trees.

During the summer little pruning should be done, but attention must be paid to too strong growing branches and laterals, suppressing the strong to give the weaker an opportunity to develop. This practice of milder cutting back and thinning out both spring and summer is followed until the tree reaches the age where it should come into bearing. This age varies, of course, with the variety and the locality. Our idea up to the present has been to prune for wood growth, now our procedure changes and we prune for fruit. The mistake is often made by growers of continuing the same practices during the bearing age, as they did during the frame forming period, thinking that the methods which have given them such fine and shapely trees should certainly give them fruit, but such is not the case.

A variety like Duchess or Wagener can stand more cutting back at this stage than a variety like Gravenstein or King; the former being weak growers, tend to heavy and early fruiting, and the latter being vigorous growers tend more to wood production. Generally speaking, however, the spring pruning should merely consist of removing cross branches, needless branches and cutting back long, barren, terminal growths, where laterals are needed, but no regular system of unrestricted heading back should be adopted. This should be supplemented by summer pruning to induce fruitfulness, especially in the varieties which are shy bearers and which take a long time to come into bearing.

Spraying Suggestions

Don't think a week earlier or later than the date recommended is just as good.

Don't think that spraying alone will insure good fruit; pruning and cultivation are equally important.

Don't apply Bordeaux mixture in wet weather, for it is liable to russet the fruit.

Don't overspray. An even coating should be left on the fruit and foliage, any material which runs off does no good.

Don't expect results if the work is not thoroughly done.

Don't apply lime-sulphur and arsenate of lead in a spell of extremely hot, bright weather, for it is liable to cause serious burning.

Don't try to get along with a machine which is worn out or too small to do good work; if the work is worth doing, it is worth doing well.

Planning the Home Lot

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

AT some time or another every person thinks of the possibility of owning a home. Many people, moreover, actually plan and build their own houses. A real home consists of the house and its surroundings. It soon becomes evident that if it is without external attractions it loses much of that charm which makes so many homes of the older countries so dear to memory. The modern house is often a great improvement on older types, both from the standpoint of architecture and convenience, but it frequently lacks in charm and simple artistic beauty because its surroundings are poor.

To miss making a house and lot into a "home" is to miss a chance to increase the cash value of the property. The pleasures obtainable only from a delightful home are also missed. Homes attractive, pleasing, convenient, profitable and "homelike" are twentieth century homes.

When to Start.

Real home making may be commenced at any period of the year. The winter, for instance, affords a fine opportunity to make simple plans and outline a policy for the coming season. A simple plan on paper, drawn to scale, is not essential, but it will help. It holds one to the practicable and saves subsequent disappointment and mistakes.

Minimum Requirements.

The minimum requirements of simple yet attractive homes are, in most cases, three or four in number, for instance:

1. In most cases, a good lawn.
2. Some simple shrubs and flowers.
3. Two or three trees.
4. An area for vegetables.

Many other features might be suggested, but everything will depend on the situation, location and size of the lot. The accompanying plan is one suggested for a home where the owner's time is limited. Its planting arrangement will involve the very minimum amount of labor and expense in its upkeep.

How to Proceed.

The first consideration in most cases is a good lawn. Around every house a good lawn is like a good carpet in a room. It should be well made and well kept. It should not be cut into by walks more than possible, and flowers are more easily tended and will produce far better effects when placed in borders at its boundaries rather than in prominent beds in central places where they rob the lawn of much of its charm. A lawn broken up

by flower beds generally looks smaller than it actually is. In exceptional cases a flower bed on the lawn is helpful and artistically pleasing. Information on making and caring for the lawn may be obtained on application from the Central Experimental Farm, Ottawa.

The second consideration is that of the permanent features on the lawn, such as shrubs and trees. Flowering shrubs cannot be too highly recommended. They are useful around all types of houses and public buildings. Their beauty is unquestioned, and they are the true furnishings of the "out-of-doors living room." They are most useful and effectively placed when planted in groups of three or four, close to the house, as shown on the plan. In such positions they help to make the house and grounds a harmonious whole. Other good positions for shrubs are by boundary fences and in the corners of the lot. As single specimens such shrubs as the hydrangea, the smoke tree and others of similar habits always look well planted in some permanent but suitable position in the foreground of the lawn area.

Flowers.

The two large classes of flowers known in gardening terms as annuals and herbaceous perennials will give bloom, when selected with this end in view, for six months of the year. For

flower borders down the side of the house, or at the boundaries of the lot close to a hedge or fence, the perennial flowers will be found more satisfactory. The heights and habits of such plants must be known in order to arrange them successfully, and information on this point may be obtained from the Central Farm at Ottawa.

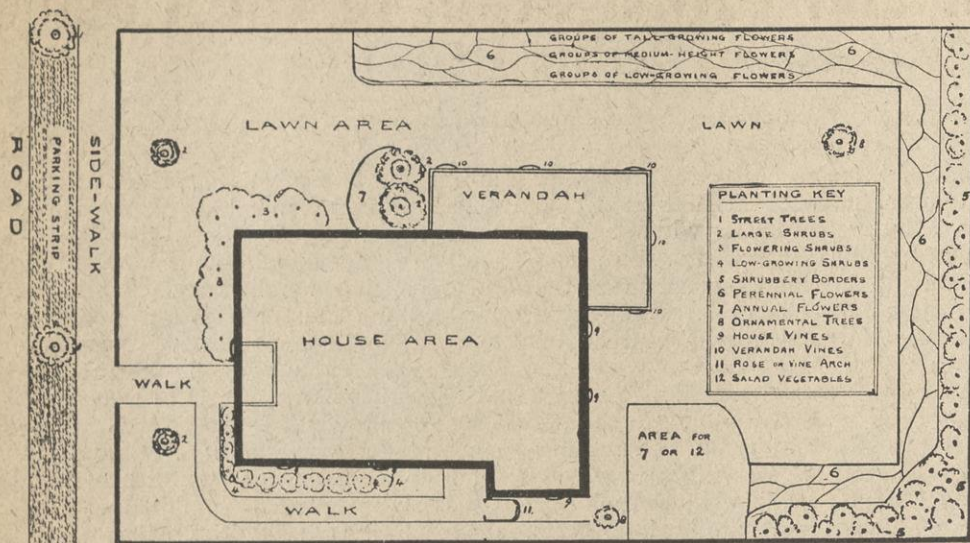
The "annuals," however, contain so many of the very best flowers that some of these flowers should be grown also. Every garden should have in it some of the old favorites like sweet peas, china asters, mignonette, nasturtiums, and others. Often a part of the lot at the rear of the house may be given up for such flowers. They are splendid for cutting for table decorations. A small vegetable garden, when there is room for it, will add much to the interesting features of the lot.

Shade and Ornamental Trees.

A lot which is large enough to accommodate a good shade tree or two is most desirable. Generally, however, it is wiser not to attempt to plant large shade trees on the average size city lot. The smaller size ornamental trees like the Mountain Ash, Flowering Crab Apples, Siberian Pea Tree, or some suitable evergreen tree are more suitable, and will generally provide enough shade. Shade trees as street trees are most desirable, but the roots of such trees, where planted on the lot itself, rob other plants of too much food and



An effective bed of light blue Iris in the garden of Mr. Lynch Staunton, Hamilton, Ont.



A SIMPLE PLANTING SCHEME FOR A TOWN LOT OF MEDIUM SIZE. Scale = 1/4" = 10 FEET.

moisture. It is difficult to get plants to do well near trees for this reason.

Starting the Garden from Seed.

Some of the best gardens are those which cost the least. Raising the plants from seed is a cheap method of beautifying the lot. In order to germinate properly, seeds must be sown in fine friable and fairly moist soil. Shade must be provided for the first two or three weeks. It is a good plan to start seeds in flats or pots, in the house or a hot-bed. Seed should be covered about three or four times the depth of its diameter. That is, fine seed is just covered with fine soil, while larger seed is sown from one-eighth to one-half inch deep, according to the size. The soil must not be allowed to dry out, and water must be applied with care and caution. Several slightly different methods will bring equal success, as there is no trick in successfully growing most flowers from seed. After the seedlings are several inches high they should be transplanted.

Some flowers may be raised successfully by sowing the seed out doors, as sweet peas are sown. Transplanting is not necessary in such cases. At the time of transplanting the seedlings it is well to remember that you will have greater success if the work is done in the evening or on a dull day. After they are pricked out, water well. This prevents wilting, and hastens growth. About the middle of April is a good time to start seed indoors. For outside sowing, sow as soon as the ground is dry enough, or about the first and second weeks of May will give good results.

Beautiful Shrubs.

For early spring bloom—Snow Garland (*Spiraea arguta*), Sweet Scented Currant, (*Ribes aureum*) Lilacs.

For spring and summer—Van Houtte's *Spiraea*, Mock Orange, (*Philadelphus*) Honeysuckles.

For late summer and autumn effects—Japanese Rose, (*Rosa rugosa*) Hydrangea paniculata, Japanese Barberry.

Evergreen Shrubs—Japanese Cypress, (*Retinospora*), Japanese Yew, Junipers.

Ornamental Trees.

Small trees—Siberian Pea Tree, Mountain Ash, Flowering Crab Apple.

Large trees—Weeping Cutleaved Silver Maple, Purple Leaved Norway Maple, Lindens (*Basswoods*).

Evergreens—White or Norway Spruce, Rocky Mountain Blue Spruce, Pines.

Small evergreen trees—Siberian Arborvitae, Pyramidal Arbor-Vitae, Dwarf Pines.

Perennial Flowers.

Bulbs for spring effects—Crocus, Narcissus, Tulips.

Flowers for early spring—Columbines, bleeding-heart, Oriental Poppy.

Flowers for spring—Iris, Paeonies, Day Lilies.

Flowers for early summer—Pinks, Foxgloves, Delphiniums, Hollyhocks.

Flowers for summer—Coreopsis, Blanket Flower, Shasta Daisy, Lilies.

Flowers for late summer—Phloxes, Rose Mallows, Sunflowers.

Flowers for autumn—Japanese Anemones, Perennial Asters, Heleniums.

Vines for House and Porch.

For the house—Self-fastening Virginian Creeper.

For porch or verandah—Bitter Sweet Vine, Dutchman's Pipe Vine.

For trellis work or fence—Native or Japanese Clematis.

Annual Vines.

Cup and Saucer Vine, Canary Bird Vine, Eceremocarpus, also Sweet Peas, Nasturtiums and Morning Glories.

Annual Flowers.

Low growing—Pansy, Verbena, Drummond Phlox.

Medium height—Snap-Dragons, Ten-Week Stocks, China Asters.

Medium height also, if room, Petunias, Zinnias, Pin Cushion Flower.

Tall varieties—Cosmos, Salpiglossis, Everlasting Flowers.

Roses.

Six useful garden varieties—Frau Karl Druschki, (white), Madame Ravary, (yellow), Mrs. John Laing, (pink), Ulrich Brunner, (cherry red), Hugh Dickson, (brilliant crimson), Etoile de France, (velvety crimson).

Pruning Shrubs

H. E. Thatcher

The pruning of hardy shrubs is one of the most important matters connected with them, but it is very imperfectly understood. We see far too often the lamentable results accruing from a lack of knowledge of their individual requirements. All that is generally considered necessary is for an incompetent workman to give the shrubs an annual trimming with a pair of shears, with the result that when the work is finished the shrubs all have about the same rounded, stiff appearance; much of the old growth, which should have been removed, is left and forms a mass of useless growth; and the young wood, which should be carefully preserved for future blossom, is cut away.

It is not possible to lay down any hard and fast rule, as shrubs differ so much in their individual requirements, but it is better not to prune at all than to prune indiscriminately. The large majority of flowering shrubs produce their blossoms during the spring and summer months, and some of these, such as the Philadelphus, Deutzias and Forsythias, which produce their flowers on wood of the previous season's growth, are improved by having some of the flowering stems cut clear out as soon as the blossoms have fallen. This will help to strengthen the new growths sent out from the base and give them a better opportunity of becoming well ripened before winter sets in.

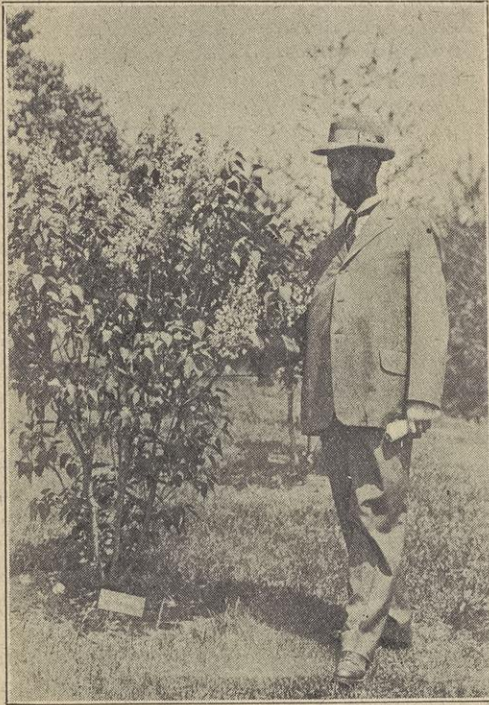
The majority of hardy shrubs require very little pruning beyond occasionally removing the old growth so as to keep them shapely and open to enable them to receive the full benefit of the sun and air. It is only by intelligent study and actual practice that one can become conversant with the requirements of different shrubs.

The sections that are enabled to enjoy bird life the most are those that contain thickets of shrubs and trees. Birds nest and live in these and pay their rent by catching injurious insects and furnishing music. Many birds have brilliant plumage, which adds color and beauty to the thicket in which they live.

The Development and Propagation of the Lilac*

John Dunbar, Rochester, N.Y.

THE lilac, *Syringa vulgaris*, is the queen of hardy garden shrubs. No other garden shrub approaches it in popularity. The showy, prominent, fragrant flower clusters which are always borne abundantly, its



The lilac Dr. Masters. Mr. Dunbar is shown.

adaptability to diverse soils provided they are well drained, and its absolute hardihood, combine to make it a favorite. It appears to flower more abundantly in the gardens and parks of the north and north-eastern United States and Canada than it does in Europe. The result of this is seen in the remarkable popularity the lilac has attained, judging by the multitudes of people that go to see different public collections of lilacs in flower.

The home of the common lilac is supposed to be on the mountains of south-east Europe and along the rocky banks of the Danube. About ten years since it was found growing on the higher mountains of Bulgaria. It had the appearance there of being in native conditions. Seedlings raised from seed collected from these plants on the Bulgarian mountains show primitive conditions in flower. That is in the small individual flowers, and small clusters, there are all the appearances of a wild type.

It is said to have been introduced into the gardens of Great Britain about 1597. Loudon is his Arboretum et

Fruticetum Britannicum, published in 1842, gives descriptions of seven varieties, and states, "A number of plants have been raised from seed by Mr. Williams, of Pitmaston, of which there are six sorts tolerably distinct in the Horticultural Society's garden. The French nurserymen are also in possession of new seedlings, but none of them that we have seen are so well deserving of culture as the common blue, violet, red, and the white." This, then, was about the status of the lilac in Europe about seventy years since. During the previous nearly two hundred and fifty years of its cultivation in British gardens, nothing particularly noticeable in the improvement of the lilac, at least so far as any records show, seems to have been accomplished.

Different Species.

There are about twenty-five species of lilacs known to science. A number of new species were discovered during the past fourteen years in western China by the Chinese botanist and explorer, E. H. Wilson. The range of all of the species of the genus is from south and south-eastern Europe through central Asia and the Himalayas to Mongolia, northern and western China, and Japan. It may appear remarkable that no species of lilac has ever been found native on this continent.

Some of the species are remarkably handsome garden plants, and all of them are worthy of cultivation. *Syringa Amurensis*, from Manchuria,

has large white fragrant loose clusters of showy flowers about the middle of June. It has very slender branches, and grows eight to ten feet high. *Syringa chinensis* was supposed at one time to be a species, but it is now known to be a hybrid between the common and Persian lilacs, and originated at Rouen, France, many years since, and is sometimes known as the Rouen Lilac. It has large, lax, flower clusters, and varies from deep lilac, reddish lilac to white. *Syringa Giraldis* comes from northern China, and has pale lavender flowers in long clusters, at the end of April, and the first of May. It grows six to eight feet tall.

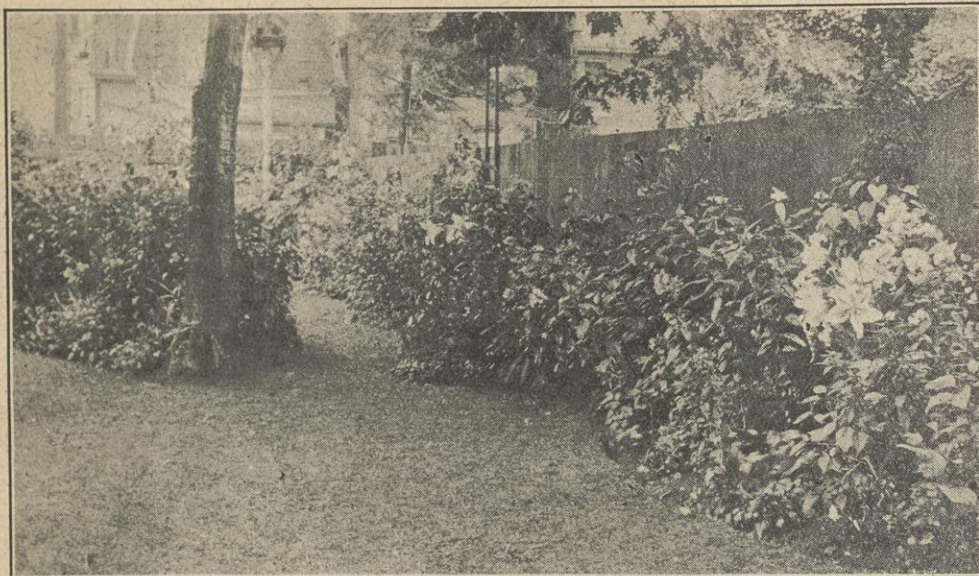
Syringa Persia, Persian Lilac, comes from Persia and Afghanistan, and is a most dainty, beautiful shrub, with flowers lilac and white. *Syringa pubescens* comes from northern China, and has loose clusters of pale rose-colored, fragrant flowers, at the end of May. This is a most beautiful shrub, and grows six to eight feet high. *Syringa reflexa* is one of the new lilacs from western China, and flowered with us last spring for the first time. It has curving panicles of rosy red flowers, and is most distinct and pretty. *Syringa Sweginzowii* is a new lilac from some part of eastern Asia, with dainty clusters of white flowers shading to pink, and flowered with us for the first time last spring.

Syringa villosa is a lilac from northern China, and grows wild in the neighborhood of Peking. It is one of the



A close view of the lilacs Leon Gambetta and the Doctor Masters.

*Extract from a paper read at the last annual convention of the Ontario Horticultural Association.



The perennial border in the garden of Mr. A. W. Palmer, Hamilton, is a source of much pleasure. On the right may be seen *lilium auratum*. At the rear of the fence border is rose color phlox. Note the bird house.

handsomest of the species and produces erect, showy clusters of pale, rose-colored flowers during the first week in June. The foliage is beautiful and characteristic. *Syringa japonica* is from Japan, and approaches more nearly to the size of a tree than any other lilac. It has enormous white flower clusters about the end of June, and is the latest of all lilacs to flower. *Syringa oblata* comes from northern China, and is about the earliest of the lilacs to bloom, and is sometimes in flower about April 26th. It is the only one that has handsomely colored foliage in the fall, and turns to a deep scarlet red. *Syringa Wolfii* is another new lilac from western China, and flowered with us for the first time last spring, and is of a deep shade of lilac, with flowers produced in great profusion.

All of the species of lilacs can be easily raised from seed, which should be sowed as soon as ripe. Varieties can be budded, grafted, raised from green cuttings, layers, or suckers (provided the suckers are taken from varieties that are upon their own roots). It is always preferable to have varieties upon their own roots, but they are usually hard to obtain. Green cuttings should be taken as soon as the wood has made its full growth, about the first or second week in June, and placed in four to five inches of sharp sand in a hot-bed in which sufficient stable manure has been packed to create good bottom heat. The sashes should be kept closed for several weeks and shaded from sunshine at all times of the day by cotton-cloth three feet away from the glass. The cuttings should never be allowed to become dry. They should be well rooted by August or September, and they can either be potted and kept in a cool green-house or planted in a frame and protected

throughout the first winter.

The next best method of propagation is to wedge graft on the roots of the California Privet, using two-year-old privet stock, the roots need not be more than three inches long. This should be done about the first of February. The grafts should be placed in "flats" about four inches deep, deep enough for the unions to be covered with soil. If the flats are placed on a green-house bench with bottom heat and a moderate temperature overhead not to exceed fifty-five degrees, they will soon unite and root. They can be planted out in the nursery about the middle of May. If this stock is planted sufficiently deep it invariably gets on its own roots and the privet ultimately disappears and dies.

Budding on to the California Privet is practised in many nurseries. They grow with tremendous vigor for a few years, but according to our observations they are short lived. Budding on to the common lilac stock is often resorted to, but in this case there has to be a constant repressing of suckers, and if ordinary vigilance is neglected the graft will soon be overpowered. Layering is an easy method, but requires patience. This should be done in spring and it takes about two years before the layer is fit to be disturbed.

A selection of the most distinct varieties of lilacs, including some of the newer ones and some older standard kinds would be as follows: Single flowered, in shades of purple-red, violet-red, and carmine-red; Danton, Cavour, Pasteur, Milton, Reaumur, Negro, Congo, Toussaint l' Overture, and Uncle Tom. Single flowered, in shades of blue to bluish mauve; Beautre, Gilbert, Crampel, *coerulea superba*, and *Colmariensis*. Single flowered, in shade of bright lilac pink; *macrostachia*, *lilarosa*, *amoena*, Schermer-

hornii, and *Lovaniensis*. Single flowered white; Vestale, Madame Florent Stepman, *Virginalia*, Kate Harlin, Princess Alexandra, Marie LeGraye, and Frau Bertha Damman. Double flowered, in shades of purple-red, violet-red, and carmine-red; Charles Joly, Paul Hariot, Stadtgartner Rothpletz, De Saussure, La tour d' Auvergne, and Marechal de Bassompierre.

Double flowered in shades of blue to bluish-mauve; Marc Micheli, Maurice de Vilmorin, President Viger, Condorcet, Godroy, Vivian Morel, Abel Carriere, Olivier de Serres, and Victor Lemoine. Double flowered in shades of light pink; Louis Henry, Edouard Andre, Comte de Kerchove, Waldeck Rousseau, and Madame Jules Finger. Double flowered white; Madame Lemoine, Miss Ellen Willmott, Jeane d'Arc, Dame Blanche, Obelisque, Madame de Miller, and Madame Casimir Perier.

Ginseng Growing

Wm. Gilgour, Peterboro, Ont.

There are two varieties of ginseng, Canadian and American. In the autumn of 1903 I received several hundred ginseng roots, purchased from a grower in Joplin, Missouri, U.S.A. Two hundred of the roots were three years old. They came up the following spring and made a thrifty growth all summer, but not one of the seeds ripened. They grew on late into October, when the first heavy frost cut them down. These roots were accustomed to a longer growing season in their native climate, hence their failure to ripen, except in favorable seasons, when planted in the north. I saw by the latter part of September that I would have no ripe seeds from those plants. I heard of a man who had a small plot of ginseng in the backwoods so I drove thirty miles north of the city to his place and bought one thousand roots—all the one, two, and three year old plants he had. The following summer, the three-year-old plants of this lot produced a fine crop of seed. They were all ripe and harvested by the middle of September. The native root has this advantage over the southern. We have a full crop of ripe seeds, and we can dig the roots for market early in September and dry them in the sun.

Look for scale and mealy bug on ferns and other house plants. To rid the plants of the insects wash with soap and water, using a soft sponge or brush, then cleanse with clear water. Rain water is better than well water, since it does not contain alkali, which often leaves white streaks on the leaves.

Spring Management in the North

James M. Munro, Slate River Valley, New Ontario

CHOOSE a calm, warm day, when pollen is obtainable, for setting out your bees. Locate your apiary in a sheltered situation, free from prevailing winds.

Open your cellar the whole night previous to setting them out. This will air the cellar, and quiet the bees. In the morning, light your smoker and keep it in readiness. Procure one small towel (wet, but not dripping.) Then prepare the summer stands on which you will set your hives.

Take the wet towel, and as quietly as possible, lay it in front of the entrance of the hive, so as to keep the bees from rushing out when disturbed. See that the legs of your pants are tucked inside your socks, and that your face is properly protected by a veil, and have all washing removed from the clothesline. Stand behind the hive you are about to remove, and lift it as gently as possible, avoiding all jarring and loud talking. Place it on its permanent summer stand, remove the towel, contract the entrance according to the strength of the colony, and give two or three puffs of white smoke into the entrance. (This smoking makes the bees mark their location, and forestalls drifting). Use the same methods with every hive until all have been carried out.

Prevent Robbing.

Keep a close watch that no robbing is started. If any bee starts to rob, stop it by placing a bunch of horse mane or tail hair in front of the entrance. I have found this an effectual preventive.

The first fine day after the bees have had their cleansing flight, take a clean bottom board, and go to the first hive carried out, and exchange for the old or dirty one. Then clean the dirty bottom board from dead bees, and exchange it with the next hive. Repeat this process till all are gone over. At the same time see that each hive has a queen, and plenty of stores, that it is tucked up with a division board and that the space left is filled with packing. See that the bees cover the combs left them, or in other words, don't leave them more combs than the bees will cover. See also that each hive is warmly packed on top, and covered with a good cover, so as to retain the heat and keep out the cold and wet. A good cover is a most important part of a hive.

If stores are scarce, begin stimulative feeding every evening, with warm diluted honey, in proportion one of

honey to two of hot water. Be sure your honey is free from Foul Brood germs, otherwise use granulated sugar syrup. Feed from a large teapot by lifting a small end of the hive quilt and pouring about half a cupful over and



Jas. M. Munro, Slate River Valley, Ont.

between the ends of the frames, and clap down the quilt immediately and place the cover on as before. Go over all your hives in the above manner, (except when nectar is coming in from the field) and you will have rousing colonies for the honey harvest.

If in the spring you find any colonies too weak to pull through alone, unite them on a strong colony, according to the Alexander method, and leave them thus for three weeks.

Don't give added empty brood combs or full sheets of foundation faster than the bees can well cover them, for fear of causing chilled brood.

Don't give additional supers until the colony has eight frames out of the ten frames occupied with brood. Then put into a second story all the frames from below, except one containing the least brood. Fill up the vacancies with empty brood combs or frames of foundation. Put a queen excluder between the two stories, and leave the queen in the lower story. In five days examine to see that no queen cells are

started in the upper story. If so, cut them out, and examine again on the eleventh day for queen cells, and if any more are started, cut them out. This will usually be sufficient.

Another, and possibly even a better method, is to keep equalizing the brood by taking a frame of hatching bees from a hive already having seven frames full of brood, and giving it to a weaker hive having five or less frames of brood. Continue this until all the hives have seven or eight frames full of brood. Then add a super full of empty brood combs above the hives without using an excluder, thus allowing the queen full range of both chambers until a few days before the honey flow begins. Then slip an excluder between the chambers and wait four or five days, when freshly laid eggs will disclose the presence of the queen. She is usually found in the upper story. If so, I simply transpose the two stories, putting the upper one below, and the queen excluder on top, and then set on top what was formerly the lower story, and at the same time pile another story of empty comb on top of that. Put on the quilt and cover, which usually ends all swarming for the season.

If during the season you discover queen cells in such a hive, make it into a shook swarm in the following manner: Smoke them and drum with your knuckles on their hive, to lead them to gorge themselves with honey. Then move the hive to one side, placing an empty hive, with starters, on the old stand, and spread a soft sheet before the entrance and shake most of the bees and the queen onto the sheet, and have them run into the new hive. Then distribute the brood (after destroying the queen cells) onto hives that show no desire for swarming, or among weak colonies.

The principal causes of swarming are the following:

- (1) The presence of an old queen.
- (2) Insufficient quarters for brood and storage.
- (3) Insufficient ventilation.

I use the 10-frame Langstroth hive, and endeavor to keep all drone comb out of the brood chambers, except about four square inches for each queen.

We have a federal law requiring every package of queens going through the mails to have an inspector's certificate of health attached.—Chs. Stewart, Albany, N.Y.



An exciting experience for the girls in Mr. Crandall's apiary.

x Cleaning Up European Foul Brood

A. E. Crandall, Berlin, Conn.

I HAVE read Mr. R. F. Holterman's article on pages 116-17 of *Gleanings*, February 1st, with much interest, and am going to give a little write-up of my own experience. If it helps him, or anyone else, I shall feel well repaid for my trouble.

Mr. Holterman wants to hear from some one who has stamped out the disease after it has spread among his bees, not one who admits he has never got rid of it. Now I do not know where European Foul Brood originated, but I do know that this locality was rotten with it years ago. We had it in our own yard.

When I discovered it in our apiary, I began to look around for information. I burned bees and combs, shook colonies and requeened, also caged queens for 10 and 20 days. You may be sure that I have learned something by practicing these different methods.

If I should ever have European Foul Brood again, I should never burn a comb. Instead, I would kill the queen and introduce a virgin inside of ten days, or if one does not have virgins on hand, introduce a young laying queen in two weeks from the time of taking the old queen away.

All through this state, and perhaps other states as well, there are many small beekeepers. A good many know nothing about disease whatever, and a good many don't care enough about their bees to look inside of the hive and see whether they are in a healthy condition or not. I am convinced that this class is wholly responsible for the condition that exists in many locations.

I made inquiries some time ago as to who kept bees nearby, and soon got in

touch with beekeepers who kept anywhere from one to a dozen colonies.

Some of these people really wanted to know more about bees, and others "didn't have time." I immediately got in touch with our inspector, and made a trip with him all through this locality. We found bees in all kinds of hives and conditions, some healthy and some diseased, and I believe this condition is the cause of our trouble. You have got to get these people to clean up, or disease will break out in your yard in spite of everything you may do. How can anyone keep a healthy yard all the time if diseased bees are near? If bees did not rob one another, I think this would be possible, but when the honey flow stops they will put their noses in other people's business, and may happen to find a comb that has been thrown down by some careless beekeeper who has found a colony alive with moths, and then he will immediately pull the hive to pieces.

No good beekeeper allows his colonies to get into such a condition, but I have seen combs scattered round the yard, and have seen weak colonies robbed out, and so I am led to believe that the disease is spread in this way.

Men like Mr. Holterman are very apt to keep their colonies pretty strong at all times, and if disease is near their yards, their bees are apt to find it in some colony that is weak, and in this way, bring it home.

Our bees are free from disease, and so was this locality last season; only one case was found by our inspector in a day's trip through this section, and you may rest assured that that case was promptly cleaned up. It was rather

gratifying to me to see bees in prosperous condition last year, that were diseased the year before. Some of the beekeepers had discarded that "pest," the old box hive, and had their bees in movable comb hives with the comb movable. Now I use this expression because some of the beekeepers we come across often have the movable comb hive, or "patent" hive, as some call them, but after the bees have kept house in them for a season, the combs don't move unless a crowbar is used.

Wired frames and full sheets of foundation should always be used.

I would urge every beekeeper to furnish his inspector with the names of every person who keeps bees in his locality, and the chances of disease getting a foothold will be lessened if not eliminated altogether. Let all who read this, try it this coming season and report results. I am enclosing a picture of a few friends and some of our combs.

Beekeeping in a Village

John A. McKinnon, St. Eugene, Ont.

My apiary is in the village, and I have had no complaints from neighbors, although my yard is surrounded on all sides by gardens and cultivated land.

When bees are properly managed, and all vicious bees weeded out, they seldom cause any trouble, even during a honey dearth. Of course, if robbing is allowed it generally starts some excitement.

x The Apiary in the Spring

F. W. L. Sladen, C. E. F., Ottawa, Ont.

Bring the colonies out of the cellar as soon as the snow is off the ground, and place them where they will be sheltered from cold winds. Contract the entrances. Extra covering during early spring is advantageous. Guard against robbing, and as soon as weather permits, examine each colony, seeing if it has sufficient stores and enough bees to hold together. See also if there are eggs and if these develop into worker-brood, which indicates the presence of a fertile queen. Colonies that are very weak or queenless or have a queen that produces drones only should be united to others. The cappings of drone-brood are raised and convex, whereas those of worker-brood are nearly flat. Shortage of stores may be corrected by equalizing through exchanging combs and later by feeding with sugar syrup.

Give a super as soon as the bees fill the hive. It is easier and usually pays

better to produce extracted honey than comb honey because the bees are less liable to swarm, and when drawn combs are used, at least double the weight of

honey is obtained. It is advisable to place a queen excluder (wood bound) between brood chamber and extracting super.

In conclusion, let us not be too optimistic. Still I think we may confidently look forward to good wintering, as prospects look favorable so far, whatever the spring may bring forth.

How Victoria County Bees are Wintering

W. W. Webster, Little Britain, Ont.

ON the morning of February 17th, Old Sol shone out in all his splendor, and as a few bees were flying, it seemed an opportune time to visit the apiary and form an idea as to how the colonies were wintering, as well as to clean out any entrances clogged with dead bees.

As I winter with sealed covers, and all the ventilation these little creatures get they receive from the entrance, it has become a custom with me, three or four times during the winter, to attend to all entrances. The ground had only a light covering of three or four inches of snow, which is unusual at this time of year, so I had not the usual amount of snow shoveling at the entrance.

Only a part of the bees were having a flight, for though the day was bright, the temperature did not rise enough for a full flight. I found many of the colonies busily engaged house-cleaning, and putting out the dead bees 'till they formed quite a pile outside the entrance. House-cleaning seems to me an appropriate term. As my colonies face the south, the sun, shining in at the entrance, revealed a very clean floor, though I must admit that their door-step needed sweeping. This I did for them with a broom.

Some, evidently, were not as early risers as their neighbors, for they were not stirring around much. They were, however, quite industrious for their floor was perfectly clean, and dead bees were piled out on the door-step. The bees in these colonies had, evidently, been very busy some days before.

There were other bees, evidently not as industrious, which appeared strong, but which had allowed dead bees to accumulate in the hive. These I drew out with a bent wire.

There was one colony with a lame queen, which I feared might not survive, but which appeared in the best of condition. I had been told to requeen all lame or inferior queens. This queen had one foot amputated two years ago, as the result of an accident of mine in clipping queens. She did such good work the first season after the accident that I did not replace her, and her colony was one of the best last season, so I spared her life again. I found this colony very strong. This gave me the impression that the queen was still all right. If she does not supersede till after the honey flow next year, should I requeen her or get her a cork leg?

Then there were some colonies which I united last fall, which I was anxious about. These I found in good condition, and as good and as strong as any. I think it a good plan to unite weak colonies in the fall, as two weak ones make one strong colony in the spring, which is worth more than four or five weak colonies at this time of year.

The fresh snow near the entrance of those which were flying, showed very few spots of dysentery so I would conclude that the stores were good. On examination I found just a very little dampness at the corners of the hives, and bees were clustered to the front and near the entrance of the hives. All colonies were alive.

Question Box

Morley Pettit

I have been told that it is impossible to let queens swarm that have had queens introduced to them from the mails, as they will supersede them every time. I would like to know how to prevent superseding and yet allow them to swarm. Which is the better, quadruple winter cases or single winter cases with five inches of packing on the sides and a foot on the top? Is there any special time of the day when bees swarm? Is it advisable to have the colonies shipped long before apple bloom? —A. L.

Queens that have come through the mail are sometimes superseded shortly after they have been introduced, but the swarming of the colony has nothing whatever to do with the superseding of the queen. After all, why should you allow them to swarm in order to get increase? Why not follow some of the well known methods of making increase, without allowing swarming? In the bulletin on "Natural Swarming and How to Prevent It," you will find a description of how to make a nucleus.

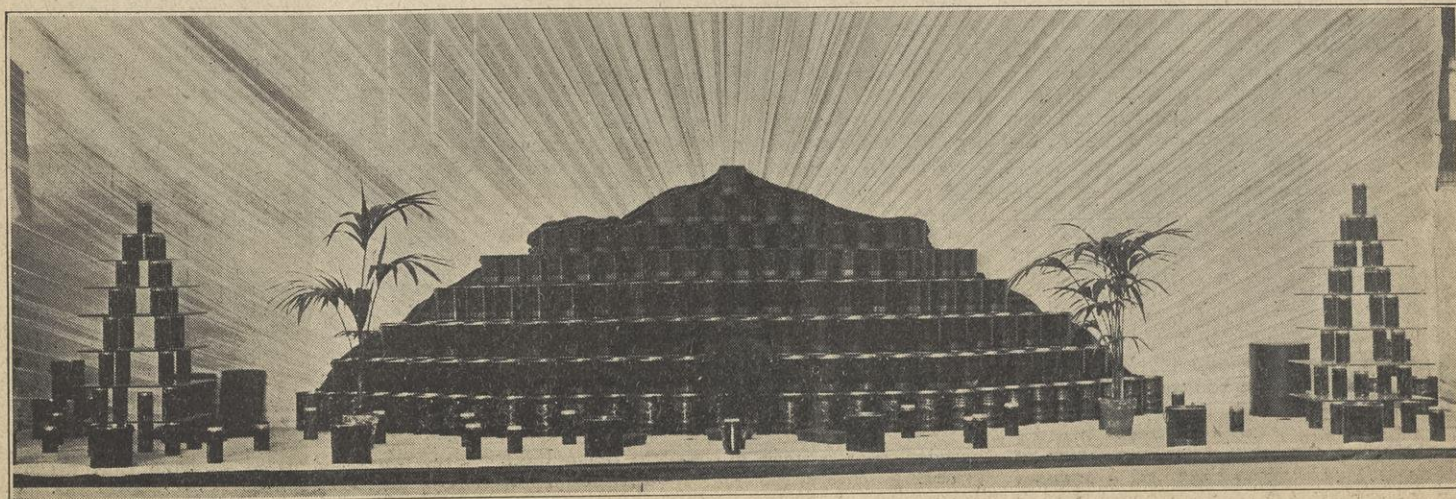
We recommend the quadruple case because we consider that the first cost is less, and the four hives probably derive some benefit from one another's heat. Some claim, however, that the single case is just as good, and with good strong colonies I believe it is.

Bees are more inclined to swarm between 10 a.m. and 2 p.m., but they are liable to swarm in hot weather any time from 6.30 in the morning until 6 or 7 in the evening.

As a rule I would not have colonies shipped much before fruit bloom.

What is the best way to ship bees a long distance?

Give plenty of ventilation, have strong colonies, screen the top and bottom, and see that they are put on the train yourself.



An exhibit of honey made by the Lambton County Beekeepers' Association at the County Horticultural Exhibition last fall.

March in the Apiary

Morley Pettit, Provincial Apiarist, Guelph, Ont.

THE lengthening days and brightening sun of March set the beekeeper to thinking about spring and looking forward to the activities of summer. It is customary at this time of the year to advise beekeepers to see that everything is in readiness. This advice is needed more than ever this year, owing to the extreme scarcity of labor which will most certainly prevail on Ontario farms during the summer.

Summer apiary work can be greatly reduced by having everything in readiness before the rush of the season comes on. Even the system of apiary management should be carefully planned. With pencil and notebook the beekeeper should look over files of bee journals, picking out ideas here and there on management for queen rearing, swarm control, etc. These should be carefully studied, correlated, and a definite plan of apiary manipulations written out, based on previous experience, and having in view the elimination of all unnecessary work.

The bees themselves will be active this month. Cellars require careful attention to keep the temperature right. It is one of the difficulties of cellar wintering to keep bees comfortable during spells of warm weather which occur in March. There is probably no place in Ontario where it is wise to remove bees from the cellar until April 1st, at the very earliest; but sometimes a warm period in March makes the bees so restless that they must be taken out. They must then be carefully protected and sheltered from cold winds to enable them to continue brood-rearing throughout the spring, getting a strong stock of workers for the honey flow.

Outdoor-wintered bees will be tempted to fly by bright sun on days that are really too cold. On such days it is best if entrances can be shaded to keep the sun from striking in and attracting the bees out when they should stay in. Care should be exercised, however, to allow them to fly freely when the temperature is sufficiently high. If such weather occurs while snow still covers the ground in the apiary, straw, leaves, or something should be spread on the snow to avoid loss of bees which alight and chill from contact with the snow.

Water should be supplied for the bees as soon as they become active. It is the early days in spring when they form their habits for the summer, and there are places where we would rather they did not collect water, such as the trough where livestock are watered, or the neighbor's pump. By placing a supply of water in the apiary so they form the habit of getting water from it on their first flight in the spring, this trouble can to a certain extent, at least, be overcome.

Supplying pollen substitutes in the form of meal in the apiary, has often been advocated, but I am not sure that it is an advantage. It is very interesting, of course, to watch the method of pollen collecting by placing a basin of meal on a hive on one of these hot days. The bees will be seen to first alight on the meal and paw with the front feet, collecting some of the dust on the underside of the body and the legs. The bee then rises and hovers in the air above the basin while it manipulates its feet, gathering the dust from the hairs of its body and passing it back to be combed off by the combs of the hind feet and worked up into the pollen baskets on the thighs.

Persons of an experimental turn of mind are also tempted to investigate the hives at this early date. By all means brood chambers should not be opened so early, unless there is actual danger of a shortage of stores. This should have been fully provided for the autumn previous; but if one is anxious to look into a hive and see whether there is brood, etc., it may be worth the experiment to assign one hive for this observation. This one hive may be opened from day to day, whenever it is warm, to examine the development of brood. This should be done carefully to avoid chilling of the brood, and it certainly will not help the development of the colony, but will satisfy the desire for knowledge.

Bees should be left as quietly to themselves as possible during March, and, in fact, right up until the first of May; but they do need to have sufficient stores and to be warmly packed and protected from the cold wind.

Early in April, when soft maple blossoms begin to appear, it is time to set hives out of the cellar. Where there are only a few hives this can be done in the morning of a day which promises to be bright and warm. If there are many hives it is best



Attending to the good things at the field meet of the Toronto Beekeepers' Association, May 24.

to carry them out in the evening, when the weather promises to be cool for a couple of days. They then become perfectly quiet and accustomed to the outside air, and flying occurs gradually as the weather warms up. This avoids the danger of mixing and drifting, which is so liable to occur where many hives are set out in the morning of a hot day and when the wind strikes up and causes confusion.

Manitoba Beekeepers' Convention

R. M. Muckle, Department of Agriculture, Winnipeg

THERE was a large attendance at the annual meeting of the Manitoba Beekeepers' Association, which convened in the Horticultural Building of the Agricultural College, Winnipeg, with President Rutledge in the chair. Professor Bedford presented the secretary-treasurer's report, which showed a good balance on hand.

The officers elected for 1916 are: President, G. G. Gunn, Lockport; Vice-President, Rev. R. A. Rutledge, St. Charles; Committee—Professor S. A. Bedford, Mrs. W. H. Hambly, Roseisle, and Wm Woods, Emerson; Secretary-Treasurer, R. M. Muckle.

It was decided to hold a honey exhibit next year during "Farmers' Week" at the Manitoba Agricultural College. Prizes will be given.

The advisability of holding field meets during the summer in several parts of the province was discussed. It was decided that this line of work would be of great value, especially to beginners.

An interesting discussion took place on the cellar wintering of bees. This is one of the problems which will perhaps be solved by wintering bees outdoors. A number of beekeepers stated that they had successfully wintered bees outdoors in Manitoba by packing them in sawdust or chaff.

A delightful half hour was spent in the college greenhouse by the horticultural section.

Mr. G. H. Ball, of Dominion City, gave a paper relating his method of swarm control. He also dealt with laying worker bees, and said that he had found the "smoke method" of great value when laying worker bees were present in a hive.

Mrs. Hambly, of Roseisle, delighted those present with a very interesting paper dealing with swarm control when running for comb honey. This was followed by a discussion on the buying of supplies. The secre-

tary was instructed to write to the beekeepers in Manitoba and find the amount of supplies needed and to make a price, for members of the association, with one of the supply houses.

Mr. Crawford, representing the Steel Metal Products Co., of Winnipeg, showed the meeting a number of honey tins suitable for honey. The beekeepers of Manitoba intend obtaining a distinctive lithographed honey container, advertising Manitoba honey.

The evening meeting opened with Mr. Gunn in the chair. Mr. Gunn outlined a propaganda for the association that should prove valuable. Mr. R. A. Rutledge read a paper, prepared by Mr. Brewster, of Green Ridge. Mr. Brewster was unable to be present owing to illness. The question box was ably answered by Mr. S. A. Bedford.

A Beginner's Experience

T. J. Reaston, Weston, Ont.

I commenced beekeeping four years ago, and worked up from a small beginning to 39 hives in the fall of 1914. These came out in the spring of 1915 with only five hives. I was certainly down, but not out. The summer and fall of 1914 were the worst known in this section for many years. I multiplied last summer from five to fourteen by dividing and natural swarming, and took off 600 pounds of extracted honey. My fourteen hives in October were strong in bees and stores, so that my prospects and hopes are on the up grade once more.

One thing I have learned: Dividing in fruit bloom season is much easier than climbing trees after swarms that seem to have no other object than finding the hardest place in the orchard and the very worst limb of the tree.

Protection Required Against Disease

Jas. Armstrong, Selkirk, Ont.

WE have been trying for years to get something done to protect beekeepers from bees that are shipped in from other countries. Bees are brought in from New York State. I have been expecting some disease to come in that way and we struck it last summer. He have European foulbrood very bad in some places.

It is time that we stirred up the Dominion Government to do something. They should notify the Department at Guelph that there is a shipment of bees coming to John Smith, and that they are coming through at Fort Erie. The inspector of that district could be right on the job and give these bees a thorough inspection. If he found any disease he could destroy them at once or ship

them back again. The way the law is at present we cannot stop them from coming in.

Last fall this disease got in and we had several county meetings. The district representative did the advertising and sent out the notices to the beekeepers and we had three nice meetings in the county of Haldimand. We had an attendance of between twenty and thirty at each meeting, and more queens were bought after these meetings than ever before. All this work was done by the county association, and at no expense to the government. It would be a good plan if every county association would get to work and do something for themselves.

phrey, St. George, managing 53 colonies had eight per cent. swarming in his apiary, but no swarms in his Lot A., of the experimental group, which averaged 10 lbs. light honey more than his other colonies.

Experiment No. 4. Method of Spring Management to Get Colonies Strong for the Honey Flow. (Described on page 44, 1914 Experimental Union Report). The hives were to be packed as soon as set on the summer stands and the colonies fed every evening one pint sugar syrup (1:1), during the period from fruit bloom to the yielding of the clover. The feeding would stimulate the queen to heavier egg production and the workers to feed the larvae better, so that the colony would be strong when the clover started to yield.

Seventy-nine applied for this experiment and 27 replies were received. About half the reports were incomplete and the remainder were by no means unanimous in their decisions. One experimenter in Oxford County, Mr. Herbert Woltz, Springfield, had 23 colonies in the spring and harvested a crop of 2,500 lbs. white honey and 1,900 lbs. dark. He started feeding on April 14th, and continued till May 7th, when the dandelions started to yield. His group A, averaged him 13 lbs. more white and 20 lbs. more dark honey per colony, and drew out 35 more frames of foundation than group B. He concludes: "Am convinced that it pays to practice stimulative feeding. I have enjoyed the work very much and am going to try for a heavier yield another year. Was bothered very little with swarming."

J. C. Davidson, Oakwood, writes:—"I find by feeding, the queens will continue to lay right along steadily until clover flow and the bees will also commence to store honey in super as soon as the clover is ready."

Other reports tend to show that the difference in seasons makes a difference in the value of the experiment. When the honey flow is early or even at a normal time it is an advantage to stimulate, but when the flow is late, as it was this past season, it may not pay to feed, as the weaker colonies had time to build up into good condition before the flow opened.

Where strong colonies are needed to clean up European foul brood, this early feeding is to be recommended, and if resisting strains of bees in strong colonies are kept, the disease may be kept under control.

Co-operative Experiments in Apiculture in 1915

Morley Pettit, Provincial Apiarist Director

IN 1914, experimental material was sent to 541 beekeepers, keeping 15,490 colonies of bees. The honey crop was a failure and many of the experimenters were unable to follow the instructions, and when reporting their results expressed a desire to further test the methods the following season. For this reason the same experiments were offered again last season.

In the spring of 1915, a list of the experiments and application forms were sent to our mailing list. Soon applications from all parts of the province began coming in. Beekeepers of every class, professional and amateur, large and small, keeping bees in a variety of hives under an even greater variety of conditions, applied for instructions and material. It is not surprising to find a great variation in the replies or results.

Generally speaking, last season was favorable for beekeeping. In districts east of Toronto, the honey crop was light, but in very few or no cases were failures reported. To the west of Toronto, the yield was fair to good. In some few sections almost record yields have been reported.

Four hundred and twenty-one applications for material and instructions were filled. The 421 experimenters were owners of 14,808 colonies of bees, an average of 35 colonies each.

Experiment No. 1. Prevention of Natural Swarming in Extracted Honey Production by Holding the Colony Together. This method was described in the annual report for 1910, page 49. It was tested by 40 experimenters, and nine reported. In every case the experimenter stated that the experimental method was preferable to his own. These experiments were tried under a variety of conditions by beekeepers of all descriptions, yet in their opinions the experimental method gave better results than their own.

Experiment No. 2. Prevention of Natural Swarming in Comb Honey Production by Artificial Shaken Swarming. For detailed description of this method see Experimental Union Report, 1911, page 51. Four reports were received from the 16 experimenters. The first report was from Mr. Frank M. Powell, St. Catharines, with 14 colonies fighting American foul brood. He harvested 1,350 sections of white honey and made six colonies increase. "More honey, less work," is his comment on the benefits derived from the experiment. A second experimenter, Mr. Garfield Stewart, Glasgow

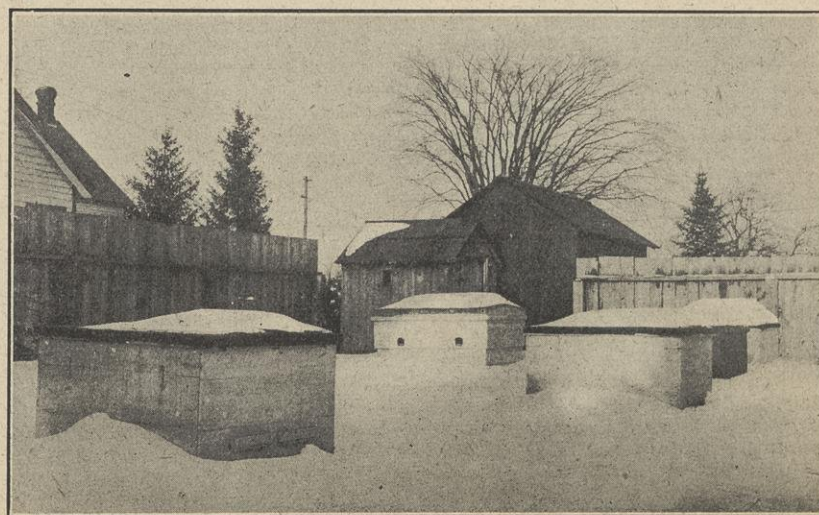
Station, reported doubling his apiary of eight colonies and obtaining 366 sections. He was handicapped by a lack of supers and drawn combs. Only one swarm issued from colonies managed by this method and the experimenter "knows better how to work with them."

The other replies were equally satisfactory. It is regrettable that when such benefits are being derived from these experiments, more are not availing themselves of their opportunities.

Experiment No. 3. Prevention of Natural Swarming by Manipulation of Hives Instead of Combs. (Details given in Experimental Union Report, 1914, page 42).

The 19 applications for this experiment were followed by nine reports. These, too, were from widely scattered places with varied honey flows, so the results show a great difference. Generally speaking, the experimenters reported in favor of the method, although one man stated that directions had been followed and more swarming than ever resulted. Probably he overlooked some little detail of the experiment that upset his success.

A Brant experimenter, Mr. Geo. Hum-



Wintering bees out-of-doors at the Central Experimental Farm, Ottawa, in cases holding four hives each and packed with planer shavings.

Better Net Returns for Local Associations*

Dr. A. J. Grant, Manager Thedford Fruit Growers' Association

THERE are many ways in which the members of fruit growers' associations can increase their net returns, such as by decreasing many of the expense items in connection with the production and handling of apples. Few members of local associations really understand the selling standards for apples, and yet the standards are the same as those governing the sale of any other commodity, viz.: quality.

Anybody can understand that a barrel or box of No. 1 apples will sell for more than the same quantity of No. 2 stock, or that good Spys and Snows will sell for more than Bellefleurs, but when it comes to the sale of a car-load or several car-loads or perhaps the entire pack of an association, then we are liable to lose sight of the fact that it is the complexion of the entire lot of apples, from the standpoint of quality, which governs the price. Generally speaking, the greater the percentage of No. 1 red fruit, and the fewer poor varieties, the greater the selling price per package. I know a man who in the season of 1914, when low prices prevailed, exported one car of very excellent Baldwins, making a net return of some \$3.30 per barrel. The price was noised about the district and nobody took the trouble to ask for the details of the sale, so that much dissatisfaction arose among the members of several associations because they did not receive at least \$3.30 per barrel for their entire output, including varying quantities of inferior varieties as well as low percentages of No. 1 apples. This brings us to the first point that I would like to drive home. If you expect your managers to get you in on the top notch prices which you hear quoted from time to time, give them the necessary percentage of good No. 1 red fruit and a first class variety list. These are the elements which make for high prices. The packs with a low percentage of No. 1 and with perhaps a lot of poor varieties, must accept lower prices, under the same market conditions.

Thorough pruning, intelligent cultivation and persistent spraying are the things which we must look to, if we wish to raise our percentage of No. 1 apples. The poor variety list must be assisted by liberal grafting to good commercial sorts. Many growers are afflicted with inferior varieties in the orchard and oftentimes none too freely blessed with quick selling varieties. Let us graft those kinds which are depreciating the sale of our pack and get at it quickly. When you improve your variety list you will improve your returns by no small margin.

In our association we found it such a difficult thing to get thorough pruning that we have started out a pruning gang to make a complete circuit of every orchard in the organization. If the grower wishes, we pay the pruning expenses and charge it up to next season's apples. You can't talk good prices for apples from unpruned trees. Prune well first, then spray, as the season demands it, at least three or four times, and you have taken a big stride toward putting more money in your pocket at the end of the season. I cannot pass such a topic as spraying without emphasizing thoroughness and a sufficient number of applications. We take it for granted that all apply the three standard sprays, but there is a most critical period just after the apples are nicely formed, and lasting several weeks. If the weather at this time is damp and cool then get

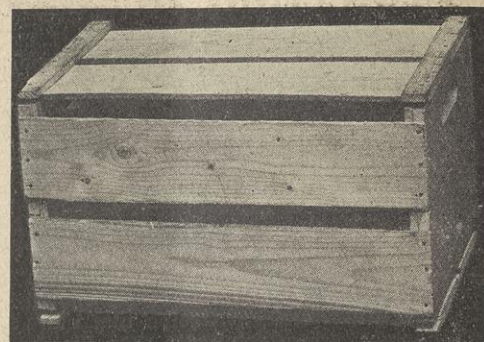
busy with the spray pump, and you will be making money pretty fast. Drench your trees with abundance of good chemicals and save money by anticipating your wants in spray material and ordering in sufficient quantity at the proper time to get in on the best price. We can save some money by using a cheaper and more easily packed container for our lower grades.

By producing good fruit which sells for more money, you increase your returns in another way. It costs less money to grade and pack a good run of apples than it does to handle a poor run. We sometimes hear association members complaining about the cost of packing; here is the very place to lessen the cost by producing better apples. I have frequently noted, in our own packing house, the remarkable difference between the time required to go through a good run of apples as compared to that required for apples which were grading low with a lot of culls.

One of the best ways that I know of assuring yourself a ready market for your pack, at a good price, is to establish standards for your various grades, (getting well in advance of the requirements of the fruit-marks act) and then guard these standards most zealously. One of the greatest shortcomings of the apple business is summed up right here. Most of us are too easily satisfied with the ideal apple for a particular grade. We have in mind simply what will pass inspection, and forget the really important thing—what the consumer is going to think about it after he has paid some real good money for the barrel or box of apples.

Why is it that we can walk down the streets of Toronto and see such an abundance of high class apples on sale which have been brought in from the Western United States, and far away British Columbia? You will find the same conditions in other Ontario cities. The quantity imported is steadily increasing because there is a demand for a high class, reliable apple, properly packed, and we fruit growers will persist in blinding ourselves to this big outstanding fact. What usually happens any line of business which refuses point-blank to supply what people are demanding? The business has difficulties, and mighty serious difficulties, if a sane line of policy is not adopted. Our grading of apples, generally speaking, is much too low and for this reason the trade demanding high class stock must seek its requirements elsewhere, thereby losing for us the cream of the business with the accompanying high prices. We have some progressive individual growers and some associations who have been packing high class grades and doing well in the industry. Why not every grower and association emulate the example of these few, and bend every effort toward producing first class apples. Let every one of us broaden our sphere of vision as to what is really a first class No. 1 apple, and a first class No. 2 apple.

We have associations in Ontario who can always sell their pack at a good advance over the common herd. Why? Simply because they have established a reputation with the trade for a high class, uniform pack. Let every association try to establish standards of grading which will assure them a good reputation with the trade and when you are fortunate enough to win this reputation, guard it carefully as one of your best assets.



The famous Climax fruit box, which was so thoroughly discussed at the recent convention of the Ontario Fruit Growers' Association, is here shown. It is cheaper than the standard box and allows the buyer to see what he purchases. As no standards for it have been set by law, one of the objections raised to its use is that this type of box will soon be made of many different sizes and width and thickness of slats, and thus result in confusion, as has been the case to some extent in British Columbia, where it is used extensively. It is a box that evidently has come to stay, and, therefore, should be standardized as soon as possible.

One of the best ways to lose the reputation of a good pack is to become economical, in the wrong direction, and employ some cheap, unreliable labor; you save a few dollars in the pay roll and lose many hundred, as well as getting in wrong with the trade—a loss which cannot be estimated in money. There are two brands of economy, "Business Economy," or "Stopping Leaks" and "Foolish Economy." Let me commend to you the former as one of the key-stones of success in the apple business or any other business, but foolish economy is doing more right now to hold back fruit growers' associations than many other agencies combined. Commenting at your manager, who should have a thorough knowledge of the business, down through the whole staff, you must have competent men. The ideal combination is "Brains," and "Energy," hard to get, but when you get such a staff, pay them first class wages and they will show results everytime, if the growers will give them the proper fruit to handle. They will bring your brand of apples to the surface so that you will be sure of a ready market at fair prices, regardless of overhead conditions. There is always a demand for the good article.

The market for apples is a very unstable one and it is our business as growers, to do all possible toward writing the word "apples" indelibly upon the want-list of every housewife. How are we going to do this? First and foremost—give the consumer a run for his money by supplying him with good, reliable, uniform fruit at a reasonable price; pare your cost of production and overhead expenses to the lowest possible limit, but don't do it at the expense of quality or uniformity of grade. I would like to see every association using central packing houses, as it is then possible to get uniform grading. Keep to your standards. The central packing method is cheaper than the orchard pack, and it is easier to get one good capable foreman, who will stick to his grades, than it is to get several foremen to handle orchard gangs. In the latter you cannot get the same uniformity, as you have too many individual opinions.

Much can be accomplished along educational lines. Everybody is now clamoring for Northern Spy; we won't deny the fact that it is the best general purpose apple that we produce, in its season; but there are other apples of merit which we are producing in large quantities, the virtues of which are largely unknown to the public.

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

Some excellent newspaper advertising has already been carried on with much benefit. We hope to see this advertising continued.

There is another method of educating the public, and that is through the legitimate fruit trade. There has been too much antagonism in the past, between the fruit trade and the fruit growers. Such a state of affairs is not in the best interests of either party and a better understanding all around would help the industry. We need the fruit jobber and the retailer and they need us; they can boost our wares to their own advantage, as well as ours, but everybody concerned must have confidence in "the other fellow." Every retailer has his clientele of customers, who look to him for advice in such matters; these men can do much toward stimulating the demand for apples by recommending the proper variety for certain purposes, varieties in season, etc. Let us bury the hatchet and get closer together.

Many of our associations have another pernicious habit which reduces our net returns. That is forcing on the market unseasonable varieties. Lack of storage faci-

ties is a difficulty in many cases, but there is always storage to be had in the larger centres, and the holding of some of the later maturing varieties for even a few weeks may make a great difference in the net returns to the grower on the season's business. I am not advising associations to go in for wholesale storage of apples, but I am advising that you offer the various varieties when the trade wants them. We growers are sometimes in such a hurry for our cheque at the close of the season, that a sacrifice is made in order to turn all the apples into money.

The business of a fruit growers' association should be conducted upon sound business principles, keeping as free as possible from speculative ventures, but you will have your reverses, just the same as any other business. Learn to take such things cheerfully; you will have good seasons and you will have bad seasons, and I have repeatedly noticed that the fellow who is dodging in and out of associations always jumps the traces after a lean season and misses the good one to follow.

Basket Packages for Fruit

F. M. Clement, Horticultural Experimental Station, Vineland, Ont.

THE basket as we use it to-day is not the product of a day or a year, but has been evolved from home-made boxes, baskets of various sizes and shapes, and other containers that at various times have been used for delivering fruits to the markets. It is a temporary container, being only used for delivery and then discarded or destroyed. The consumer pays for the container with each basket of fruit that he buys. The factor of cost in the basket is essentially then an important one.

Because of the demand for a basket at a low price, the tendency has been somewhat to make a cheap basket—cheap material, cheap manufacture, cheap basket. The leading growers, however, demand a good-quality basket. The veneer may vary in

thickness. Veneer of good quality, cut in not more than sixteen to the inch for six-quart baskets, and not more than fourteen to the inch for eleven-quart baskets, makes a fairly substantial package. Material of hard wood of excellent quality may be cut a little thinner; the handle for six quarts should be cut not more than eight to the inch, and for eleven-quarts not more than seven to the inch. The bands must be strong, of good material, and all parts must be well nailed. I shall be pleased to have the opinion of manufacturers on these standards.

The sizes of the so-called "six" and "eleven-quart" baskets are fixed by law, but it is difficult to find baskets that are constructed exactly according to the standards.

Douglas Gardens

OAKVILLE, ONT.

A gentleman who lives in Toronto, and who has had experience in building and planting, has recently been examining the lists of Herbaceous Perennials to be found in many of the leading Plant Catalogues issued in the U. S. and Canada. His conclusions given—not to the writer—but to a mutual friend, is that there is no occasion for going past Douglas Gardens for this class of plants: that the prices are no higher, and the plants are at least equal to the best to be found elsewhere.

The testimonials, the originals of which are in our possession, printed in our new and enlarged Planting List, go to support this gentleman's conclusion.

We are ready to send this Planting List to all who request it, and to fill orders from old and new customers with plants fully equal to the best to be got anywhere, and superior to most that are sold elsewhere.

JOHN CAVERS

Peerless Plant Boxes



MADE

Close Cornered with
New Machinery out
of Hardwood Veneer

PEERLESS IN NAME

AND

PEERLESS IN QUALITY

Order Early from

**Canada Wood
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AYLMER SPRAYERS
have won Medals
and are used by
seven Governments

USE THE AYLMER SPRAYER

Aylmer Sprayer
Outfit:

Pump, complete, 10 feet hose; 2 Bordeaux nozzles; 1 brass stop cock; 1 Y; 1 long extension rod; Without barrel \$15.25. Lined Bamboo extension rod, in place of iron rod, \$1.50 extra. Barrel, \$3.00 extra. Shipped freight prepaid, any station in Ontario.



Fruit growers use Aylmer Sprayers because they give **RESULTS**. Aylmer Sprayers have the force to drive the mixture into crevices of bark and buds and make it penetrate the hiding places of the destructive little insects. No time wasted on repairs during the spraying season if you get a Sprayer that **DOES NOT GET OUT OF ORDER**. Any man who has had the exasperating experience of having to stop on account of loose "packing" on the pistons, will be glad to own an Aylmer Sprayer. It is the only Sprayer constructed without troublesome "packing." In the Aylmer, the pistons are made tight by three bronze expanding rings, the same as the pistons in automobile engines. This Sprayer is easy to pump and there is no pressure leakage; every ounce of pressure being turned into spray work. Agitators prevent clogging; nozzles are up-to-date; throw full distance and with full power from a stream to a spray. Every part designed to give perfect service. Prices low. **FREE GUIDE TO SPRAY MIXTURES** sent on request.

Aylmer Pump and Scale Co. Ltd.
WATER ST., AYLMEER, ONT.

NOTICE TO CANADIAN BEEKEEPERS

We are making a specialty of the pound package trade. Our improvement on the package, making it larger and lighter and giving it more ventilation, enables us to guarantee its safe arrival. We will ship from our yards in Alabama during April, May and June, packages and queens at the following prices:

Pound package without queen, \$1.25—with queen, \$2.00; 2-pound package with queen, \$2.65—without queen, \$1.90; 3-pound package with queen, \$3.50—without queen, \$2.75. Queens, untested—one for \$1.00, six for \$4.50, 12 for \$8.50. Select, tested, \$2.00; breeders, \$3.00.

Our stock of 3 band Italians have stood the test for 20 years; there is none better. We guarantee them to be free from disease. Pure mating and no inbreeding. Your money refunded if not satisfied. We sold the A. I. Root Co. two carloads, and will sell them this season. Our aim is to carry a surplus of stock so as to fill all orders by return mail. 5 per cent. discount on all orders before March 15th.

Reference—American Exchange Bank of Apalachicola, Fla., and the A. I. Root Co.

After March 15th our address will be Fitzpatrick, Ala.

MARCHANT BROS., SUMATRA, FLA.

PRODUCTIVE BEEKEEPING

is the title of a new book of 326 pages by Mr. Frank C. Pellett, State Apiarist of Iowa.

As the name of this book indicates it is especially adapted to the needs of the practical beekeeper. Not a discussion of scientific principles, but of practical methods.

Sources of Nectar, Wintering, Marketing, and Laws that Concern the Beekeeper, are titles of chapters of special interest.

Regular price \$1.50 postage extra.

We offer this latest book with the American Bee Journal one year, both for \$2.00, Canadian postage 15 cents extra.

134 illustrations, attractive cloth binding.

AMERICAN BEE JOURNAL,

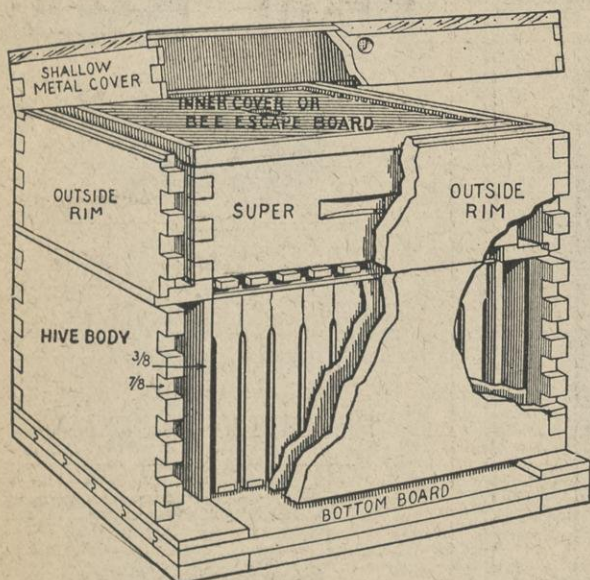
Hamilton, Illinois

Baskets manufactured by various companies vary so much that much inconvenience is caused in uniform packing, finding covers to fit, and loading in the car. It is suggested that when once the size for quantity and the dimensions are fixed by law, the blocks be supplied to the manufacturer by the government to insure uniformity of manufacture.

The quantity the baskets should hold, and the shape the baskets shall take, are important. Two sizes of baskets for quantity seem to be recognized by all growers; that is, those baskets that are now known as "six" and ordinary "eleven-quart." The former is generally accepted as it now stands for all small fruits, including grapes and fancy peaches. With certain requirements of quality in manufacture, no change seems advisable. The latter basket, that is the package that is now known as the eleven-quart, has come in for a great deal of criticism. It is claimed that it is too low to take three rows of No. 1 peaches layered, and that with the variation between the size of the bottom and the top fixed by law, it is impossible to pack three layers of uniform size. The smaller peaches must be, of necessity, placed in the bottom if a uniform pack is to be maintained. The law does not permit this; consequently it seems necessary to modify the package or the law. The quantity it holds seems satisfactory to both grower and consumer. It is also a convenient package to handle.

The law states that a basket shall be a certain length at the top and at the bottom, the difference being two inches. At the same time the law states the baskets shall be a certain width at the top and at the bottom, the difference being 1½ in. This permits of much more flare at the ends than at the sides. Why this difference? The strength of the basket is somewhat weak-

CANADIAN BEE WARE



Protection Hive—the hive that is making a clean sweep everywhere.

Double walled and single walled dovetailed hives—Canadian standard in width, power outfits, excluders, ventilating escapes, smokers, sections, wedge drivers, Fdn. fasteners, shipping cases, bees, queens, honey, wax, comb foundation (including Dadant's—finest in the world).

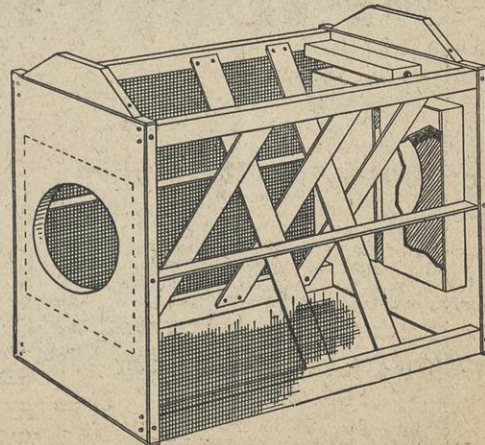
Everything for the Beekeeper manufactured on the premises.

Our work is a by-word for accuracy and finish. Our products bear the imprint of thought and care, even in the smallest detail. This is because we are PRACTICAL APIARISTS.

BEES AND QUEENS

How about your 1 lb. combless package of bees? Also Queens. In order to handle early business we have established an apiary at Hayneville, Alabama. All orders mailed to Chas. E. Hopper & Co. at this address will receive the same prompt attention as if addressed to the home office.

We are prepared to handle Carniolan and Caucasian bees, though we no longer breed them. Orders for these should be sent to the home office. All bees will be ready for shipment the first week of April.



1 lb. Combless Package of Bees, Queen included. The modern way to ship bees.

CHAS. E. HOPPER & CO., Toronto, Ont.

26 years of knowledge and experience we give you in every order.

ened by the increased slope of the ends, for which there is apparently no necessity. It is also this increased length of top over bottom that makes uniform packing most difficult. Some flare is necessary in the basket because of conditions of manufacture and the advisability of "nesting" for shipment and storage.

For packing the fruit, the more perpendicular the side the easier and more uniformly the fruit can be packed. The difference in width between top and bottom also permits of air circulation between the baskets, so essential in long-distance refrigerator shipments. The minimum flare for manufacture is, however, sufficient for a maximum of ventilation in the car.

Generally speaking, we are agreed on the more perpendicular side, but the point that seems to be more difficult of decision is how high the basket should be. Keeping in mind the fact that this basket is also used for cherries and plums that are somewhat soft sometimes, it seems necessary then to make the height the maximum that will get three layers of No. 1 peaches. The whole situation, then, evolves itself into one of size of No. 1 peaches, and then the minimum height that will accommodate three layers of peaches of this size. The present government standard for the eleven quart is five and three-quarters inches deep perpendicular. I am highly in favor of increasing the height of this package one-quarter inch. This will raise the standards of No. 1's. This basket will accommodate three layers of No. 1 peaches and at the same time not make it too deep for the softer fruits.

There is in use quite largely also a basket known locally as the nine quart. This is made with the same size of bottom as the common eleven quart, but the height is the same as that of the six quart. This basket will take two layers of fancy fruit. By law, this basket must be stamped with the number of quarts it contains when full before it is a legal package. This package might also be standardized for certain grades of fruit. It takes two layers of fancy peaches exactly. At the same time, if this is standardized it should be made a special package for a certain grade of fruit and be protected from the poorer grades.

One other package that was used somewhat last year was the American Bushel, which holds forty-five pounds net of fruit or three eleven quart baskets. The place of this package is difficult to establish. A certain trade will take a large quantity of fruit for canning purposes in this package. At the same time, it tends to lessen a great deal the price to the grower. The price is already at a minimum, and if there is any danger of this package cutting into the basket trade I would not favor it.

The Fall Packing and Exhibition Number in September of The Canadian Horticulturist was the best magazine I have ever seen.—H. A. Nicholls, F.R.H.S., London, Ont.

The Root Canadian House

185 Wright Ave. - - - Toronto, Ont.
MAPLE SYRUP WANTED.

All kinds of Bee supplies, books and journals. None better in quality. Put in your order now for 1 lb. packages of bees. Satisfaction guaranteed. Early discounts.

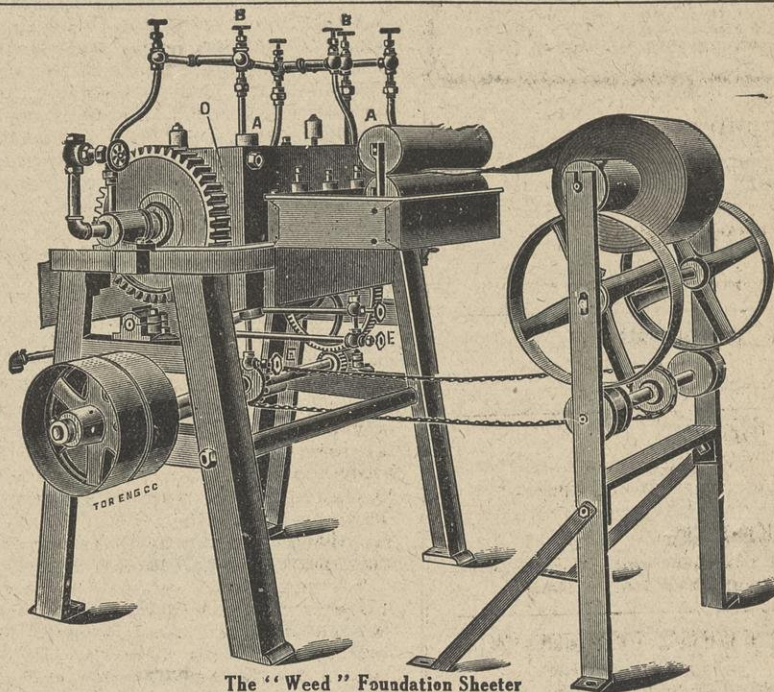
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FOUNDATION made by this process excels all other in strength of texture. This feature, combined with nice, straight uniform sheets, good cell walls and thin base, gives it world-wide reputation for general excellence of quality. So much better than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

Customers' Wax made up by "Weed" Process.
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The Rarest and Best Offer Yet

A daughter of one of Dr. Miller's best honey getting queens and the Beekeeper's Review one year for only \$2.00. Every one will want a daughter of those famous world champion honey producers. Listen to the record: a yard of 72 colonies produced in one season 17,684 finished sections of comb honey, or an average of 245 sections per colony. This is without a doubt the world's record crop from a yard of that size. Start breeding up a honey strain of bees by using one of those famous daughters this season. This is the first time stock from this noted yard has been on sale. Our breeder, one of the very best in the gulf states, will breed from one of those best queens, and as his original stock is of the best three banded stock, wonderful results are to be expected. Let us book your order at this time for one of those fine queens, for we only have for sale something like 500 for June delivery. The queen is well worth all we are asking, \$2.00 and the Review a year.

1000 Pound Packages of Combless Bees For Sale with Queen

Did you ever ask a breeder to quote you a price upon a thousand pound packages of combless bees? If you did, you will have noticed that he took his pencil from his pocket and began to figure what such a sale would save him in advertising, postage, office help, etc., and the result would be that he would make you a very close price. Now we have that very close price on one pound packages of bees, and, as is usual with us to charge no profit on supplies furnished subscribers of the Review, none will be charged upon those, but our subscriber will get all the advantage of this good buy. Notice that this close price is not for a late fall delivery, but for April and May delivery—later deliveries at a less price that will be quoted later, or by mail for the asking. Upon this deal we have two big points: First, the price; second, an old experienced breeder who has spent his life breeding bees and queens for the market. We mention this so you will not get it into your heads that this is a "cheap John" lot of goods, but that they are as good as money can buy, no matter what price you pay. The price is \$16.00 for ten pound packages of these combless bees, each containing a young untested three banded Italian queen of this season's rearing. Additional pound packages, without queens, one dollar each. For larger lots ask for special price, stating how many you can use and when the delivery is to be made. They are shipped from Alabama, in light, well ventilated cages, by express. Just a word to the wise: Book your order early! Address

THE BEEKEEPERS' REVIEW, Northstar, Michigan

THE BEEKEEPERS' DIRECTORY

The following beekeepers will be able to supply Bees and Queens in any quantity for the season of 1916. Order early.

E. E. MOTT,

Glenwood, Mich.
Northern Bred Italian Queens.

J. P. MOORE,

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Try Moore's Strain Next Year.

W. R. STIRLING,

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Fine Italian Queens.

J. I. BANKS,

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Italian "Queens of Quality."

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Canadian Bred Italian Stock.

THE DEROY TAYLOR CO.,

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Northern Bred Italian Bees and Queens.

M. C. BERRY & CO.,

Successors to Brown & Berry,
Hayneville, Ala.
Best bred Italian Queens and Bees.

THE PENN COMPANY,

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Bees and Queens.

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Bees by the pound, also best Italian Queens.

H. C. CLEMONS,

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Three band Italians bred for business.

THE ROOT CANADIAN HOUSE,

185 Wright Ave., Toronto, Ont.
Canadian and U.S.A. bred queens and bees. Bees by the pound or colony.

A. E. CRANDALL & SON,

Berlin, Conn.
"Quality" Italian Queens.

JOHN A. MCKINNON,

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Best northern bred stock.

WM. ATCHLEY,

of Mathis, Texas.
Wants to sell you your early bees by the pound. Queens in season.

STOVER APIARIES

Mayhew, Miss.
Not a single complaint.

J. W. K. SHAW & CO.,

Loreauville, La.
Everyone knows their strain of three-band Italians.

Apples in Boxes and Barrels

C. W. Baxter, Chief Fruit Inspector, Ottawa.

SINCE the box as a commercial package for apples came into prominence a few years ago, the merits of both it and the barrel have been so often debated that there is little that is new left to be said on the subject, especially with reference to the barrel. The question has often been asked, "Which is the best package for apples, the barrel or the 'box'?" There is no one best package. Our experience in marketing the crops of 1914 and 1915 has shown this.

"Box Packing" and the marketing of apples in boxes have been making history rapidly during the last few years. It is not long since our instructors were teaching so many different styles of packs, that the average packer in the east was so confused that he despaired of ever being able to pack apples in boxes commercially. This, however, has been overcome, and we have, to-day, four simple rules, which, if followed, will give us a perfect pack. In fact, experienced packers tell us that nearly all the apples in Eastern Canada can be packed under the three styles, "3-2, 2-2, and 2-1." The methods to determine the style of packs to be used have been simplified, and with good fruit, practice is the only other thing necessary to turn out a box pack equal to the best.

We say "Box Packing" has been making history. Let us review this history briefly: We are indebted to the growers and packers of California and the Pacific Coast States for the inauguration and perfecting of the present methods. Necessity had much to do in bringing this about. The growers in the Pacific Coast States having bought fruit land of high value, realized that because of their being situated so far distant from the large markets of the east and because of the heavy freight charges in placing their fruit on these markets, they must put out a pack that would be superior to, and different from, the eastern product, in order to obtain their fair share of the trade.

The appearance of these neat packages of very fine looking fruit, and the high prices realized, had a stimulating effect on eastern growers and packers.

It cannot be said that they were quick to adopt the box as a package for apples nor have they taken kindly to it yet, but I believe it was in a degree responsible for the improvement in barrel packing and grading, which we have seen. I also believe that this has been largely responsible for bringing about apple packing laws in the various states and the federal law of the United States.

As the production of apples on the Pacific Coast increased and the Eastern product im-

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



Pound Packages and Queens

We have established a Bee and Queen Breeding Yard in the south to handle our growing trade. You should order early to avoid delay. Send order on a postal, no money until Bees arrive. Delivery begins April 1st. If possible order in 5 lb. lots, it is cheaper in express charges. Satisfaction guaranteed. Price, \$3.25 per lb.

CHAS. E. HOPPER & CO., TORONTO, ONT.

Italian Bees and Queens

3 banded from select imported mothers. Bees by the pound. Safe arrival and satisfaction guaranteed. Give us a trial order. Write for prices. No disease. Are now booking orders for early delivery.

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"POUNDS OF BEES"

To the practical Beekeepers of Canada. Past experience proves to us that it does not pay to sell bees in pound packages earlier than May 1st, but after that date, which is just after our Orange Blossom flow, finds our hives full of young bees and sealed brood. So we can offer bees after May 1st, 1 pound, \$1.50; 5 pound lots, \$1.25; 10 pound lots, \$1.00 per lb. In lots of 100 pounds in separate pound packages, 90c. per pound F.O.B. Rialto, Cal. Untested queens to go with them, \$1.00 each, \$4.25 for six, \$8.00 per dozen; \$60.00 per 100, or queens by mail at above prices. Safe arrival and satisfaction to all customers. Express charges to or near Toronto, around 25c. per pound in lots of 10 or more at one time.

RIALTO HONEY CO., Rialto, Cal., U.S.A.

3 Band Italian Queens

My Queens are bred from imported mothers. They are the best for honey gathering and gentleness. I fill orders as promptly as possible.

PRICES

April 1st to July 1st

	1	6	12
Untested75	4.25	8.00
Sel. Untested90	5.00	9.00
Tested	1.25	7.00	13.00
Sel. Tested	2.00	11.00	20.00

GUARANTEE

That all Queens will reach you in good condition and to be purely mated, and will give perfect satisfaction.

L. L. Forehand

Fort Deposit Ala., U.S.A.



Italian Queens Three-Banded

Ready April 1, of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey gatherers. Untested, \$1.00; 3, \$2.75; 6, \$5.00; 12, \$9.00. Tested, \$1.25; 6, \$6.50; 12, \$12.50. Send for my free circular and price list, and see the natural conditions under which my queens are raised. Will book orders now.

JOHN G. MILLER, Corpus Christi, Texas.
Corner C St., and Coleman Ave.

BEEKEEPERS!



Jones' Weed Process Comb Foundation, Wax worked into Foundation, Italian Bees in Pound Packages, Improved Model Hives, and a full line of Bee Supplies. Catalogue free.

Write us if you have any BEES-WAX to offer.

F. W. JONES

BEDFORD, QUE.

proved in quality and packing, the average price realized for boxes in the Eastern markets was not so great. Wider markets were sought and large shipments were made to the Prairies. Two or three years experience in these markets has revealed the fact that the demand for the higher grades, such as Extra Fancy, Fancy and No. 1's, wrapped and carefully packed, was very limited and that what the majority of the consumers wanted was apples of good quality; but they did not want to pay for frills. The result was that a cheaper package was adopted and this season a large portion of the Pacific crop was marketed in open crates. Whether this is a desirable package or not will likely be discussed later, and it may be a question of individual market requirements, but our experience with apples in boxes properly handled, wrapped and packed, indicates that the demand for these at remunerative prices to the grower has its limitations. I am of the opinion that the future demand for apples in boxes will be determined largely by the improvements in the methods of grading and packing in barrels.

Precooling Fruit Markets*

Edwin Smith, Dominion Cold Storage Division, Grimsby, Ont.

THE precooling work at Grimsby is divided into, first, commercial cold storage and the precooling of fruit for the general public; second, demonstrations in fruit handling, packing, precooling and transportation; third, experimental refrigeration tests.

The first precooling last season was with strawberries. On June 28th a shipment was handled for the Vineland Growers' Co-operative for Winnipeg Market. The berries were shipped by refrigerated express, and the car was opened on July 2nd. The berries arrived at destination without decay but sales were poor owing to a poor market. From an economical and temporal view the shipment was a failure. The fruit was ripe at the time of forwarding and was shipped in Ontario 24-quart crates,—the poorest strawberry package that could be used for that purpose. The berries arrived in a fair condition, so that from a physical standpoint the venture was successful and further trials are to be made.

Our experiments with the maturity of strawberries for precooled shipments indicate that while ripe strawberries lose in texture and will not stand the package pressure for this length of shipment, on the other hand berries picked green advance but little in color when precooled and shipped under refrigeration. Strawberries must show some color, but must still be firm when picked for precooled shipments.

Precooling Cherries.

At the beginning of the season a carload shipment of cherries was made jointly with the Grimsby Fruit Growers', Ltd., and the Winona Fruit Growers', Ltd., to Winnipeg, including Early Richmonds and a few Black Tartarians. This shipment was of special importance for three reasons: First, the Early Richmond is not considered as good a shipper as the Montmorency; Second, it tested sweet cherries on freight shipments to the west and, third, it gave sour cherries a ten day shipping test. As all lots arrived in Winnipeg in good condition it showed that Early Richmond cherries could be precooled and shipped

HOT BED SASH



Manufactured from
CLEAR RED CYPRESS.

Stock size 3 ft. 4 in. x 6 ft. 0 in., for four rows of 8 inch glass, lapped.

Price—1 $\frac{3}{8}$ in. thick\$1.20
1 $\frac{3}{4}$ in. thick\$1.50

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We recommend the 1 $\frac{3}{4}$ thick as it is more substantial and will give better satisfaction.

Write for **CATALOGUE** of our **SASH, DOORS**
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On strawberry plants to the planter. And other kinds of small fruit plants at very low prices. Such as Raspberry, Blackberry, Currants, Gooseberry, and Grapes; also best kinds of Rhubarb and Asparagus Roots. 23 years' experience in propagating and shipping small fruit plants. There are no better plants grown in Michigan. Everything fully guaranteed. Large illustrated and descriptive catalogue free.

A. WESTON & CO., Bridgman, Mich.

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The St. Catharines Cold Storage and Forwarding Co., Ltd.

The old reliable headquarters for Spraying Materials, Pumps and all Fruit Growers Supplies.

Having purchased large quantities of Sulphur, Lime-Sulphur Solution and Arsenate of Lead before the last big jump in prices, we are in a position to supply growers in small lots at present wholesale car load prices. Be sure and get our prices before placing your orders. We sell the famous "Friend" Power Spraying Machine and Outfits. Also the "Gould" Pumps and Accessories.

The St. Catharines Cold Storage & For'd Co., Limited

St. Catharines, - Ontario

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



Don't Limit the Beauties of Your Flower Garden

by thoughtless seed buying! Choose the varieties with an eye to the possibilities of your own particular space and location—but be even more careful to get

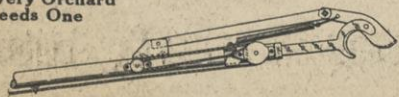
Ewing's Reliable Seeds

Then you can be quite sure that the seeds will germinate and grow—that the plants will be strong and healthy—and that the bloom will be abundant and beautiful.

Write for our new 1916 Illustrated Catalogue—the biggest and finest yet! It will help you to plan—and realize—a garden that will be a delight. If your dealer has not Ewing's order direct from us.

The William Ewing Co. Limited
SEED MERCHANTS 47
McGill Street - - Montreal

The Georgian Bay Tree Pruner
Saves in Many Ways
Every Orchard
Needs One



The Price is \$2.50
Write to G. W. BULL, Mfr., Warton, Ont.

west nearly as well as Montmorencies, standing a shipping test of ten days, and that sweet cherries may also be precooled and shipped west.

To demonstrate how precooled cherries stand up after withdrawal from the refrigerator car a part of the experimental shipment was re-shipped by ordinary express to Brandon, and arrived there in good condition, selling for a higher figure than those in Winnipeg.

Cherries that have been picked for ten days even though they have been under refrigeration will not stand up as well as freshly picked fruit. Ripening processes take place slowly under refrigeration and thus lower the vitality of the fruit. However, cherries will not perish immediately upon withdrawal from refrigeration and if they have not been under refrigeration for more than eight or ten days most varieties will stand up long enough for marketing. Upon first withdrawal from the refrigerator car there is a rapid condensation of moisture upon the surface of the fruit (not so heavy on the prairies as in the east on account of the low relative humidity of the air in the west). This gradually disappears, but the moisture has helped to germinate mold spores. During the day of unloading and distribution the cherries remain in good condition, without much sign of change. After twenty-four hours from the car, or on the following morning, the fruit will appear in as good condition, but upon careful examination will show discolored spots, especially where it has been bruised. After thirty-six hours the discolored spots begin to show decay, which begins to be serious after two days from the car, unless kept in cold storage.

Plum Precooling.

The precooling of plums has been very successful from the first. Shipments in 1915 were more active and gave more satisfaction than in 1914, since better care was given by the growers to the maturity and condition of the fruit. The greatest distances that precooled plums were shipped were to Prince Albert, Saskatchewan and Glasgow, Scotland.

Plums retain their flavor and texture under refrigeration better than any of our tender fruits, and during the past year fears of shippers and the trade relative to the keeping quality of precooled plums have been alleged. Our experimental tests with plum varieties have been made to determine which varieties are suitable for long distance shipments, after precooling. The following have proven most satisfactory: Bradshaw, Monarch, Grand Duke, Reine Claude, Damson, Abundance and Burbank.

Much difficulty has been experienced in shipping tomatoes to the Western Provinces, due largely to a lack of tomato shipping information and standards. Thus far precooling has not helped to any extent, since when picked firm enough for ordinary shipments the tomatoes would not have color enough for a precooled shipment. During 1914 one shipment of over-ripe stock was precooled and met with bad results. The cause of the loss was attributed to precooling. Demonstrations in 1915 have shown that it was not a question of precooling so much as one of maturity. For a precooled shipment the tomato must have color, but must still be firm enough to stand the necessary package pressure; the tomato must be free from cracks for best results.

Few Peach Shipments.

During 1915 peach shipments from Ontario to the western Provinces were very light. A greater tonnage of cherries was

Merryweather's Roses

Send for list of collections to be delivered after April 15th, 1916, in time for Spring planting.

Nurseries:
**SOUTHWELL
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15 Best Hybrid Perpetuals for \$3.00. 18 Best Hybrid Teas for \$5.50. 12 Best Tea and Noisette Scented for \$3.75.

12 Best Decoration Hybrid Tea for \$3.75.
12 Best Roses for Table Decoration, \$3.75.

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Direct to You at Grower's Prices

Quality before price is our motto, but our personal supervision of all trees from our nurseries to you, together with up-to-date facilities, enables us to sell Kelly Trees at low prices.

Our catalog tells all about our trees and prices. It is our only salesman, and you can order from the catalog just as well as if you visited us here in Dansville—Why not do both?

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KELLY BROS., Wholesale Nurseries

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You'll never regret planting Kelly Trees.



Too Much Mustard

It costs but 80c an acre to kill wild mustard when you use a Spramotor. If you spray for four years you will be able to pull all that comes up the fifth year. The mustard plants will be killed without in any way injuring the grain.

SPRAMOTOR

is made in many styles and sizes, from the largest horse and wagon outfit to the small portable Knapsack Sprayer, at prices from \$6 up to \$400. Over 20 valuable patented features obtainable in no other machine are embodied in the Spramotor. Made in Canada. No duty to pay.

Write for booklet of crop diseases—free.

Spramotor Works, 2709 King St., Toronto, Can.

precooled for western shipment than of peaches. The small western movements were due to fairly good local demands in the early part of the season, a late crop in Ontario and low prices in the west at the height of the marketing season. Low prices in the west were due to (a) a large consumption of California, Washington and British Columbia peaches before the Ontario shipping season had started, and (b) the lower cost of Washington and British Columbia fruit.

From a physical standpoint the precooled peach shipments were very successful. A shipment of Early Crawford's was two weeks under refrigeration and arrived in Winnipeg in good condition. A successful shipment of Elbertas was made to Glasgow. The farthest western shipment was to Prince Albert, Saskatchewan.

Tests with the maturity of peaches for precooled shipments show that a peach must not be green at the time of picking, but must be picked before showing any indications of softening as ripe peaches become mealy, lose flavor and are practically worthless when held for any length of time under refrigeration. Tests have shown that such varieties as Belle of Georgia, Yellow St. John, Early Crawford and Elberta, if properly picked and packed may be precooled and shipped to nearly any part of the Dominion.

Extension of Markets.

It has been shown that by precooling the better varieties of our tender fruits, not including berries, they may be shipped to remote parts of the Dominion without decay or waste. With the exception of sour cherries, the western shipments of which increased some 900 per cent in 1915 over those in 1914, the surplus of Ontario's fruits has not felt the influence that pre-cooling has on the extension of markets. The reasons for this are obvious.

In the past the Ontario grower has been marketing a high priced product when compared with prices received in other districts in North America. Abnormally high land values and a very great increase in production have followed. Before the increase in production was felt cheaper fruits from the United States came across the border to be used in Canadian canning factories and to fill up the outlying markets in the Canadian prairies. The importation of fruit for these markets became an established trade and one that is hard to break off, so that during 1913, the year when tons of tender fruits rotted on the ground in Ontario for want of markets, and when calamity first stared the Niagara District fruit grower in the face, the Dominion of Canada imported from the United States 12,149,207 pounds of peaches, 6,197,700 pounds of plums, 6,026,691 pounds of grapes, and 11,054,228 pounds of pears, apricots, quinces and nectarines—or an equivalent of 1,767 carloads of tender fruits such as might have been grown at home. The importation of tender fruits from the United States has made a steady increase, and to-day is greater than it ever has been.

Our Fruit Commissioner's reports indicate that a large proportion of these importations go into our Prairie markets. For three weeks during the peach rush of the past season arrivals in Winnipeg ran as follows: First week, imported 30 cars, Ontario 13 cars, British Columbia 10 cars; second week, imported 22 cars, Ontario 10 cars, British Columbia 16 cars; third week, imported 25 cars, Ontario 10 cars, British Columbia 13 cars. Points further west have been consuming imported fruit at a rate to make ratios even more striking. Without doubt we have let markets slip out of our

This Year Grow Bigger Crops

MAKE up your mind that you will make each acre yield a bumper crop this year. Fertilize more thoroughly than you have ever done before.

Harab-Davies FERTILIZERS

are strictly high-grade. They have proved their worth and are recommended by progressive Canadian farmers from the Atlantic to the Pacific. They are thoroughly mixed, well-balanced, complete in every way. Following are the principal lines for 1916:

Guaranteed Analysis

Ammonia.	Available Phos. Acid.	Potash.	Ammonia.	Available Phos. Acid.	Potash.
2	10	0	3	10	1
3	10	0	4	9	1
4	10	0	0	10	2
5	12	0	2	9	2
0	12	1	3	7	2
1	12	1	1	8	3
2	10	1	2	7	3

Our 1916 Fertilizer folder contains complete particulars about Harab-Davies Fertilizers. Write for it.

The Ontario Fertilizers, Limited

West Toronto, Ontario

SMALL FRUIT PLANTS.

GOOSEBERRIES—Josselyn, Red Jacket, Downing, Pearl, Houghton. CURRANTS—Perfection, Ruby, Cherry, White Grape, Lee's Profile, Champion, Black Naples, Black Victoria, Boskoop Giant. RASPBERRIES—Herbert, Plum Farmer, St. Regis, Cuthbert, Marlboro, Golden Queen, Brinckle's Orange. GARDEN ROOTS, Strawberry Plants, Rhubarb. Write for Catalogue.
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KANT-KLOG SPRAYER
9 sizes of sprays from one nozzle. Starts or stops instantly—saves solution and work. Send for catalog. Agents wanted, Rochester Spray Pump Co., 195 Broadway, Rochester, N. Y.

Northern Grown Apple Trees

\$18.00 per hundred.
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Everything from an apple tree to a strawberry plant—shade, ornamental and evergreen trees, ornamental shrubs and vines, roses, hardy flowering plants, bulbs, asparagus—guaranteed stock at reasonable prices. Catalogue Free. Silver black foxes, fishers, mink.

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Strawberry Plants

Stocky, well rooted plants. Carefully and securely packed for shipment by mail or express. Free catalogue and price list.

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Bigger Crops! Better Quality

It will pay you big to spray the Brown's Auto Spray way this year; then you can be sure of thorough spraying. And then you can be sure of more, finer fruits, vegetables, field crops, flowers, 350,000 users—farmers, orchardists, gardeners, U. S. Experiment Stations, recommend to you

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Auto Spray**

—in all their 40 styles, hand and power. They especially recommend Style No. 1—shown here. Capacity, 4 gallons, just right for 5 acres field crops or 1 acre trees. Fitted with Auto-Pop nozzle. Throws all kinds of sprays. Wonderfully fast, thorough work. See it—and entire line—at your dealer's. Or write us for low prices, Free catalog and Free Spraying Guide.

E. C. Brown Co.
862 Maple St., Rochester, N. Y.



hands large enough to consume more tender fruits than Ontario is producing to-day, and the reason for this has been the extraordinary prices we have received in Ontario and Quebec in the good old days.

The Ontario peach is not largely used in the Prairie Provinces owing to the heavy purchases of Washington Elbertas by the wholesale trade early in the season. The trade prefers to purchase Washington Elbertas over Ontario because of their earlier season, their dependable packing, and formerly because of their lower cost. Because of the past failures in shipping it is now difficult to make f.o.b. sales of Ontario peaches to the western trade, and it is going to be very difficult to capture even a small part of the peach trade from the United States.

The only way that we can interest the western trade is to show them that they can secure a better article for less money in Ontario than in the state of Washington. By precooling, proper packing and good salesmanship, this can be done.

In the past the Ontario shipper has demanded high prices in the west to meet the risk of long distance shipments. In the future he will have to wipe out this risk by pre-cooling, and thus sell at a price that will come under the lowest price his competitor can make. At normal times the minimum that Wenatchee or Yakima peaches can be laid down in Winnipeg or Brandon is 75c per box. Deducting freight, icing and pre-cooling charges, and we have 58c at the Ontario shipping point. Deduct packing and selling charges and 37c is left to the grower for 20 pounds of peaches. In order to compete with the Washington grower the Ontario grower must grow his peaches for 1½c per pound.

By eliminating the risks of long distance shipments through pre-cooling, and lowering the cost of the fruit to the consumer, a large increase in consumption will result. One shipment of pre-cooled cherries was sold in Winnipeg by the T. Eaton Co. for 50c per 6-qt. basket. So eager were the Winnipeg housekeepers to secure fancy cherries at so reasonable a price that the entire carload of 2,333 baskets were sold in 30 minutes.

One shipper has made the statement that by systematic salesmanship and by making pre-cooled shipments, the entire Ontario cherry and plum crops could be marketed in the Prairie Provinces with greater net returns than are now being received with the added markets of Ontario, Quebec and the Maritime Provinces.

In 1901 the population of the three provinces to the west was 419,512. In 1911 this had increased to 1,322,709. Is it not safe to say that by 1921, only five years hence, this population will reach 2,500,000? By that time are our importations of tender fruits from the United States going to increase from 1,767 cars to 2,500 cars, or are the growers of Canada going to extend their markets to absorb the increased demand for fruit? By pre-cooling we can deliver the goods to these remote markets, and it only remains for the growers to decide how much of the trade they wish to supply, or how much they wish to give to the United States.

Shipping Immature Fruit *

F. Carpenter

ONE of the main aims of fruit growers has been, and is, to increase the consumption of fruit and enlarge our

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

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T. E. Bissell Co., Limited, Elora, Ontario.
BISSELL STEEL STONE BOAT
See advt. also on page VIII.



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FERN OR BULB PANS

¾ AZALEA POTS
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Orders Filled Promptly. Send for Prices.

THE FOSTER POTTERY CO., Ltd.
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FRUIT MACHINERY CO.

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Manufacturers of the Ontario Power Sprayer Model 2-B, the handiest of them all. Engine fills the tank. Also a complete line of Apple Evaporating Machinery and power evaporator equipment. Our complete power systems for evaporating as we install them are practical, sanitary and labor saving.

Write for free illustrated catalogue on spraying and evaporating.

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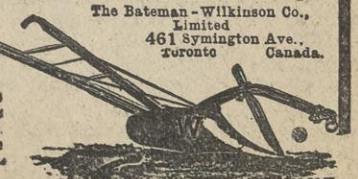
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Sod or
General
Purpose
Plough
55 lbs
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market, and, by so doing to keep the demand equal to and, better, sufficiently ahead of the supply to regulate prices so as to bring profitable returns to the grower. To further this a large amount of money and much time is being spent by the government co-operative associations, dealers and individual growers. Added to this the fruit grower has been assisted through the medium of lectures, demonstrations, etcetra, to grow a class of fruit at the least cost that will meet the demands and requirements of the consumer. The transportation companies have been, and are being urged to give more rapid and better service. The fruit inspectors are trying to regulate the pack so as to give the consumers an honestly packed package. Practically everything we are attempting to accomplish is favoring a larger market and an increased consumption. The question naturally arises, are we doing all we can to increase consumption? I say, emphatically, NO, for until such time, especially for the tender fruit industry, as the shipping of immature fruit is either prohibited or regulated, we cannot expect to obtain the largest consumption of fruit.

Most growers do not appreciate the amount of damage done to our markets through the shipping of immature fruit. The grower in his own case when he desires fruit during the fruit season for his own consumption goes to the tree or vine and selects a fruit that he knows will satisfy his taste. He seldom does this indiscriminately, for if he did he might obtain one such as the consumer frequently gets, which is immature. When he attempts to eat it one bite is most likely sufficient. The fruit does not appeal to his taste and he has more consideration for the subsequent possible condition of his internal organs than to attempt to eat it. Even in view of the saving practices of this time of war the fruit in this case is most likely wasted, yet much fruit reaches the consumer in practically the same condition, and we expect him to consume it. What is the result? If it is to be used as fresh fruit, it will last a long time, and, if for canning purposes, it cannot have the flavor and will require more sugar than ordinarily used to make it palatable. It appears as if some growers were in league with the sugar man.

What is the consumer's position. In most cases he is not and never will be competent to judge as to the maturity of the fruit from exterior appearances. Possibly he does not know where the individual basket came from, other than that it is Ontario fruit, and as a result hurls his high explosives on the Ontario fruit growers as a body, tells his friends and neighbors of his experience, and, after the bad flavor

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Dunlap, Wonder, Williams, \$4.00;
Arnout, Uncle Jim, \$5.00 per 1000.
200 plants, 50 each of four
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We also have good **Seed Corn**. Send for Price List.
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are the first raspberries to ripen and they continue to bear until the ground freezes in the fall. Plants \$1.00 per doz., \$3.00 per hundred, \$25.00 per thousand.

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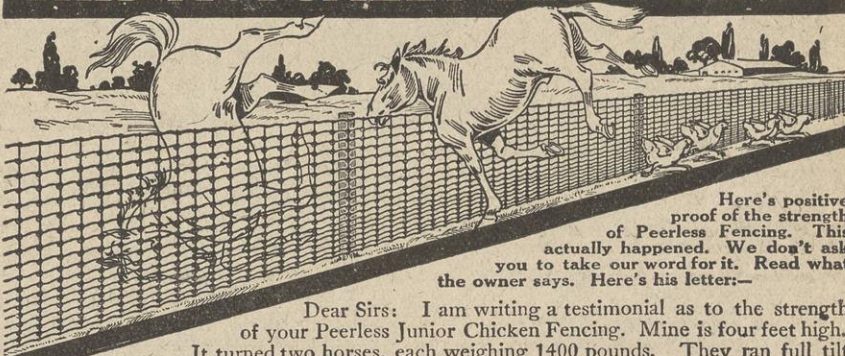
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Dear Sirs: I am writing a testimonial as to the strength of your Peerless Junior Chicken Fencing. Mine is four feet high. It turned two horses, each weighing 1400 pounds. They ran full tilt into the fencing about 2 rods from each other at the same time. The result was that they turned a somersault over the fence, alighting on their heads and necks, scratching them up some, but the fence remained intact. Yours truly,

Joe Boothroyd, Surrey Center, B. C.

Think of it! A dead weight of nearly a ton and a half coming with violent force against our poultry fencing—not field fencing—and yet

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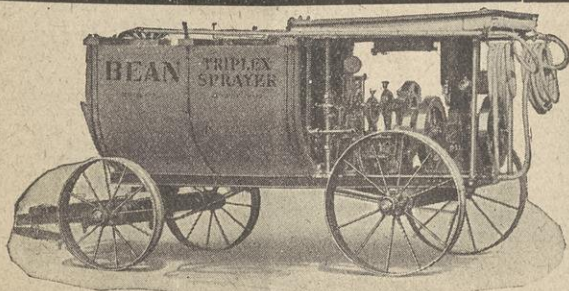
What greater test can you ask? We build it stronger than is necessary under ordinary circumstances. We build it of Open Hearth steel wire with all the impurities burned out and all the strength and toughness left in. Well galvanized. Every intersection is locked together with a Peerless Lock. Top and bottom wires of Peerless Poultry Fencing are heavy—extra strong. Consequently, fewer posts are required. Peerless fencing can't sag—can't get out of shape—can't help giving absolute satisfaction.

Catalog giving details on request. Describes our poultry, farm and ornamental fencing, also Peerless farm gates.

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about the prizes the Bean has won. On straight merit in competition with the world, it was awarded the Gold Medal and Grand Prize at the Panama Pacific Exposition in 1915. All sizes—Hand and Power.

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The garden tools for big results

They are saving time, lightening labor, and producing better crops for over two million farmers and gardeners. Planet Jr tools last a life-time. Fully guaranteed. 72-page Catalog, free!

Describes over 70 tools including 12 entirely new ones, and improvements to our Seeders, Wheel-Hoes, Horse Hoes, Harrows, and Corn, Potato, Orchard, and Beet Riding-Cultivators. Write for it to our nearest Agency.

S L Allen & Co Box 1106G Philadelphia

No. 4 Planet Jr Combined Hill and Drill Seeder, Wheel-Hoe, Cultivator and Plow pays for itself in a single season in the family garden as well as in larger acreage. Sows all garden seeds (in drills or hills), plows, opens furrows and covers them, hoes and cultivates easily and thoroughly all through the season.

No. 11 Planet Jr Combined Double and Single Wheel-Hoe, Cultivator, Plow and Rake. Straddles crops till 20 inches high, then works between. The plows open furrows and cover them. The cultivator teeth work deep or shallow. The hoes are wonderful weed-killers. The rakes do fine cultivation and gather up trash. Unbreakable steel frame. Strong high steel wheels and specially hardened steels—new this year. The greatest hand-cultivating tool in the world.

No. 11

We make 32 styles of seed-drills and wheel-hoes—various prices.



SKINNER SYSTEM OF IRRIGATION

Control complete. Prevents drought losses. Reduces labor bills. Increases profit. Special Portable Line for \$11.75. Send for new Bulletin.

The Skinner Irrigation Co.
217 Water Street Troy, Ohio.

NEW AND RARE SEEDS

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

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

CENTRAL NURSERIES

For reliable Apple, Pear, Plum, Cherry, Peach and Ornamental Trees, Shrubs, Roses, Grape Vines, Berry Plants, Evergreens, Hedges, etc.—good ones, too.

Also Seed Potatoes.

We ship direct to customers. Our new price catalogue will interest you. Note our offers—they are dependable and O. K.—35 years at it. No agents for us. Early Six Weeks' Seed Potatoes for sale.

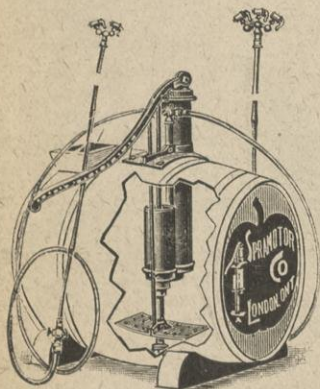
A. G. HULL & SON, St. Catharines, Ontario



Insure your crops with a

Spramotor

It isn't a SPRAMOTOR unless we made it



You find it good business to insure your life, your health, your home, then why not insure your crops upon which your livelihood depends? A few minutes' work with a Spramotor at suitable intervals will rid your

crops of fungus diseases, and assure their arriving at maturity in that hard, healthful condition that secures first-grade prices. We have Spramotors adapted for every kind of spraying in every part of the world. Let us quote you prices and terms to meet your own special needs. Meanwhile write for a copy of our booklet which describes the various styles of Spramotors and gives valuable information about the treatment of crop diseases. Made in Canada. No duty to pay.

Spramotor Works, 2708 King Street, London, Canada

coincident with his attempt of consuming this fruit has passed away, and he begins to feel fruit hungry again, what happens? He is cautious in buying Ontario fruit, and if a banana or orange will satisfy his appetite as well, will likely spend more money to assist in building up the fruit industry of our competitors, and at the same time take pleasure in knocking ours. On the other hand, if he is fortunate enough to secure a basket of mature fruit, it does not last long. He possibly feels more physically fit after using it and in a short time will want it replaced, and as a consequence, uses many times the quantity of fruit than when deceived occasionally as mentioned. Is this not a fair comparison? I could cite you instances to prove it, if necessary, taken from consuming centres close to the point of production, where the distance from market could not be made use of as an excuse for the sale of immature fruit.

The 1916 Outlook for Apples

As the war develops, the outlook for the sale of the 1916 crop of apples does not appear to improve. Referring to this situation Mr. Elmer Lick, of Oshawa, President of the Ontario Cooperative Apple Growers' Association, is quoted in a recent issue of The Globe, as follows:

"The most serious feature," said Mr. Lick, "is that we shall find our export trade wholly cut off for the year. Even if the seas are kept open, and even if apples are accepted for shipment, the delay in carrying the fruit from shipping station to place of consumption, in my judgment, puts an export trade out of the question. Some apples which our association sent to Manchester last season were a month in reaching their destination. It is not likely that record can be bettered this year, and for every four or five days apples are on the way, in excess of two weeks, you may write off a shilling a barrel in the selling price. The loss by delay and heavy freight rates combined are a fatal handicap on European shipments.

"This means that we shall be confined to the home market, and the home market is not big enough to consume the entire home product—at high prices. If, however, growers are prepared to advertise their fruit, and to accept the prices ruling a year ago, there is no doubt in my mind that the home market can absorb three times what it is absorbing this year.

Capture the Western Market.

"Our first duty is to plan to get a hold on the western trade. We are going to be faced there by stiff competition from British Columbia and Oregon. But we have one strong factor in our favor—the predisposition of Ontario people in the west in favor of the Ontario apples. There is hope, too, as an outcome of negotiations now under way, that cooperative apple-growers in the

The Williams Strawberry

This famous strawberry still maintains its lead over all others in this district as a commercial berry. We have a fine stock of plants for spring setting, and can quote favorable rates on large or small orders. Satisfaction guaranteed. Send for circular.

W. H. BUNTING

The Carleton Fruit Farm, St. Catharines, Ont.

east may be able to sell direct to cooperative grain-growers in the west at a total cost of twenty-five cents per barrel for the agencies doing the handling.

"No matter what is done, however, we cannot look for high prices; but even if we get only 50 cents a barrel for fruit on the trees this year we shall not do so badly if, as a result of lower prices this season, we can develop a larger consumptive market in the years to come. Most of our apple-growers are mixed farmers, and this is where we have an advantage over the specialized fruit-growers of British Columbia and Oregon. We can stand a year of adversity as they cannot. We can live under conditions that will put them out of business. Still it will be necessary, even in our case, to reduce our expenditures to the minimum. Where an orchard is pretty well clear of bark louse I would be inclined to omit the first spraying, the most expensive of the lot. On the other hand, if an orchard has been long in sod I would cultivate it well this year with a view of bringing it into full production next season.

"I can see nothing else for it but fairly low prices this season, particularly for the poorer varieties. It may be, however, as in other seasons, that as a result of low prices in the early part, consumption may run away beyond expectations, and that towards the close of the season there may be scarcity and comparatively high prices in consequence."

How to Prevent Co-operation

If the farmers in your neighborhood want to co-operate in the shipping of their produce, never ship with them, but immediately notify the largest speculators what is going on, so that they may buy your produce at a little better price and enough of your neighbor's stock to make cooperative shipping impossible. By doing this you will be doing your community a good turn, because the speculator is usually one of your citizens, and you must assist him in building up his business. Anyway, the extra money that your neighbors would get by cooperative shipping might cause them some embarrassment.

If this plan does not commend itself to you, then agree to ship with your neighbors; but at the last moment sell to the old-time speculator for a little more money than you think you will get cooperatively, and in that way prove to the community that cooperation is all a humbug, and that it pays well to be a traitor.

If the cooperative organization happens to sustain some loss on one of their shipments, due to unusual circumstances or conditions, even if absolutely unavoidable, get all the information possible and make it your special business to see everyone you can and tell them all you can about it.

In this connection very telling work can be done by careful exaggeration, double or treble the quantity of goods concerned, paint it very black, make it very much worse than it actually is, because the fact that there may be a little truth in it will enable you to carry that class of campaign a very long way successfully. Pretend to sympathize with the cooperators and pretend that you could have handled the business better; that will make them dissatisfied.

Incidentally you should be careful not to mention that you have yourself met with much worse luck on various occasions in the past. This method of procedure has much to recommend it. Your neighbors will consider you very much interested in their welfare, and therefore a real good fellow.

Implements for Orchard and Vineyard

Spring Tooth Harrows

10, 15, or 17 Teeth

The 10-Tooth size is in one Section and can be furnished with handles for vineyard work when so ordered.

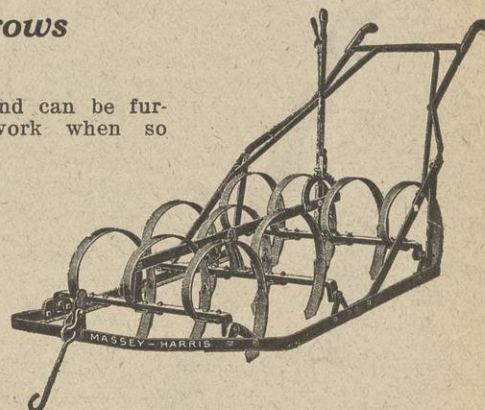
Spraying Outfits

Small outfits on skids—large outfits on wheels.

Hand and Power Spraying Equipment of all kinds.

Vineyard Plows

Both Walking and Riding Plows especially built for orchard and vineyard work.



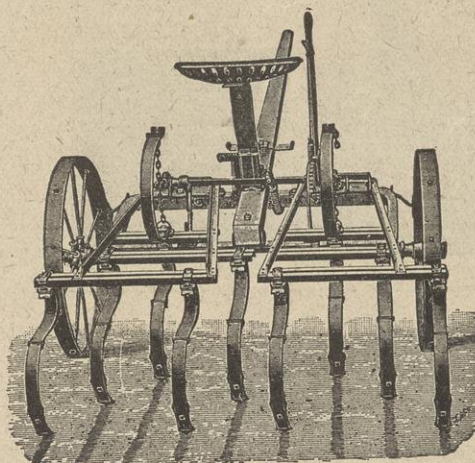
Orchard Disc Harrows

REVERSIBLE

To throw the dirt to or from the trees or vines.

ADJUSTABLE

Gangs can be adjusted as required. Extension can be furnished for working under branches.



Cultivators

A great variety—for cultivating small fruit—for vineyards—for orchards.

Grape and Berry Hoes etc.

Toronto
Montreal
Moncton
Winnipeg
Regina

Massey - Harris
Co., Limited

Saskatoon
Yorkton
Swift Current
Calgary
Edmonton



No. 6 C'n. Drill & Wheel Hoe



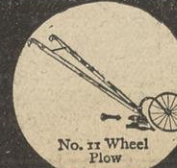
No. 1 Double and Single Wh. Hoe



No. 27 Disk Cultivator



No. 20 Wheel Hoe



No. 11 Wheel Plow



No. 10C Wheel Cultivator

Practical Gardening Tools

TOOLS like these will do all of the necessary work (except plowing and harrowing) economically, whether for home, farm or market gardens. You can plant certain crops close and straight, and work them close and safely, with wheel hoes. You save ground, save heavy investment for tools at the start and yet do the best kind of work with profitable results.

IRON AGE Hand Seed Drills and Wheel Hoes

Will sow, cultivate, ridge, furrow, etc. better than you can with any old fashioned tools and ten times quicker. Pushed ahead a step at a time, these tools can be worked by women, or grown boys or girls. We show here a few only but we make 38 styles and combinations from which to choose. Prices, \$3.00 to \$14.50. There are also many attachments for special work.

Ask your dealer to show them and write us for booklet "Gardening With Modern Tools." Also, for horse hoes, harrows and cultivators, sprayers, etc.

The Bateman-Wilkinson Co., L't'd 462 Symington Ave. Toronto, Ontario.

Fire Blight Destroys Thousands of Trees

FIRE BLIGHT OF THE APPLE
IS SPREAD BY APHIS

APHIS CHECKS GROWTH OF TREES
APHIS CAUSES LEAVES TO CURL
APHIS DEFORMS FRUIT
DESTROY APHIS WITH
"BLACK LEAF 40"



Guaranteed 40% Nicotine

Your dealer will furnish you this effective insecticide in concentrated form—200 gallons of spray from the 2-lb. can costs \$2.50—1,000 gallons from the 10-lb. can costs \$10.75. If he will not supply you we will send it to you, express prepaid, upon receipt of price. Write for Free Bulletins to the address below.



"BLACK LEAF 40"
40% Nicotine

The KENTUCKY TOBACCO PRODUCT CO.
INCORPORATED
LOUISVILLE, KENTUCKY.

"The Best Horse Clipping Machine"

That is what customers in every country say of the
Stewart Ball-Bearing Machine

It turns easiest, clips fastest and endures the longest. Its file hard cut steel gears running in oil will last a lifetime. It has feet of new style, easy running flexible shaft and the new patented Stewart cutting head, highest grade. Clip off the heavy winter coat from your horses before the spring work begins. They will look better, feel better and do better work. Get one of the Stewart Ball-Bearing Machines from your hardware, saddlery or implement merchant, at only \$9.25.



Insist on a Stewart Machine, the only one that will give you good service. Write us if your merchant does not have it.
CHICAGO FLEXIBLE SHAFT CO.
E. 612 N. LA SALLE ST. CHICAGO, ILL.

The Poultry Yard

F. C. Elford, Experimental Farm, Ottawa

Grit and oyster shell should be in a hopper, to which the hens have access at all times. The grit may be the commercial product, or if you are situated so that you can get a supply of coarse sand or fine gravel in the fall, it will answer very well. Oyster shell is a convenient form of supplying the lime necessary, and the egg shells may be used for the same purpose, but should be broken up fine before they are fed so that the hen will not get into the habit of eating the eggs.

Sixty-five per cent. of the contents of the egg is water. This means that the hen must have plenty of drinking water. Open pans or pails are the best water vessels for winter, because they can be emptied and cleaned more readily than other vessels. Where it is almost impossible to have a fairly constant supply of water before the hens, see that there is a pan of fresh snow put in. In fact, fresh snow is sometimes used exclusively, though where the conditions are such that water can be supplied, it is better, and if the chill is taken off it, it will remain longer without freezing.

Mark the Laying Pullets.

By this time a pullet should be laying well. Those that are not should be marked or rather those that are laying should be marked so that only such will be kept another year. The pullet that does not lay in January will not likely pay for her keep and should be discarded in the spring. Those that are laying should be kept for breeders another year.

The best results cannot be obtained from a flock in which both hens and pullets run together. The pullets should be fed better than the hens at this time of the year, because it is from them that the fresh eggs should be coming. If the flock is of any size, and a division could be made in the house, so that the pullets will be kept by themselves, it would be worth while to do it.

Keep things clean. Though the winter is cold, don't think that there will be no mites. Watch out for them. Clean out the house frequently. Put in a nice clean litter occasionally, give the hens a comfortable, though it may be a cold house, and if you have a good strain of birds, fed judiciously, you ought to have been getting eggs since early in January.

Good Prices Always For Your Fruit and Vegetables

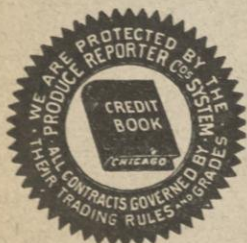
OUR facilities enable us to realize top prices at all times for your fruit, vegetables or general produce. Aside from our large connection on the Toronto Market, we have established branch warehouses with competent men in charge at Sudbury, North Bay, Cobalt, Cochrane and Porcupine. In time of congestion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



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

H. PETERS
88 Front St. East, Toronto

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



We Solicit Your
Consignments

Send for
Shipping Stamp

Niagara Peninsula Fruit-Growers

F. G. H. Pattison, Winona.

The annual spring meeting of the Niagara Peninsula Fruit-Growers' Association opened at Grimsby on the afternoon of February 23rd. Mr. W. A. McCubbin, of St. Catharines, in an address on "Fruit Diseases of the Year," referred to the currant rust, a new disease which first appeared at Font-hill, Grimsby and St. Catharines, and has now spread as far as Oakville. It attacks the black currant chiefly, covering the undersides of the leaves with a conspicuous orange coating. It is very infectious, and spreads from patch to patch. The rust spores die in the fall on the currant, but are carried over in the white pine, which acts as a secondary rust, through the winter, to infect the currants again the following spring. It is likely to be much worse next season, although it seriously affected the crop in some places last season. Growers must get rid of the white pine or lose their currants. The Department is going to try and get rid of all affected white pine next season.

C. A. Pratt, Benton Harbor, Mich., gave a practical talk on peaches, their mode of growing, cultivating and marketing them in Michigan. The chief variety grown there is Elberta.

Dominion Fruit Commissioner D. Johnson gave a comprehensive view of the present condition of the fruit industry, with special reference to the advertising campaign conducted by the Dominion Fruit Branch last season.

Mr. W. T. Macoun, of the Central Experimental Farm, Ottawa, gave a short address on the leading principles of pruning, and Prof. Caesar, of the O.A.C., Guelph, gave a description of the newest sprays and how to control a number of the most important fungus diseases and insect pests.

Mr. David Allan, of Grimsby, while in favor of advertising, was of opinion that the dealers, etc., had put the prices of peaches down too low last year.

Mr. E. D. Reed, of Hamilton, reviewed the whole campaign of advertising last year in connection with the Niagara Peninsula Publicity Campaign. He read a number of letters from dealers and merchants in numerous towns and villages in Ontario, all testifying to the good results obtained by the advertising last season. Mr. Reed was of opinion that by the use of larger space in the newspapers of these towns that much greater results could be obtained next season with the expenditure of very little more money.

"Co-operation, or Problems of the Fruit Grower," was ably handled by Mr. S. J. T. Bush, of Rochester, N.Y. This was by far the best address of the day. It is published in part in this issue of The Canadian Horticulturist, by special request of the growers.

Dominion Instructor P. J. Carey spoke on "The Packing, Handling and Marketing of Basket Fruit." This address also will be published in The Canadian Horticulturist.

St. Catharines Meeting.

The convention was continued on February 24th in St. Catharines. There was a capital attendance. Prof. Caesar gave an address on "Injurious Insects, Diseases and Sprays," much the same as the one given at Grimsby.

Mr. W. T. Macoun followed, his subject being, "Apples, Best Varieties for Profit." He believed that the apple is going to be the most important fruit in Canada. Every grower in the Niagara District should have at least a small apple orchard. He considered that after the war Canada would have



Much of the success with a well-planned flower or vegetable garden depends upon the wise and careful selection of seeds. KEITH'S, by supplying only the highest quality seeds, has well earned the title

THE STANDARD FOR FIFTY YEARS

You will not be satisfied till you see a copy of our "Golden Jubilee Catalogue." It contains the full line of our "Quality" seeds.

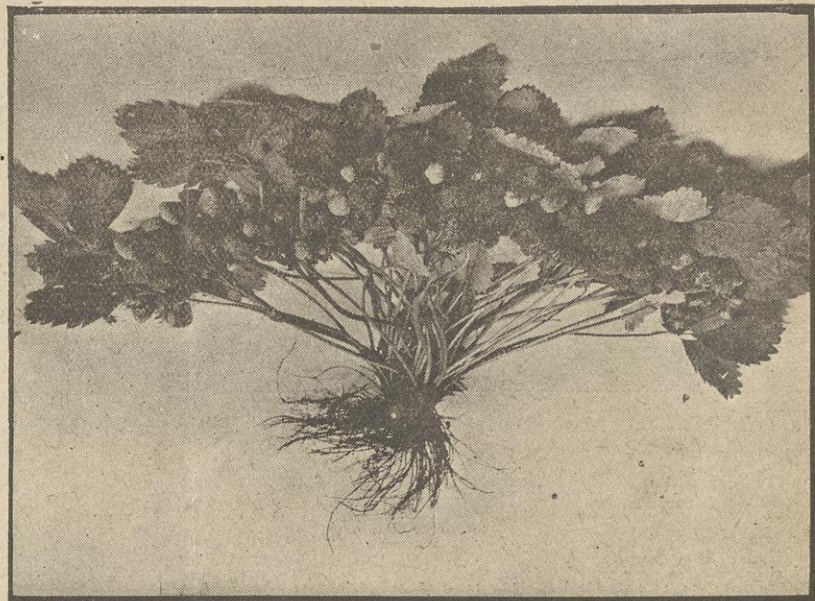
Send a post card to-day

GEO. KEITH & SONS

120 King St. E.

Toronto, Ont.

Ott's Giant



THE new variety of strawberry reproduced above was cultivated from a chance seedling found by George Ott, of Arkona, Ont. The stems and leaves of this plant average 12 inches in length, and it contains 114 berries, the largest berry measuring $5\frac{1}{4}$ inches in circumference. It will yield one-third more per acre than any other variety which Mr. Ott has heretofore grown. The berry commands also a higher price in the market than the older varieties.

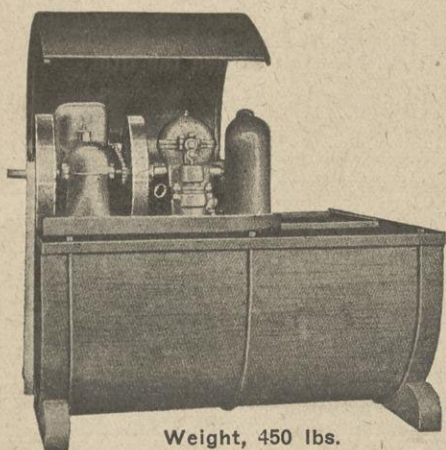
Ott's Giant is being put on the market for the second time this coming spring, 1916. For a full description of this wonderful new berry and price list, send a post card to George Ott, Arkona, Ont.

You Can Grow Prize Fruit by SPRAYING your fruit trees with the right sprayer.

Over two hundred prize winners at last year's Fairs were growers who used our Sprayer last Spring, and who followed our directions about when and how to spray trees.

Your orchard can be made to produce three times its last year's yield, and the extra profit will add many dollars to your bank balance if you spray with the

I. X. L. JUNIOR Automatic Power Sprayer

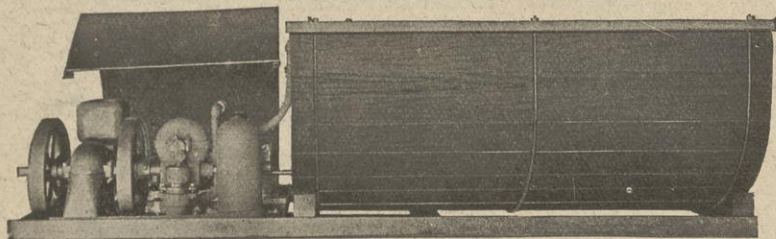


Weight, 450 lbs.

- I. X. L. with 100 gallon tank, \$165.00
- I. X. L. with 150 gallon tank, 170.00
- I. X. L. with 200 gallon tank, 180.00

For rough or hilly orchards, common in some parts, the machine which best fills the requirements is our back-mounted

Pontiac Special Automatic Power Sprayer



This machine is equipped with the same engine as the I.X.L., and is made with two size tanks.

- 150 Gallon Tank, 50 ft. Hose, 2 poles\$200.00
- 200 Gallon Tank, 50 ft. Hose, 2 poles\$210.00

We have prepared a valuable booklet entitled, "Prize Fruit and Vegetables from your Orchard and Garden," which is free to all farmers, fruit and vegetable growers. Use the coupon and send for your copy to-day.

Canadian Sprayer Co.
TRENTON, ONTARIO

Canadian Sprayer Co., Trenton, Ontario.
Dear Sirs:
Kindly send me your free book.
Name
P. O.
Number of trees in orchard

The I. X. L. Junior is made in two styles. It consists of a 3½ H.P. Engine, cypress tank, gear driven vertical cylinder pump, two 25 ft. leads of Hose, two visible spray nozzles, complete in all details.

exceptional chances to place her apples in the British and other colonial markets at an advantage. He gave a full account of what they were doing at Ottawa in the originating of new varieties. Seven hundred varieties had been tested there, and they had one hundred kinds that were very promising and likely to take the place of older kinds. He thought it would be profitable in the future to grow early-bearing varieties. By planting trees closer judiciously, a large amount of fruit could be obtained from a small piece of ground in a short time. He recommended the following varieties for the Niagara District: Red Astrachan, Duchess, Wealthy, Gravenstein, Blenheim, Hubbardson, McIntosh, Fameuse, Greening, Baldwin, Spy. He considered that good summer, fall and winter varieties of the highest quality would be very profitable in the Niagara District.

Mr. McCubbin repeated his address on "Fruit Diseases of the Year."

Mr. C. A. Pratt gave a capital address on "Strawberries." Large crops of good fruit can't be grown from poor plants. First-class plants and rich soil are necessary. Barnyard manure is the best manure for the strawberry. In planting make an opening in the soil, place the plant in it and make the soil firm against the roots. Plants must be cultivated well and carefully, and the crowns must not be covered with soil. They grow a propagating bed for plants every year. For varieties they grow Senator Dunlap for early, Gandy and Brandywine for late. Rotating the crops is the best way to control insect diseases. For the last two or three years they spray their strawberries with conner sulphate; first, just before the blossoming; next, between blossoming and picking. Chickweed is a hard proposition in a strawberry patch. They mulch their plants with marsh hay. It should be done early in the fall.

Mr. D. Johnson spoke on the marketing of fruit, and suggested that the growers should get together in the Niagara District and formulate a plan to market their fruit co-operatively. Last year they had come together and advertised Niagara District fruit, consequently Niagara peaches had been used where they had never been used before. "This year you expect again to have a large crop of peaches, therefore you should organize now, and be ready to handle the crop."

Prof. J. W. Crow, of Guelph, considered fruit growing too risky for a man to raise only one kind of fruit, and advocated an apple orchard in addition to other kinds of fruit for the Niagara District. He strongly urged fruit growers to raise a variety of fruits, as in this way a paying crop could be raised every year. He was of opinion that Northern Spys in Ontario are usually produced at a loss. Many fruit growers injure their business by asking too high a price for their fruit.

Mr. Bush repeated his excellent address as given at Grimsby.

Mr. E. D. Reed gave full data concerning the Publicity Association's advertising campaign of last season. The greatest benefit derived last year was when the Dominion Government helped by inserting large show advertisements in the daily newspapers.

An informal round-table talk was held in the evening, at which marketing and co-operation were the chief subjects discussed.

Mr. W. T. Macoun spoke the last day on "Small Fruits." He advised getting plants nearby if possible, as the loss was heavy when obtained from a distance. Currants needed severe pruning, good manuring with barnyard manure, and a soil with plenty of moisture. Mr. Macoun went fully into the

methods of cultivating currants, gooseberries and raspberries.

Mr. C. A. Pratt spoke on "Grapes, Pears and Cherries." In Michigan they suffered a good deal from black rot, but had controlled it with Bordeaux Mixture. Concord was the only grape grown there commercially. The growing of pears in Michigan has been limited by reason of the blight, but along the lake shore they do not suffer much from that. They cultivate till the beginning of June, and then let the weeds, etc., grow up. Keiffer and Bartlett are the chief varieties. In cherries they used to grow Governor Wood and other varieties, but now Black Tartarian is the only cherry being much planted. They are quite successful with Windsor and Montmorency in sour cherries. They ship their cherries in 16-quart crates.

Mr. Bush gave an admirable address on cold storage, which will be given in full in The Canadian Horticulturist.

Mr. Pratt spoke on peaches, and Mr. Creelman gave a thorough account of the pre-cooling of tender fruits and the best kinds of packages in shipping pre-cooled fruits, as evidenced by a series of experiments at the Grimsby Pre-Cooling Station.

The following resolution was adopted:

"Resolved that this Association endorse the work of the Niagara Peninsula Publicity Committee in advertising the tender fruits in 1915, and recommend that work along similar and improved lines be continued in 1916."

The Outlets for Low Grade Fruits*

P. E. Culverhouse, Experimental Station, Vineland, Ont.

The question has been asked: "What prospects have the tender fruit growers for disposing of more of their low grade fruit in the form of by-products?"

In the past, grapes have gone partly to market and partly to the wine-maker. Both outlets took all kinds and classes of the fruit. The wine-maker, however, used mostly the Concord. In 1915, grapes for wine-making were reduced by two-thirds. Legislation and popular opinion is strongly reducing the amount of alcoholic beverages manufactured. The making of unfermented grape juice looks like the industry of the future. This industry will take only the best ConCORDS. Therefore, we may classify grape production of the future in the following manner:

(1) Red varieties—Niagaras, Wordens, some ConCORDS, and other varieties grown for market.

(2) Best ConCORDS for grape juice.

(3) Culls of all varieties for jelly making.

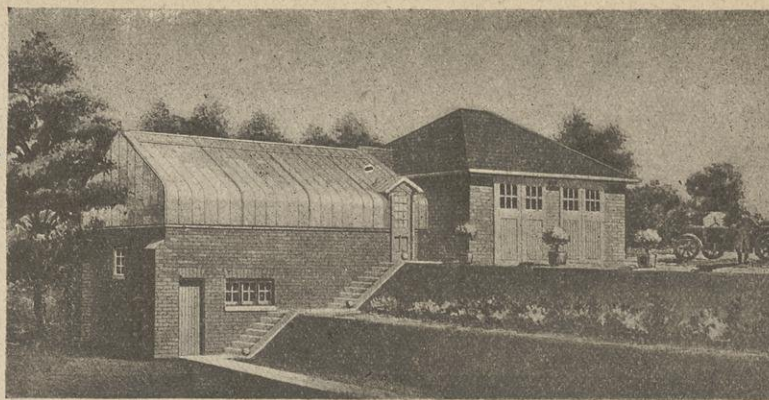
This third class of grape is the only one of low grade nature. By removing it from the other two classes, Ontario grapes and Ontario grape juice will become more popular. The jelly and jam making business of Ontario is growing. Grape growers will be able to dispose of more and more of their small bunches of unevenly ripened fruit.

Peaches.

Low grade peaches consist of: (1) Undersized fruit; (2) overripe fruit of all sizes; (3) split peaches; (4) windfalls; (5) peaches with gum spots; (6) scabby peaches.

The most promising way to dispose of these peaches is to stop producing them. Seriously, no grower can afford to stop improving his organization for producing and handling his crop. Granted, however, the

*A paper read at the last annual meeting of the Ontario Fruit Growers' Association.



What Have You Done Since October?

Have the winter months been wasted as far as your flowers and vegetables are concerned? They have been busy months with all enthusiasts who own a greenhouse, and horticulture is a particularly delightful hobby when winter reigns outside.

Of course, much depends on the efficiency of your greenhouse—that is why we can count as our clients the big professional florists, whose whole income during one-half the year depends on flowers raised under glass.

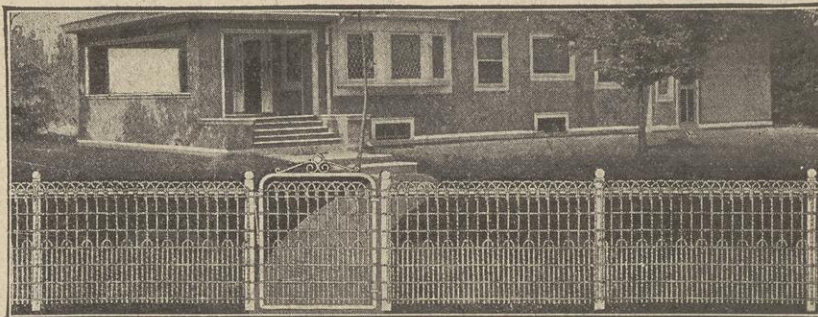
We will build a house to suit everybody. Let us know your requirements, and write us for booklet B of greenhouses.

GLASS GARDEN BUILDERS, Limited

201 Church Street, TORONTO

Transportation Bldg., St. James St.

Montreal



(Style "S"—Short bowed stay in lower half, exactly as shown.)

Beauty, Economy, Perfect Weave

These and complete satisfaction you get in Frost Improved Lawn Fence, because—

(1)—It is perfectly woven on the latest automatic power machine, the only one in Canada. The spacing is only 1-3/8 inches, and the fabric is tightly and uniformly woven throughout. Every stay stands straight.

(2)—The material is all our own make best quality heavily galvanized Frost Hard Steel Wire. Laterals are two No. 13 wires tightly cabled, with the deeply crimped No. 9 uprights firmly interlaced.

(3)—Our heavy zinc coating (galvanized) is more durable than paint (which quickly cracks and peels off) and enables us to sell our improved fence at lower prices than the hand-woven, painted fences.

FROST IMPROVED LAWN FENCE

can be erected on wooden or iron posts. It adds beauty and value to any private property or public buildings, church yards, etc. We make three different styles of fabric, and gates with filling to match as shown above.

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greatest efficiency some of these low grade fruits are bound to appear.

Undersized, split and scabby peaches, if not too ripe, may be used in the canning factory for pie peaches. For this purpose they are sliced and canned in water. This product is cheap, but should dispose of a great deal of our peaches.

Overripe and gummy peaches and wind-falls should be used for jam making. Peach jam is not very popular. It is not advertised sufficiently to be known by the public. We made some at Vineland last year, however, which was very good. Fairly large quantities were made in commercial jam factories. The question might well be asked: "Why couldn't a large quantity of peach jam be sold for army purposes?" It could be prepared cheaply, is very healthful, and anyone who tastes well made peach jam will agree that it is a splendid product.

The idea of evaporating our peaches is promising. If such an industry were established here many undersized peaches could very likely be used.

It may be pointed out that local canning factories and evaporators, if run properly and successfully, will not only accept much low grade fruit, but will prevent much of the waste due to overripeness. Because factories are nearby the grower can dispose of greater quantities with less labor. Therefore there will be less spoilage.

Manitoba

J. A. Neilson, Manitoba Agricultural College, Winnipeg.

The annual convention of the Manitoba Horticultural and Forestry Association was held in the Manitoba Agricultural College, February 17th and 18th. About sixty delegates were in attendance. The meetings were characterized by earnest attention, practical papers, and interesting discussions.

President J. B. Reynolds, of the Manitoba Agricultural College, gave an address on "The Farmer's Vegetable and Fruit Garden." He stated that a fruit and vegetable garden should be found on every farm home. A good garden has a three-fold value: 1, Its value to the family; 2 Its value as an education; and 3, As a recreation.

Miss Ethel M. Eadie, Professor of Household Science at the Manitoba Agricultural College, read a paper on "Vegetables as Human Food." Miss Eadie showed that vegetables exert a beneficial effect on the health of the human body through the action of the various salts which they contain. Some vegetables, such as beans, peas and lentils, contain more protein than meat, and are a cheaper food.

Mr. James Tribe, of Kildonan, discussed the "Storage of Vegetables"; Professor Churchill, the "Value of Drainage to a Market Gardener"; Mr. J. J. Ring, of Crystal City, the "Farmer's Kitchen Garden," and Messrs. S. E. Clarke, of Souris, and J. E. Boughen, of Dauphin, and George Harper, of Neepawa, gave brief addresses on various phases of horticulture. J. A. Neilson, of the Horticultural Department, gave a demonstration and short talk on the preparation and use of Bordeaux Mixture.

Miss Barbara Stratton, of Stonewall, read a paper on "The Pests of House Plants and How to Combat Them." Mrs. S. E. Clarke, Winnipeg, gave a paper on "The Raising of House Plants from Seeds," and Mr. R. M. Muckle, Provincial Apiarist, gave an illustrated lecture on "What Bees Do With Flowers."

Professor V. W. Jackson gave an inter-

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Beans —Refuge Wax—Pods round, clear and transparent and of handsome appearance. Is tender, very productive, free from rust, and stands dry weather well. ¼ lb. 15c., 1 lb. 45c., 5 lbs. \$2.00. Postpaid.

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Peas —Bruce's Early Settler—A grand extra early wrinkled marrow variety. The pods are large, deep green, and filled with large peas, possessing the rich flavor and quality of the best late varieties. It attains a height of about 1½ feet and is very productive. ¼ lb. 15c., 1 lb. 40c., 5 lbs. \$1.75. Postpaid.

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esting lecture, illustrated by lantern slides, on "Spore Production in Plant Diseases." Mr. E. H. Strickland, officer in charge of the Entomological Laboratory at Lethbridge, Alberta, gave a full account of the work which he has been doing on "Cutworms and Their Control." Mr. Strickland presented some interesting matter on the life history of some of the injurious species of cutworms. In his experiments he found the poisoned bran mash a failure. He secured very good results by using the following preparation: 50 pounds shorts, 1 pound paris green, 1 gallon molasses and $2\frac{1}{2}$ gallons water. Mix the shorts and the paris green together dry. Dissolve the molasses in the water and add it slowly to the shorts and paris green. Thoroughly mix, and when completed the material should be dry enough to crumble finely. Apply at the rate of 25 pounds to the acre. If the land is dry and the cutworms do not come to the surface, harrow the bait in. In control experiments this mixture has destroyed 75 per cent. to 80 per cent. of the cutworms.

Mr. Norman Ross, Superintendent of the Dominion Forestry Station at Indian Head, gave an interesting review of the work of the past year, and briefly outlined some of the work for the present year. Mr. Ross reported an increasing interest in the work of tree planting on the Prairies. School-ground planting was being taken up by the Saskatchewan Government, and it is expected that a great increase in this work will follow as a result of careful supervision and up-to-date methods. Coniferous trees have proved to be better able to stand drouth than deciduous trees.

The United States Forestry Department had, during the past two years, made a careful study of the Canadian methods of forestration for a prairie country. It is an interesting tribute to the Canadian Forestry Department to notice that the American authorities have practically adopted in full the Canadian methods.

S. A. Bjornason gave an outline of the horticultural work at the Brandon Experimental Farm in 1915.

Mr. A. P. Stevenson, one of the successful pioneer horticulturists of Manitoba, gave an interesting paper on "Experiences in Horticulture in 1915." Mr. Stevenson has the largest and one of the best fruit plantations in Manitoba. In the face of unfavorable climatic conditions he was able to produce 150 barrels of standard and crab apples. The best bearing standard varieties of apples proved to be the Ostrekoff, Simbrisk and Hibernial, in the order named. Several varieties of the Russian Bush Morello Cherries came into bearing during the past season. Of these the Vladimir and the Shubianca proved to be the best. The Compass Cherry is one of the best hybrids tested. Sansota and Kaga were found fairly satisfactory. The Carrie Gooseberry, a seedling of the Houghton, produced a heavy crop of large-sized fruit which was superior to the mother plant. The Everbearing Strawberry was found to be quite satisfactory. A good yield of fine quality fruit was secured. The Agwam, a variety of Blackberry, has been found hardy enough to stand the winter in Manitoba. Two crops of this fine fruit have been produced. A variety of Red Raspberry Seedling No. 4, was secured from the Fruit-Breeding Station at Excelsior, Minn. This variety is one of the best of the seedling raspberries so far tested. The Herbert, a seedling variety, originated at Ottawa, was found quite satisfactory.

The convention was brought to a close on Friday evening by an illustrated lecture on "The Fight to Save the Forests," by Mr.



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give satisfaction. And letters which we have received and are constantly receiving from farmers all over Canada, signify that our statements have been met with a service that is making staunch

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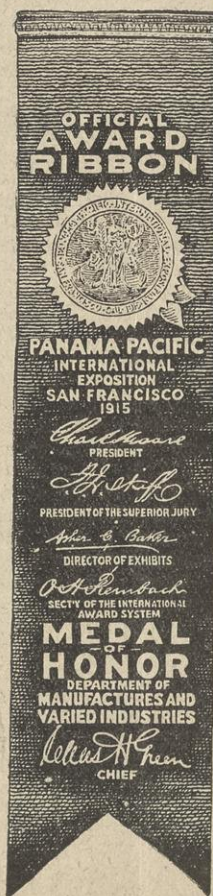
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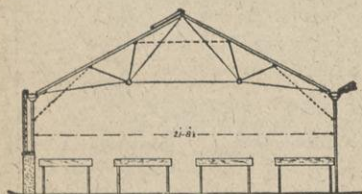
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will find many suggestions in its list of 115 hardy varieties. It also lists many varieties, new and old, of Shrubs, Vines, Herbaceous Perennials, Trees and Bedding Plants.

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Dotted lines show location of wind-ties that positively prevents vibration of the sash. Supplied in widths up to 25 feet 2 1/4 inches from post to post.

KING CONSTRUCTION CO.,
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Robson Black, Secretary Canadian Forestry Association. Mr. Black emphasized the fact that our forest supplies are being rapidly depleted by fire and by lumbering operations. The timber requirements of the Canadian Pacific Railway alone were very great. This company uses in a single year 5,000,000 railway ties, 200,000 fence posts, 50,000 telegraph poles and 6,000,000 feet of lumber. During the past century Canada lost one half of its total forest wealth by fires. To offset the great loss caused by forest fires an efficient Federal and Provincial system of forest fire protection is urgently needed.

Niagara District Notes

By F. G. H. Pattison, Winona

On February 5th an important meeting of the members of the local co-operative association, prominent growers and dealers, was held for the purpose of considering further and better co-operation for the Niagara district. Messrs. F. C. Hart and J. B. Fairbairn, of the Markets Branch of the Provincial Department of Agriculture, represented the Department.

It was proposed to divide the Niagara fruit belt into three districts. No. 1 to take in the portion of the fruit belt between the eastern outskirts of Hamilton and the Sixteen-Mile Creek below Jordan. No. 2, from the Sixteen-Mile Creek to the Niagara River. No. 3, the district between Hamilton and Toronto, lying along the lake shore.

For District No. 1, J. R. Hastings, of Winona, presented a plan worked out by himself in conjunction with Messrs. Hart and Fairbairn. After a good deal of discussion a strong committee was appointed to draft a constitution and draw up a definite and clear-cut scheme to place before the fruit growers of the district.

On February 1st the Ontario Vegetable Growers' Association held their annual business meeting in Toronto, and elected officers for 1916, as follows: President, F. F. Reeves, Humber Bay; Vice-President, J. J. Davis, London; Second Vice-President, E. K. Purdy, Kingston; Secretary-Treasurer, J. Lockie Wilson, Toronto. The officers, with the addition of Thos. Delworth, of Weston, form the executive. The Association will hold field-crop competitions in early potatoes, celery, onions and potatoes, and special prizes will be given for the best kept garden of any vegetable grower, not less than three acres. The Province will be divided into four districts in each competition.

On February 15th a Vegetable Growers' conference was held at Burlington, both afternoon and evening, with the following speakers: J. A. Campbell, Leamington, "Growing of Onions for Profit"; J. McFarlane, Brantford, "Skinner Irrigation for the Vegetable Grower"; F. F. Reeves, Humber Bay, "Greenhouse Crops"; S. C. Johnston, Provincial Vegetable Specialist, gave an illustrated address on "Insects and Fungus Diseases Affecting the Vegetable Grower."

On February 16th another Vegetable Growers' conference was held at Bartonville, with Mr. S. C. Johnston in the chair. Mr. Johnston explained that the object of these vegetable conferences was the giving of practical information to vegetable growers by experienced vegetable growers from a different locality. More money could be made by growing vegetables of first-class quality on a limited scale than by growing a large area of moderate quality. Mr. Walter Cook gave a very interesting and practical talk on "Hotbeds." Mr. Thos. Delworth, of Weston, went thoroughly into the question of "Greenhouse Crops." In the



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Twenty named varieties, \$1.00. Fifteen choice named varieties, \$1.00. Ten Giant prize-winners, all correctly named, \$1.00. Four different colors, 25c. All are field-grown roots. Postpaid. Send for Catalogue of over 200 beautiful varieties.

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both single and double, of all varieties, the best that money could obtain; also a quantity of extra good mixed ones, at very reasonable rates.

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Dahlias, Gladiolus and Perennial Phlox

15 choice Dahlias, all different, postpaid\$1.15
50 choice large flowering Gladiolus, postpaid 1.15
12 Perennial Phlox, new, large flowering, postpaid 1.15
5 Dahlias, 12 choice Gladiolus, 5 Per. Phlox, postpaid 1.15
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See advt. also on page 76.

evening "Skinner Irrigation" was discussed, and Mr. S. C. Johnston gave an address on "Insects and Fungus Diseases," illustrated by limelight views.

On the evening of Thursday, February 17th, Mr. W. E. Saunders, of London, Ont., gave a splendid lecture in Hamilton on "Bird Life," to the members of the Hamilton Scientific Association. Mr. Saunders described the reasons and results of bird emigration, and urged the erection of bird shelters in different parts of the Province. In illustrating this novel and admirable lecture Mr. Saunders used stuffed birds, limelight views of birds and their habits, and also imitated with marvellous accuracy the different bird calls. Mr. Saunders advocated his hearers to take up the study of birds and to identify them by their calls rather than by their appearance.

At the Niagara-on-the-Lake branch of the Dominion Canners, Limited, the employees have been busy lately making up a large shipment of canned goods for Montreal and other places. At this factory there is still a considerable share of last year's pack to be disposed of.

The Vineland Canning Factory has changed ownership.

At a meeting of the shareholders of the Northern Veneer Company, held at the head office, Grimsby, Ont., it was decided to go into voluntary liquidation and McLeod, Tew & Co., of Hamilton, were appointed assignees. This company was capitalized at \$200,000, and manufactured baskets and other supplies for fruit growers of the Niagara Peninsula. The head office was at Grimsby, with branches at Winona, Beamsville, Burlington and Copetown.

There is not likely to be much planting of new orchards or vineyards this spring. In consequence of this there will be a small movement of nursery stock, probably the smallest in some years.

The acreage planted to tomatoes is likely to be larger this season, as canning factory stocks are pretty well cleared out. It seems clear, however, that the canning factories are not going to pay more than 25 cents per bushel this year, and some contracts have already been made at that figure, in spite of the efforts of the Lincoln and Welland Vegetable Growers' Association to hold the growers together in demanding a better price. There is a probability that the price of baskets will go up before long. The present rates are \$42 per thousand for 11-quart and \$34 per thousand for 6-quart. The makers say they are losing money at those prices owing to the increase in the price of the raw material, especially bottoms.

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It is an established fact that the "Parsons" have become a universal favorite at the canning factory and at the home, possessing many good qualities, viz., a vigorous grower, excellent flavor and exceedingly productive. This season's stock comes from a piece of new ground (the first strawberry plant crop), therefore will be free from all plant disease. These plants will be carefully packed in slatted crates, with plenty of moss to protect roots. Shipped by express to any address in Canada. \$3.75 per M. F.O.B. Niagara Falls, Ont. Cash with order.



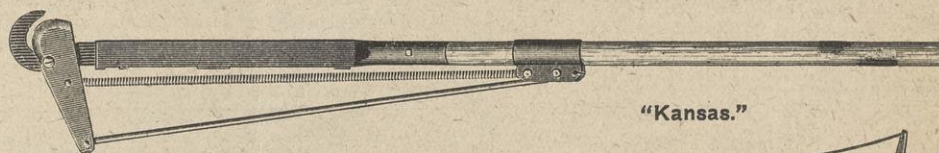
A two-acre field of strawberries 5 months after setting the plants.

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CARNIOLAN, GOLDEN AND THREE Banded ITALIANS. Bees by the pound, Nuclei. Ready to go April 1st. Write for price list. C. B. Bankston, Buffalo, Leon Co., Texas.

CHOICE ITALIAN BEEES—Excellent workers. Chris. Grimoldby, Owen Sound, Ont.

Annapolis Valley, N.S.

Manning Ells, Port Williams, N.S.

Although apple prices have been high in the Valley right through the season, the growers are not in an optimistic frame of mind as to the future. More than any other fruit-producing section in Canada we depend for our returns on the English market. There in all normal times we have a steady demand and paying prices. The transportation charges are lower than for any of our competitors, and a farmer with a small orchard can ship direct as well as the largest operator. But the whole thing hangs on transportation, and now with few boats and a prospect of fewer, with freight rates steadily climbing, and no relief in sight until some time after the end of the war, the outlook seems anything but rosy.

However, things are not always as bad as they seem, like the old farmer who said that he had had a great many troubles in his life, most of which had never happened. To date it is a fact, as pointed out by the President of the Fruit Growers' Association in his annual address, that the war has not caused a smaller amount of money to come into the Valley for apples the past two seasons. It would seem poor economy to neglect the orchard at this stage of the game. No one is setting more trees, however, and the nurserymen are living off the profits of years gone by.

The debate on Mixed Farming versus Fruit Growing at the recent fruit growers' meeting was more largely attended than any other session of the convention. All classes in the Valley seem to consider that the fruit grower is not doing his duty as his father did before him, in producing beef, butter and hogs, in addition to apples. No doubt the cause of all this interest in the farmer's business is the feeling that if more of these commodities were produced, prices would be easier and the consumer benefit. To the unprejudiced observer, the fact that so many in the Valley are giving more and more attention to orcharding should be prima facie evidence that that is the line where lies the greatest reward for their efforts.

The new movement in New York to sell fruit by auction has not been suffered to come into being without opposition. At the recent New York State Fruit Growers' Association meeting a strong fight was put up by a number of the large apple growers and buyers to discredit it but the Association stood by the scheme, and pledged apple shipments to auction markets. As that is the most representative fruit-growers' association in the State, this endorsement was very gratifying to auction supporters, and will probably result in a large auction plant being established at Rochester, which, it is claimed, will save millions to Western New York growers.—F. G. H. Pattison.

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GARDENER WANTED to take charge of Springbank Park, London, Canada. Apply to E. V. Buchanan, General Manager, Public Utilities Commission, London, Ontario.

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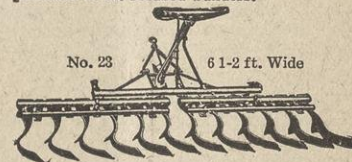


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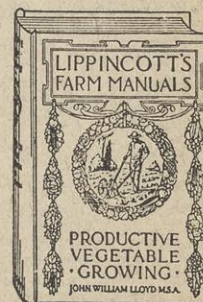
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York State



D-24

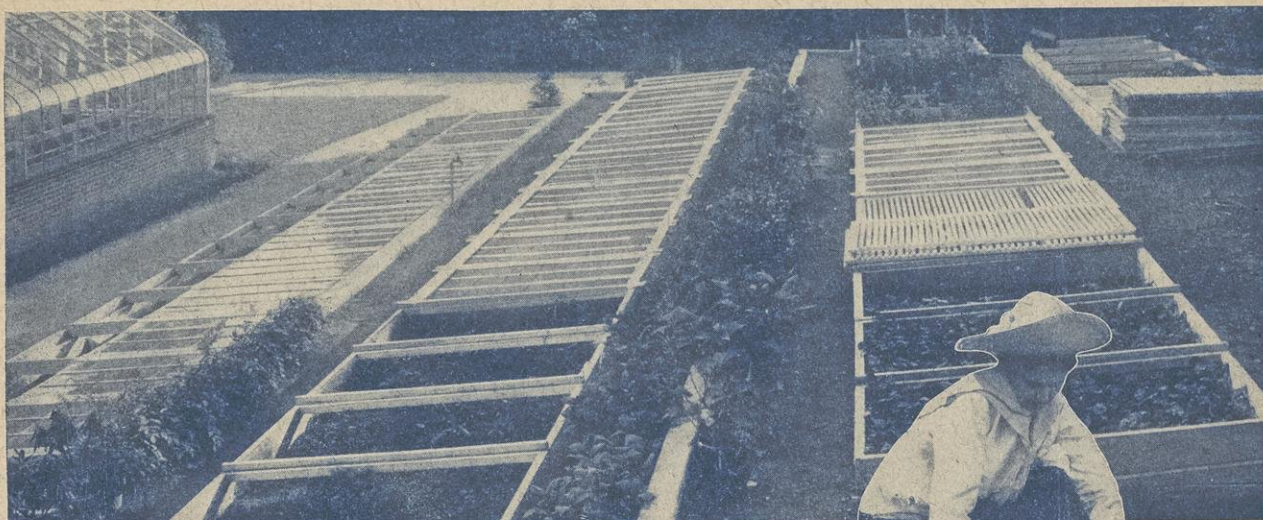


Don't wait until the last moment and then be forced to use whatever saws your dealer may have left in stock; make your selection now and get the saws exactly suited to your requirements.

Our Pruning Saw Catalog will help in your selection. Write to-day for a copy.

HENRY DISSTON & SONS, Limited

2 FRASER AVE., TORONTO, ONT.



These three rows of sash are full of plants, all ready to set out.

The Sure Way To Surely Have An Early Garden

THE most troublesome trouble with gardens, just as it used to be with automobiles, is in getting them started.

Dame Spring has such an exasperating way of luring us on with warmish days full of hope, and then playing us with some of the most exasperating varieties of weather, that just knock gardening progress galley west.

So to have that coveted early garden, we must get the running jump on spring, by starting our seeds and growing good, husky plants in cold frames.

Five of these Frames cost so surprisingly little as \$4.62. For Melons, Rhubarb, and Flowers, they are ideal.

Happily for you, we have at least six different sizes of frames to fit your needs, as well as your pocket-book.

For example, there are the tote-about sizes. You can buy ten of them for so little as \$6.56.

Five Melon Frames cost \$4.62.

Or a two-sash Junior frame, 68 in. long by 38 1-2 in. wide for \$8.40.

Then if you want the big frames with their sash, 3 x 6 feet, we can sell you any length.

But don't put off ordering. Every day's extra start now means several days ahead later on.

Send for Two P's Booklet for further facts and figures.

Lord & Burnham Co. *Limited of Canada*

Greenhouse Designers and Manufacturers

Royal Bank Bldg., Toronto

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