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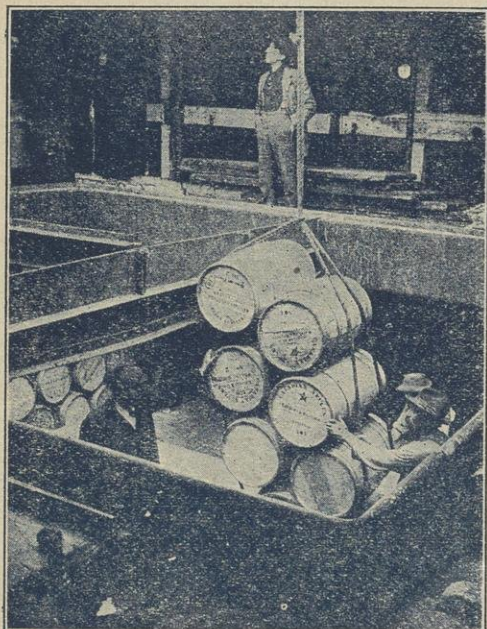
THE CANADIAN HORTICULTURIST & BEEKEEPER

Vol. 27, No. 6, June, 1919
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The Canadian Horticulturist

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The Canadian Horticulturist and Beekeeper

(See Pages 165-170)

(See Pages 165-170)

Vol. 27

TORONTO, June, 1919

No. 6

Securing Annual Crops of Apples^{*}

J. C. Harris, Ingersoll

TO be successful in growing fine apples with few off years we must apply intensive management and must have a genuine enthusiasm and a love for doing good work. We must be prepared also to give attention, rigid attention, to every detail connected with the business, and have the knack of getting things done. Intensive orcharding is a fascinating occupation. One must acquire an intimate acquaintance and love for his trees as individuals, just as the born dairyman or poultryman cultivates the acquaintance and friendship of his pets. It is wonderful how an apple tree though neglected will brace up under good care. No one of us, be he ever so much a master orchardist, has learned the whole story.

The fruit grower must be ready at a moment's notice to meet his enemies. The old days are gone when the markets were less critical, and any sort of an apple would do. The man who now comes out winner by producing a crop of nearly perfect apples must have a marvellous amount of Nature's assistance, or he must be a fighter.

To obtain annual crops of fair sized well colored apples the ground under the trees must be kept in a moist condition during June and July. This will not only benefit the growing crop of apples, but enable the blossom buds (which form during these months) to get strong and well matured for the crop of the following year. Otherwise the trees may blossom out the following spring, and most of the blossoms fall to the ground because not fully matured.

To conserve this necessary moisture some growers favor cultivation to July 1st and then a cover crop; others favor

sod mulch. Cultivation, I believe, will give rather more apples than sod mulch but usually of only medium or poor color. Sod mulch gives a crop of medium-sized apples with high color suitable for barrel or box packing,

In many cases it is a difficult proposition to get sufficient mulch for large commercial plantations. In such cases cultivation is necessary if we are to get annual crops of apples. I have had no experience with light sandy soil.



An Early Promise of a Good Yield.

which will bring more money in the best markets than those from the cultivated orchards. In my experience with sod mulch, trees will ripen up their wood better than with cultivation, therefore there is less winter injury. Then, also, with sod the orchard can be sprayed and the apples picked and packed to better advantage than where the orchard is cultivated. Summing up the whole situation, on clay loam or sand loam I prefer sod mulch to cultivation, more especially for the small farm orchard of five acres or less.

Pruning.

The young orchard left unpruned, or nearly so, will grow faster and bear apples much sooner than where the trees have been pruned annually, but I am not sure that these trees which were left unpruned up to nearly bearing age will be as profitable as if they had been pruned earlier. In commencing to prune a neglected apple tree one should take at least two or more years for the operation. A few general principles should always be before the operator.

Heavy pruning is a severe shock to a tree, and should not be done to excess in any one season. Study your tree well when lowering or dehorning it. Never cut a limb unless you know why you are doing it. An old orchard severely pruned may give you a crop for one or two seasons after the pruning, but in the long run one will have to pay for it by going without a crop for several seasons while the orchard is recuperating.

A tree once in shape should be gone over annually, cutting out any dead or cross limbs and giving a little thinning from the outside occasionally. An orchard well pruned and cared for will be a pleasure and a profit to its owner the rest of his days. To get annual crops of apples excessive pruning in any one year is out of the question.

Benefits From Thinning.

In raising apples as in raising wheat, it is the seeds or grain which exhaust the tree and draw plant food from the

^{*}Extract from a paper read at the last annual convention of the Ontario Fruit Growers' Association.



Lettuce started early in the season in the greenhouse often proves a profitable crop. This shows a field of lettuce being cropped in mid-June at Bartonville, Ont.

soil. The flesh of an apple is nearly all water, therefore it costs the tree practically as much to grow a small apple as a large one. The large one is worth money, the small one very little. Hence if we thin off small and inferior apples we are giving the tree a chance to grow more No. 1 grade fruit, as well as leaving it with plenty of vigor preparing for next year's crop.

I believe the cost of thinning will be nearly saved at picking time in the fall, as the work will be much less when few specimens have to be thrown in the cull heap, and the tree will not be in an exhausted condition by producing so many seeds as would have been the case had all the apples, good, bad and indifferent, been left to mature. In summing up, the tree must not be overdone in any one year if we are to get annual crops of apples. Thinning (especially some varieties) is most necessary to attain results.

An apple orchard left unsprayed will not give the returns per acre that the land would were it devoted to some other farm crop. On the other hand an acre of apple orchard of the best varieties well cared for will give a net return equal to ten acres devoted to an ordinary farm crop. Many people are getting poor results from spraying—often not enough to pay the expense and trouble. The reason for this could always be easily learned if one were present to see how and when the work is done. The time to spray is very important. For instance, if we wait ten days after blossoms fall, we cannot hope to control the codling moth. This is true also of the apple scab.

I cannot too strongly urge that the

work be done thoroughly and well. An orchardist may have his orchard in the best possible shape as regards pruning, cultivating, and fertilizing, all of which are more necessary, but if he falls down with the spraying he will fall far short of the satisfaction and profit that would have resulted from more careful work. One thing it is well and often very necessary to remember. That is that a tree, when the leaves are the size of a ten cent piece, will stand a very strong spray without injury. This same spray applied two weeks after the blossoms fall might in some seasons ruin the crop of apples for that and also the succeeding year.

The spray, before blossoms open, with lime sulphur can be applied safely 1010 Sp. G. or stronger, but I think each succeeding spray should be weakened at least two points. Be very careful to have the exact strength of your spray material. A little too strong a mixture may in some seasons severely injure two crops of apples. In other words, it is an easy matter to spray the apples off our trees with any of the spray mixtures.

Most of our crop failures can be traced to one of four causes: Lack of barnyard manure, soil moisture, overbearing and unintelligent spraying. If our orchards are not lacking in any of these four essentials, I am convinced nine years out of every ten we can count on a good crop of apples.

I feel very optimistic as regards the outlook for the Ontario apple grower. This is because the majority of Ontario orchards have been neglected for four years past, and on account of the severe winter killing of recent years.

Because of the high cost of labor and materials many fairly good orchards are being permitted to go unsprayed and uncared for. It seems to me that the man who has a good orchard, or the young man who will plant one consisting of the best varieties and who will look after them well, never had such a bright outlook as there is at present and is likely to be for many years to come.

The Home Orchard

If the home orchard be restricted to about twenty-five trees it can be kept up in good condition with little work, spraying will not be a long job, and enough fruit will be grown to supply the home amply. The man who has several acres in the home orchard will do well to consider carefully the reduction of the number of trees so that he may have a small orchard easily cared for and have the cleared land to use for other purposes. A well-considered resolution to give the home orchard a square deal will include the following items, each of which require little time:

1. Prune either in late fall or early spring.
2. Disk up the old sod between the rows, then let the grass and weeds grow, but mow these two or three times and leave for a mulch.
3. Add a light dressing of strawy manure after the disking.
4. Spray two or three times.

This work will ordinarily secure good fruit. Pruning in a small orchard will take less than a day; disking, half a day; and manuring, an hour or two. Spraying can be done after a rain when the fields are too wet to work, and with a barrel spray pump, twenty-five trees can be sprayed thoroughly in half a day. A crop of 25 bushels would be a modest estimate, and each bushel is worth at present prices at least \$1 so the crop easily pays for the time expended.

Growers have been advised to plant apple trees forty feet apart. It is too much. With anything like that spread you have limbs like whip lashes with most of the bearing wood at the end and the upper limbs pressing upon the lower ones. Green fruit is the inevitable result.

Fruit should be grown all the way from the trunk to the end of the limbs. Leave enough "suckers" to ensure this. A sucker will produce fruit in four years.

Eighteen to twenty feet is enough height for any apple tree.

Summer pruning induces fruitfulness.

The Cost of Producing Apples

DOES it cost you three dollars to produce a barrel of apples? Mr. W. H. Gibson, of Newcastle, Ont., places his costs at that figure. As Mr. Gibson is one of the most extensive apple growers in Canada, who figures his operating costs closely, it is probable that the costs of production may be even higher in many orchards.

Each of us should know what our costs are. Yet few growers do. During the past few years the prices of supplies have advanced greatly in many lines. Therefore, prices for apples that left a good margin of profit some years ago may not meet present needs. So important is this subject recognized to be, the members of the Northumberland and Durham Apple Growers' Association, of which Mr. Gibson is president, at their annual meeting last February passed a resolution asking for an investigation by the Government into the cost of growing a barrel of apples. It was felt by the apple growers present that until they had some such statistics upon which to base their estimates and plans the growing of apples from an economic standpoint will always be more or less like a leap in the dark.

Nova Scotia Costs.

In the April issue of The Canadian Horticulturist the costs of production in a four-acre orchard, as reported to the Nova Scotia Department of Agriculture a few years before the war, were given as follows: Pruning \$10, fertilizer \$36, sowing fertilizer \$2, discing and harrowing \$8, seed for cover crop \$5.70, sowing cover crop \$1.50, spraying three times \$22.40, barrels (451 at 25c) \$113, picking, packing and

truckage at 25c, \$113; sundry expenses \$8.40. Total \$320. There were produced off the four acres 451 bbls. of apples, which sold for \$1,017.74. This left returns of \$697.74. These figures showed the cost of production (with some items of expense that might properly have been charged, not included), to have been 70 cents a barrel.

Recently a representative of The Canadian Horticulturist, during a short visit at Mr. Gibson's farm, obtained his views on present costs of production. Mr. Gibson pointed out that the foregoing costs do not apply today. For instance—the item of pruning is placed at \$10 for four acres, which would now just about board the men while doing this work without paying any wages. In the same way, barrels and picking and packing expenses only came to 50c altogether while now it would take \$1.50. Another criticism made by Mr. Gibson was that the yield is away above what anyone may expect as an average. One hundred and thirteen barrels to the acre is the yield upon which these figures were based. "I am positive," said Mr. Gibson, "that no one can depend upon an average yield of 100 bbls. per acre year after year. I think I have been as successful in growing apples as most men and while I have had as high yields as 200 barrels to the acre from my Ben Davis orchard, I have never been able to count on an average of 100 barrels."

Put on Business Basis.

Mr. Gibson has 100 acres of apple orchards and believes that he knows very nearly what the cost of growing his apples amounts to. He has figured out the approximate cost of producing

apples per barrel on the average in a couple of different ways and places his estimate of the cost at \$3.00 a bbl. f.o.b. for all grades.

"One of the ways in which I have figured the cost," Mr. Gibson said, "is this: In my father's time the approved method of disposing of apples was that of selling them to the buyers on the tree. The buyers would send out their pickers and do all the rest of the work. In those days \$1.00 a barrel on the tree was considered about an average, while \$1.25 was a good price. They considered that with apples at these prices they could about hold their own with other farm crops. Now, if \$1 or \$1.25 was a fair price and represented fairly closely the cost of producing the apples up to the picking stage, say fifteen years ago, it would not be placing the price too high to reckon that they now cost us \$1.50 a barrel on the tree at picking time. This would be allowing only a small increase for the extra costs of labor and materials that go into the spraying, pruning and other work. This with the \$1.50 it costs to get the picking done, to supply 80c barrels and to get them delivered, etc., would bring the cost up to \$3.00."

Another Method.

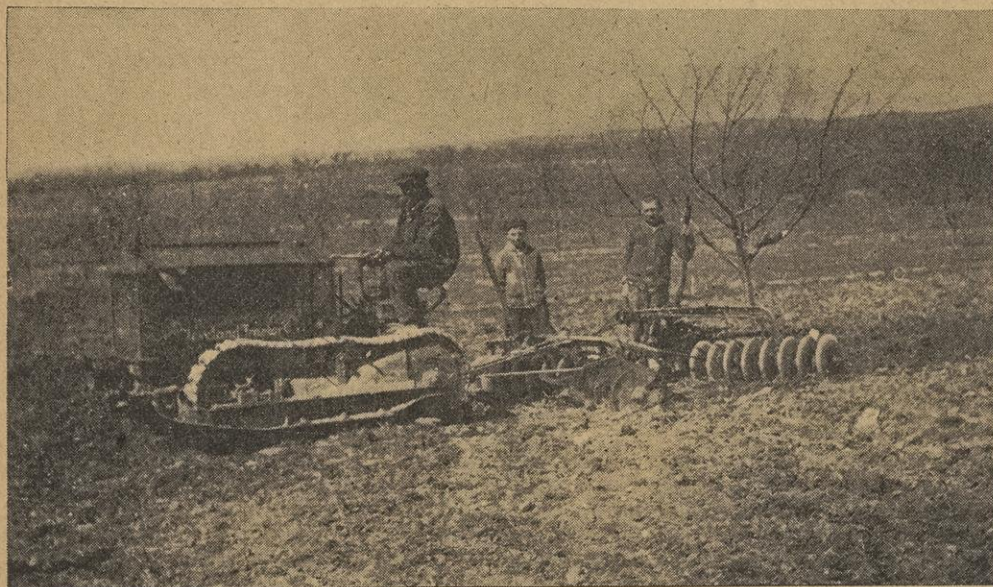
"There is of course another method of getting at the cost," continued Mr. Gibson, "That is to count up all the expenses incurred in looking after the trees together with interest on investment and depreciation of orchards, taken on the acre basis and then charge this against the apple yield."

"We must remember that there is a debt accumulating against the bearing period of an orchard during its non-productive period. This debt is made up of the planting costs, with interest for the fifteen years until the trees come into bearing, the annual up-keep costs with interest and a rental for the land after the tenth year when one must stop using it for other crops. This debt would figure out something like this for one acre:

Original cost of trees, 50@25c..\$12.50
Cost of planting 12.50

Total planting costs\$25.00
With interest at six per cent
compounded for 15 years ..\$ 60.00
Maintenance 15 years dormant
period at \$25.00 a year and
6 per cent compound interest 616.50
Rent of land last 5 years, \$5 a
year and interest 30.00
Total debt against orchard at

beginning of bearing season \$706.50



A caterpillar tractor at work in the orchard of Mr. W. H. Gibson, of Newcastle, Ont. Note accompanying article.



Transcendant Crab Apple trees, 14 years old, in bloom, as grown at the Cherry Hill Nurseries, Sellers, New Ontario, owned by W. S. Setch.

"On this investment 6 per cent must be charged which would bring an annual levy against the trees in bearing of \$42.00. To this would have to be added a sinking fund payment so that during the twenty-five years which would represent the bearing period of the orchards, the depreciation might be looked after. This would amount to an annual charge of \$28.00 bringing the total for interest on investment and depreciation up to \$70.00 a year per acre.

Cost Per Acre.

"The cost per acre would therefore figure out something like this as near as I can come to it," said Mr. Gibson.

Pruning	\$10.00
Fertilizer	12.00
Plowing	2.50
Discing and harrowing	3.00
Seed and sowing for cover crop	3.00
Spraying (full sized trees) material, labor and dep. on mach.	20.00
Thinning	5.00
Barrels at 80c each	80.00
Picking and packing, etc., at 70c ..	70.00
Interest on investment and dep. of orchard	70.00
	\$276.00

On an average yield of 100 barrels this would leave the cost per barrel at \$2.75 for all grades. With an average yield of 90 bbls. an acre, which is nearer what one might expect year after year, the cost would mount up to something over \$3.00 a bbl. just about what I had figured out for myself by the other method.

"Although I believe there is a great future for the man who can grow apples and grow them well," he continued, "it is not well to be too optimistic and to consider that everything one gets for his apple crop is clear gain.

Expenses are heavy in connection with it. For instance it costs me over \$1,000 a year to spray my trees, so unless one takes into consideration the expenses he is liable to be disappointed in his returns over a period of years.

"There is a long time to wait after trees are set out before one begins to harvest the fruit, particularly in the case of such varieties as Spies. We have found in this district that it is about 28 years from the time we set out the trees until Spies come into full bearing. After they come in, however, they are very satisfactory trees for they are longer lived than any other apple and the fruit has no equal in my opinion.

Off Seasons.

"There is another factor that must be taken into consideration and that is the off seasons in the apple orchard. Some districts seem to be worse than others in this regard and various belts of the same district find differences in the behaviour of the orchards. For instance, here, in the vicinity of Newcastle, different distances away from Lake Ontario seem to give different apple growing conditions. The first mile from the lake is not very good for apples on account of the prevalence of scab induced by the muggy atmosphere. Orchards in this belt are also subject to unevenness of crops. For instance, one of the largest orchards in the district last year averaged only two barrels to the acre. The next belt from two to five miles from the lake never has such high yields as are sometimes obtained in some of the other belts but always has a good even crop. On my farm my crops practically always run from 3,000 to 3,700 bbls. In a few years, however, when some more of my

young trees come into bearing I will be able to count on 5,000 bbls. a year. Then when you get farther back from the lake again you run into a belt of the same unevenness in bearing, so that in most districts one has to count upon poor apple years as well as the good, and if he sets his hopes too high they are apt to be dashed.

"I am just wondering how I came out in my orchard work last year," Mr. Gibson concluded. "I sold 3,000 barrels, 70 per cent of which were No. 1, for \$7,500, and according to my \$3.00 a barrel estimate these cost me \$9,000. I would have, of course, realized considerably more for my apples had I held them a while but when I sold them in September with no prospects of an armistice in sight and with an embargo still on I thought I was getting a fair price for them. With some of the other farm crops and stock I probably evened up on the apple losses last year.

"I would like to see this subject of apple costs discussed fully in the columns of The Canadian Horticulturist so that we will not be left to work in the dark in our apple-growing activities."

Tomato Mosaic

J. E. Howitt, O.A.C., Guelph, Ont.

Tomato mosaic is a disease of unknown cause which three or four years ago was very prevalent in some sections of Ontario. It was observed by the writer both in the field and under glass.

The leaves of affected plants may be mottled with light green or yellow or they may be dwarfed and have a peculiar fern-like appearance. Sometimes the leaflets are so narrow and slender as to appear almost thread-like. Badly affected plants produce little or no marketable fruit.

As yet there appears to be no satisfactory method of controlling this disease. It is well known that it can be transmitted from plant to plant and that it frequently spreads through the beds when tomatoes are grown under glass. There is also some evidence that it may persist from year to year in the soil in the greenhouse. Tomato plants growing under glass showing symptoms of mosaic should be pulled up at once and burned in order to prevent the disease getting established in the house. Observations would lead the writer to believe that applications of acid phosphate will lessen the loss from this disease.

Cultivated strawberries will be much larger and of better color than could be possible without cultivation.

Harvesting the Strawberry Crop*

Jas. E. Johnson, Simcoe, Ont.

PICKING strawberries for the canning factory should not start until the berries are thoroughly ripe. Go over your patch twice each week, under normal weather conditions, in the strawberry season. Our pickers are furnished with a tray each holding six empty baskets. As soon as the six baskets are filled the tray is taken up by one of our men. He in return gives the picker another empty tray containing six baskets, also a ticket for the six baskets of berries picked. This enables the pickers to be continually employed in the picking of berries. Thus they are not nearly so apt to miss picking some of the berries in the row as they would be if they carried their own trays to the packing house. There are many advantages in keeping the strawberry pickers constantly employed in the picking of berries. We pay once a week retaining a half cent per basket as an assurance that the pickers will stick to the work for the whole season.

It is always easy to get pickers when the berries are at the best but towards the last of the season, when the berries begin to get small, some pickers get a strong mind and a weak back and feel that they have earned such good money while picking was good that they will not pick any more berries that season. Therefore, I have found that the plan

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

of settlement I have described has worked out both to the mutual benefit of myself and the pickers.

I have always worked co-operatively with my pickers bearing in mind that berry-picking is hard work and paying them a price per box that enabled them to make a good wage. I have always had lots of pickers. The berries are all carried by our men to the packing houses and packed in crates, care being taken to see that all boxes are well-filled. If I were growing berries for shipment the packing house is the place where I should try to build up a great trade in the packing of berries. My instructions to the packers would be that every box of berries must be **GOOD TO THE BOTTOM**, giving the most exacting consuming trade honest packed berries. Picking should be done every day leaving a stem three-quarters of an inch long.

There is a great future for us in the strawberry business if we will pay more attention to the picking and packing of our berries for the consuming public. The great cost of producing berries compels us to look for markets where we can place a part of our berries at a higher price than the canning factory has been paying us. This has been proven the last three years as strawberries have been in big demand by the consuming public; but the growers like myself who contracted early did not get a big price and did

not make the profit as those who sold on the open market.

The varieties we have grown have been Parson's Beauty and a few each of sample Kellogg's Prize and Senator Dunlop.

As soon as picking is completed if the patch is in good condition I start the mowing machine, and as soon as it is dry rake off the straw and begin cultivation with a 2-horse corn cultivator, narrowing the rows to 12 inches. I then harrow twice cross-wise and follow by hoeing, and continue cultivation until frost, when I mulch. It will pay well to clean up an old patch as long as you can have good matted rows.

Care of the Small Orchard

W. H. Kirby, Oshawa, Ont.

When a person plants out an orchard of trees to make money from the fruit they should have a firm and fixed determination to give the trees the best of care and attention. One of the most important operations is the proper spraying of the trees when they commence to bear fruit.

Over thirty years ago I planted an orchard of about sixty-five small pear, plum, and cherry trees. In a few years they started to bear fruit, but alas! the fruit was no use as it was wormy. This continued for two or three years, when I noticed a sprayer manufacturer firm of Quincy, Ill., U.S.A., advertising sprayers in an agricultural journal. I wrote for their literature and soon had my order on the way, for a bucket pump sprayer. There were no sprayers made in Canada in those days and the writer was the first person in this locality to get a sprayer and I believe the first in the County of Ontario to get one to spray fruit trees. I selected a bucket sprayer because it was large and powerful enough for my small fruit trees. There were two nozzles, a spray and a small stream nozzle, which I put on to reach to the top of four large apple trees I had.

I commence to spray as soon as the bloom drops off and once a week afterwards for six weeks. If a rain comes on within a day or so after I have sprayed I go over the trees again. There being no fungoid growths to combat, I use only Paris Green, the same strength as for potatoes. This little bucket pump is about as good today as when I got it, being all brass. The faithful use of it insures a crop of fruit every season a crop sets. Some years I scarcely see a wormy apple when picking the crop.

Sheep and cow manure are good fertilizers to use in the garden or on the lawn.



One of the most noted orchards on the Canadian prairies is that of A. P. Stevenson, of Morden, Man., another illustration of which appeared on the front cover of the May issue of The Canadian Horticulturist. Mr. Stevenson has originated a number of hardy varieties of apples. (Both photos were supplied through the courtesy of the Manitoba Department of Agriculture.)

Effect of Pruning on the Tree

Prof. W. H. Chandler, Ithaca, N.Y.

WHILE it is true that any amount of pruning on young trees reduces the fruitfulness, we cannot be so sure with reference to old trees. Some evidence indicates that pruning actually stimulates better fruitfulness in the old trees. The effect of pruning with the old trees, as with young trees, would be to increase the vigor; and an increase in the vigor of individual spurs of the trees has been shown to increase the percentage of sets of years like the past two, when conditions are not favorable for pollination at blooming time. Fewer seeds, in other words, less perfect pollination, will hold the fruit on a vigorous strong spur than on a weak one. It has also been found that the old distorted spurs set fewer flowers, and of these a smaller percentage set fruit than in case of younger spurs, and spurs so weak that the leaves on them are very small and will not form fruit buds. An unpruned, old tree may reach a condition where there are few if any points of terminal growth, but all growth is in the spur. It seems the new growth also starts from the side of the spur and is greatly distorted, and therefore offers much resistance to the movement of water to the leaves and fruit. Pruning tends to stimulate new growth on which would be formed new spurs that are larger and more vigorous.

It makes much difference, however, how the pruning is done. Thus, if any limb is cut back severely we expect water sprouts or increased growth in the part left, but that increased growth comes close to the point where the cut is made and very little effect is seen on the other growth of the tree. Even the whole top of the tree may be cut off without greatly affecting the vigor of the lower portion of the tree, except at the end of the cut branches. If pruning, then, is to result in the stimulation of better growth in the spur and in the formation of more new spurs, it must be distributed through the top of the tree, cutting back from the ends to good side twigs or branches. Such pruning may be considered rather expensive, but it should be borne in mind that not all parts of the tree would need such pruning every year, but that during a period of two or three years all parts of the tree would have some of this renewal pruning.

We can be reasonably certain, also, about the time of pruning. The experimental evidence shows rather con-

clusively that it makes not the slightest difference in what portion of the dormant period the trees are pruned, and they may be pruned even as late as blooming time without in any way affecting the vigor or growth of the new wood. The effect of pruning in summer is different in different sec-

tions, depending largely upon the length of the growing season. In most sections the effect is to reduce fruitfulness to about the same extent as an equally severe pruning in the winter would do and to dwarf somewhat more than equally severe pruning in winter would do. In some sections, where the growing season is long, pinching or cutting off the ends of the twigs in summer at exactly the right time may increase the number of fruit buds formed.

Cover Crops in the Orchard*

Prof. W. S. Blair, Kentville, N.S.

THE time for seeding a cover crop in the orchard may vary according to the crop used. It seems unwise to seed before the 15th of June in any case, and seeding later than the 15th of July is usually not advisable.

It would appear from work done by the writer at Macdonald that red clover seeded about the middle of June is a good practice. This crop requires a long period to get started and if seeded late makes very little growth, but if seeded in June at the rate of 8 to 10 lbs. per acre, a strong growth can usually be had by fall. It is the best of all the crops I know of for collecting nitrogen. An application of two tons ground limestone per acre is necessary on most soils to produce conditions suitable for its growth. Crimson clover makes rapid growth and seeded at the rate of 15 to 20 lbs. per acre early in July will give a heavy math of material for plowing under in the fall.

Vetch is one of the standard cover crops. It has many advantages. It will grow on soils much more deficient in lime than the clovers, and will start under more unfavourable soil conditions, as the seed being large it can be harrowed in more deeply to where there is sufficient moisture to germinate the seed at once. Seed is difficult to get at reasonable prices at present, owing to the former supply from Russia having been cut off, but it has the advantage of being a crop from which we can get our own seed by seeding a small area early in the spring. It is usually seeded at the rate of one bushel per acre.

Buckwheat is the crop most generally used and it has many advantages but does not trap any atmospheric nitrogen like the clover and vetch. Oats are good and an excessive growth may be useful for stock feeding if the ground is in good condition. Millet loves heat and a very rapid growth will be made on dry soils. No crop

dries out the soil so rapidly as does this one. Rape is another crop that may be used to advantage, and like oats and millet may be used for stock feeds if too heavy a growth for turning under is made.

Orchard plowing should be done in the fall if at all possible and the ground well worked with a disc harrow as early as it can be worked up in the spring. If the orchard can be worked with the disc without plowing at all, so much the better.—Prof. W. S. Blair, Kentville, N.S.

Vegetable Experiments

A. H. MacLennan, B.S.A., Dept. Agr., Toronto

The cabbage maggot has been proved controllable by the use of a solution of corrosive sublimate consisting of one ounce of the poison to 10 gallons of water. Three thousand two hundred cabbages in one patch were treated at a cost of \$5.25, with only two per cent. loss of plants. Plants require to be sprayed with the solution the fourth or fifth day after setting and each week thereafter for three weeks.

For onion blight Bordeaux mixture has been tried but it has had but little effect. A better treatment was found to be a top dressing of nitrate of soda when the bulbs are forming.

Black heart in celery has been found to be controllable by the use of "Black Leaf 40" in the Bordeaux spray. Four ounces to 40 gallons of Bordeaux is recommended. This disease, it has been ascertained, may be caused by both the tarnished plant bug and a black-green aphid. Spraying was started on June 9th and repeated nine times by the 9th of August. In treating celery blight Bordeaux mixture was found satisfactory as was also dusting with sulphur and lime. The formalin treatment—1 pint to 20 gallons of water—was found to have merit for this disease, but it should be followed with Bordeaux mixture.

*Extract from a paper read at the last annual convention of the Ontario Fruit Growers' Association.

Picking Strawberries*

Manning Ells, Port Williams, N.S.

IT is not good policy to raise more strawberries than can be gathered in first-class condition. Some growers who are situated near the towns can get pickers fairly easily, others have to depend on their usual help. We have had to bring in pickers from outside points and board them during the season. This method gives the best satisfaction if good, reliable pickers can be secured.

For our markets the berries should be gathered at least every other day in ordinary weather and in very hot weather every day. Pick them ripe but not too ripe, that is, there should be no berries with brown hulls in the boxes. We do not find it necessary to face the boxes but they should be filled carefully at the packing shed as they are being placed in the crates. There is no complaint so general from the merchants handling berries as that about the boxes not being properly filled.

Only one of our box factories in the Annapolis Valley makes the right size crate to hold the standard four-fifths shipping box. The crates made in some of the factories near Berwick are too big, and when packed with berry boxes allow a motion from end to end and from side to side every time the crate is handled. This shaking about is ruinous to the fruit and is wholly needless. The buyer, in ordering crates,

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

should insist that they be made the proper size.

In marketing berries make direct sales wherever possible. In Nova Scotia, Halifax is a large enough market to absorb at good prices any large amount of berries on consignment. The commission men there seem willing to cut prices as soon as any quantity go forward to give an excuse to do so. The dealer or commission man should come to the shipping point and buy F.O.B. as is done in other large berry growing districts. Our markets are all small in the Maritime Provinces, but in the aggregate they form a very large one. Our difficulty lies in the problem of obtaining an even distribution. A berry shippers' association with a marketing head to handle all our berries would be one way to handle this question, but we would have to grow more fruit than we are doing to make it worth while.

Spraying Experiences

When asked recently by a representative of The Canadian Horticulturist about his experiences in the dusting of his apple orchard Mr. W. H. Gibson, of Newcastle, Ont., replied: "My practice is to spray all I can with lime sulphur, and help out by using the dust in the early morning or late in the evening after the dew is on and when there is no wind. I have found that the dusting controls the worms as well

as liquid sprays but is not quite so efficient in controlling scab, probably because it does not stay on the leaves or the fruit quite so long as the liquid. I have been considering using a little different scheme this year, that of using less dust and spraying oftener. The time used in spraying with dust is, of course, much less than with the liquid spray."

Mr. Gibson has two liquid spray power outfits which he runs all day. He gets out with his dusting outfit every morning just as the day breaks and operates this as long as the dew remains. At that time of day there is no breeze and the dust stays as a cloud in the trees. Mr. Gibson has found that he can do ten acres of apple trees in two hours. "One day last year the leaves stayed wet all day. It was sort of muggy with no breeze stirring. We kept the duster going all day and got over 40 acres," remarked Mr. Gibson. "Of course this was an exceptional day and we might not have such another for ten years."

"Do you notice any difference in the set of fruit?" I asked.

"I have found that the dust gives healthier foliage and sets more fruit buds for the next year," replied Mr. Gibson. "There is a general feeling that lime sulphur causes the dropping of fruit and I have proved this to be true in comparison with the dusted trees. In rows of the same variety side by side the dusted trees bore more fruit but had a higher percentage of spotted apples."—S. R. N. H.

Injured Apple Tree

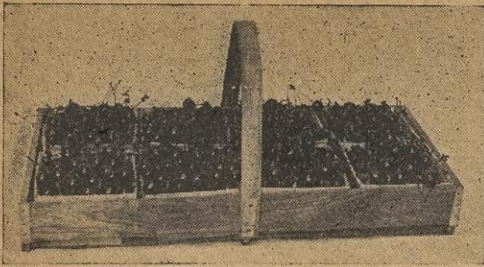
W. T. Macoun, Dominion Horticulturist, Ottawa.

I have an apple tree about ten years old. The outer skin is blistering and cracking. It is also throwing out a lot of fruit buds. This appears to me to be an effort at self preservation. Enclosed is a sketch of the tree showing where the blistering has taken place.—T. L.

The winter of 1917-18 was a very severe one and much injury was done to apple trees in the provinces of Ontario and Quebec. Some of this injury was not very apparent in 1918, but this spring trees are dying or the top is dead from the effects of that winter. Last year enough sap reached the top of the tree to keep it alive but the tree had been badly injured at the crotch or base of the main branches and the trunk also and the tree died during the past winter. From the sketch sent by you it is evident that your tree was injured in the above manner but evidently not badly enough to kill the tree, although before the dead part heals over rot may set in and the tree may break down from lack of strength at the crotch. We recommend keeping the part which has been injured covered



A Patten's Greening apple tree in bloom in the orchard at Macdonald College, Que. This is a hardy variety good for table use and excellent for cooking.



English Morello cherries, in quart boxes, as grown at Macdonald College, Que. Trees of this variety were badly injured during the severe winter of 1917-18.

with white lead paint, painting it as soon as possible now. This should prevent rot developing but it will be desirable to re-paint the wounds from time to time until they heal over if the tree is not too far gone to prevent this.

Cost of Growing*

Jas. E. Johnson, Simcoe, Ont.

The cost of growing strawberries for the canning factory is far more than it was a few years ago. My approximate cost of growing an acre of strawberries during the years 1918 and 1919 is as follows:

Cost to Produce One Acre.

For the first year:—

40 tons manure at \$2.15	\$ 86.00
Hauling and spreading manure	12.00
Ploughing	3.50
Preparing to plant	5.00
6000 plants at \$6.00	36.00
Planting	8.00
Cultivating	10.00
Hoeing, placing runners, etc....	40.00
Straw and spreading	30.00
Taking off straw	2.50
Management	10.00
Interest on investment	10.00
Rent of land 2 years	40.00
	\$293.00

Average yield I had last 3 years, 4000 baskets to the acre. Cost of picking, including breakage, baskets, and building packing sheds averages 2¾c per box

\$403.00

Or about 10c box 1st year.

For the second year:—

25 tons manure	\$ 53.75
Hauling and spreading manure	7.50
Mowing and moving straw	5.00
Cultivating	5.00
Hoeing	15.00
Straw and spreading	30.00
Taking off straw	2.50
Management	10.00
Interest on investment	6.00
Rent 1 year	20.00
	\$154.75

*Extract from a paper read at the last annual convention of the Ontario Fruit Growers' Association.

Average yield I had last three years, 4000 baskets to the acre. Cost of picking, including breakage, baskets and building packing sheds, averages 2¾c per box

\$264.75

or about 6¾c a box for 2nd year.

I have been able to save a well-cared for patch at times, four years, but in order to do this one must give the patch the very best of attention. You can readily see that the cost of production is cut down considerably after the first year. During the past three years strawberry growing in Norfolk County, Ontario, has been unprofitable to the careless growers as they have lost many dollars in trying to produce a crop of strawberries.

The Peach Borer

Peach tree borers which attack peach, plum and cherry trees can best be controlled by cutting them out of their burrows in late May or early June. The use of poisonous sprays, repellent washes, and mechanical barriers have not been effective in experiments to control this pest.

The borers can generally be located by exudations of sawdust-like materials near the base of the trees. The younger borers may also be found in diseased and wounded areas on the upper part of the trunk. There are two species of borers which may be cut out at the same time.

It is necessary to treat the tree wounds after the borers are cut out with lime-sulphur solution, Bordeaux mixture or white lead, as these materials help to keep diseases and other insects out of the wounds. Thorough spraying and culture methods in orchards tend to produce fewer areas where the borers can work.

Small Fruit Prospects

"In the opinion of E. B. Luke, Vice-President Luke Bros., Limited, Nurserymen, Montreal, Que., the war furnished a great excuse to many people to defer fruit planting. Labor shortage provided another. Large plantings have shown a marked decrease, while on the other hand small plantings for home use, as far as we are concerned, have shown an increase. In other words, in our apple tree department we have sold almost as many trees per year as before the war, but have not had the same number of large orders. On the other hand our ornamental departments have increased splendidly.

"Speaking for this district, we believe that there is a real opportunity for the growing of small fruits, particularly raspberries, strawberries and currants,

especially black currants, for we never seem to have enough local or Canadian-grown berries for the Montreal market."

Moisture in the Orchard

Prof. W. S. Blair, Kentville, N.S.

TO reduce the moisture in soils during June, July and early August is not wise. It not only prevents proper nourishment but as a result of the drying out of the soil the soil temperature is raised to a point that prevents the roots from functioning properly, and a serious check to the tree results.

To reduce the moisture content in September may be of great advantage, as usually there are excessive rainfalls at that time, and an excess with the ground warm may cause an undesirable second growth, particularly if the trees have been checked too early, and the wood prematurely ripened by dry weather during July and early August.

Tomato Blossom End Rot

A. H. MacLennan, Department Agriculture, Toronto.

Will you be kind enough to tell me what to do to prevent tomatoes getting black in the centre and rotting before they are ripe. This has happened several seasons. I have tried different kinds of plants, but without an improvement.—A. F. S.

Your tomatoes are affected with the disease commonly known as Blossom End Rot. It is caused by lack of moisture followed by too much moisture, which dries the cells of the fruit afterwards, the extra supply of water causing them to break and the bacteria entering. I would advise you to grow your plants to the single stem as advised in Bulletin 231 and cover the soil around the plants with three or four inches of very strawy manure as soon as you have set the stakes and tied the plants to them the first time.

Asparagus Beetles

Asparagus beetles may be satisfactorily controlled by dusting the infested plants with fresh air-slaked lime, according to entomologists at the Ohio Experiment station. The treatment has the best effect if applied in the early morning when the plants are damp with dew.

On large areas plants to serve as baits may be allowed to grow at intervals in the rows. These plants then may be treated each week by dusting with arsenicals or the plants may be cut and burned. Plants dusted with poison must not be used for food.

On new beds spraying or dusting with arsenicals will kill both the adult and larval forms of the beetle. The dust commonly used for this is four pounds arsenate of lead to one barrel of air-slaked lime or plaster.

Short Cuts in Producing Extracted Honey

By W. A. Chrysler, Chatham

WHEN we endeavor to produce extracted honey with the minimum of labor and expense, we should take into serious consideration a system of management and appliances, which will produce the well ripened article that has the best body and flavor that is possible to produce for the consumer's table, on which much of our future demand and price depends.

Many already know that I use and recommend shallow supers entirely. Shallow supers are entirely used to produce comb honey, and the same rule holds good in extracted honey in getting the maximum of sealed honey with the least amount of surplus comb capacity used.

To prevent excessive swarming, one super should be put on early to prevent the brood-nest from becoming crowded with honey, and allow the queen as much space to lay as possible. The super being shallow is a greater inducement to the bees to enter, than if a deep one were used. When 1st super is one-third to one-half full, another one is added underneath. When honey is being stored in the second super, the swarming fever seldom occurs. A third super is given in due time and this continued throughout the season. When the honey flow is expected to end soon and a super is needed, it should be put on above the one next the brood chamber, and thus avoid the pollen in the combs, which is very objectionable some seasons, or putting on too many supers.

It might be suggested by some: "Why not put on several supers all at one time, and be done with it? Against that, I might say that the 1st super induces the bees to store above, and relieve the brood chamber of congestion, and a greater inducement to store above is attained when more supers are added gradually. The honey in 1st super becomes ripened and sealed much sooner, and will be ready to take off and be extracted, than when full stores or when several are put on at once.

Honey when first gathered is generally thin and it is calculated to put in the lower super, all others above are in their different stages of ripening. A large portion of the honey will be sealed before the season is over, and those supers that have sealed honey may be left off when putting on more supers, thus lessening the labor chargeable to putting on supers, and also making the cost of taking off honey less than nothing

as the bees will all leave the supers, and all that is necessary is to load them on the hive cart, and take them in the honey house, or if at an out-yard, load them on the truck and bring them home.

For the balance of the crop, when robbing is present, we take the supers off, and if honey is well capped over, we take them direct to the honey house, and tier them up criss-cross and allow the bees to go out through escapes in the window. Should the flow stop before the last supers are filled, there may be many young bees around in the empty combs, and it is necessary to jounce them out before taking them in the honey house. What remaining bees there are in them, invariably go out the escapes in the window. This is a decided short-cut over any other that I have ever tried. I do not say it will work as well with full depth super, whose combs have been in the brood chamber. I believe the system of putting brood combs in the supers wrong for different reasons. If a bee-keeper gets American foul brood, he will have to follow the long-cut cure. Bees hesitate to store in all portions of the combs the same. They apparently expect the queen to lay in, when they eventually fill them, and you have green and ripe honey in the same comb, and consequently has to remain

on the hive longer to ripen. To handle honey, before it is extracted, it should be in supers of convenient size for handling the combs, spaced so they cannot bruise one another or break down when handling and conveying to the honey house. Our supers hold about 35 lbs. honey with frames of the closed end style held tight in their place by fixed springs. There is no occasion to handle the frames until the super is inverted, when all drop out at once. The uncapping of shallow frames of uniform spacing adds to the speed of the work, and more pleasant work than with combs generally in use of large size and irregular spacing. When combs are extracted, they are placed back in the supers, and can be moved or handled without a frame moving out of its place. Moths will not trouble them when so spaced and have no pollen in them.

Where it is possible, the extracting should be done with power, and a honey pump saves labor. It is also advisable to fill the honey direct from the storage tanks into the containers they are sold in rather than having to re-liquify and re-fill from barrels or 60-lb. tins.

I have repeatedly tried the popular method of taking off honey with bee escapes on the hive, but it takes from 25 to 50 per cent more time.



In truth it is a pleasant view, Pleasant View apiary, the property of Mr. A. A. Morrison, Cataraqui, Ont. From the hives on the scale in the foreground 431 lbs. of honey was taken in one season.

Notes and Comments

By J. L. Byer

MUCH discussion as to the relative value of packages of bees as compared with full well-wintered colonies has taken place lately in the beekeeping press and at conventions just passed. Many have stated that two pounds of bees on the average would give just as great returns in honey as a well wintered colony—so well known an apiarist as David Running of Michigan, holds this to be true. We have bought some packages in the past—in fact we bought some this year, and I certainly have faith in the package business, but only as an auxiliary to the business, and candidly I cannot see yet how it is possible for two pounds to equal a full colony well wintered.

On the 13th of May we had packages delivered and on the combs at that date. Of course all there was to be accounted for in each case at that date, was a queen and two pounds of bees or less, as there is always some loss of bees. On that same date I visited the yard north of Fenelon Falls, the bees having been out of cellar just 22 days at that time if I am correct. Of the nearly 80 colonies in the yard, only four had less than four combs of brood in all stages, the majority having 6 and 7 combs. If the bees at home referred to (the packages) had two pounds of bees, then most assuredly all these colonies up north had at least three pounds—many of them four pounds or more. The package enthusiast says: "But all those two-pound package bees are young bees, and they will live longer than the old bees that have been wintered over." No they are not all young bees, as I can see some that show all signs of being old or at least worn out. And then again the full colonies have at least a pound more to make good the losses from old bees and what about those four to seven combs of brood in each hive, with young bees already emerging by the thousands? Of course the pound packages have young queens. While that is a fact yet it is not a fact that all these queens make good as the greatest source of disappointment in the package business in past years was the fact that many queens did not make good. What they will do this year is yet to be proven. At the yard up north in question, at least half of the queens are of last year's rearing and as they are doing fine now, naturally I expect they will hold out for the season anyway. Let me repeat, I believe in the package business as a help by way of making increase, making up winter or other losses, but I do not believe yet that it

will pay us to kill off our bees in the fall and rely on package bees in the spring to make up the loss.

* * * *

No doubt many will accuse the writer of being guilty of bad management in having bees short of stores in the spring, as described in "Notes" for May issue. And the accusation is well deserved I can assure you, as we have always been guilty of bad management not only in the manner indicated but in many other ways as well. But to make the matter appear a little better in the case at issue, I might say that only eight or ten at each yard were short of stores, and of this number nearly all had lots of honey granulated solid in the combs. The same amount of sugar syrup would have avoided all trouble but unfortunately we could not get enough sugar last fall and we had to take a chance on honey of doubtful quality—doubtful last fall but not at all so in the spring. One bright spot in the situation is that contrary to what I expected to happen, the most of these colonies that I had to feed early are now in real good shape. But this is no excuse for having to feed bees in the spring, as it is a job we have no use for if at all possible to avoid it.

* * * *

Many know that here in our immediate vicinity we are fighting European Foul Brood, not to mention the ancient feud with scattering outbreaks of the American variety. Many have wondered what progress we are making against E.F.B. and at this date I think we are at least holding our own or better, although cool, wet weather has prevented us making extensive examinations of the colonies. The disease is very erratic and hard to understand, in that while it is extremely infectious or contagious, or both, yet in some cases it disappears so quickly. Last spring at the one yard affected, some fifty colonies had queens caged for from 6 to 10 days and then Italian queens were given to the colonies. Many of the queens destroyed were pure Italians while others were hybrids—there are still many black bees in apiaries near us but there will not be many for very long. When the Italian queens came, we were one short, and the colony we had no queen to give still had the old queen caged on top of the brood nest. They had built up strong before the disease struck them hard but at least one-quarter or more of the brood was dead. The old queen was released on a set of empty combs in the brood nest, and the brood combs placed in super above the excluder.

Contrary to what we expected they cleaned up and more than that they are or at least were a few days ago, still clean and very strong in bees and brood. But there is still some of the disease in the yard, and only a few days ago while at the apiary we noticed a few colonies doing a land office business, flying directly towards an apiary half a mile away that we know to be rotted with E.F.B. But robbing out a colony affected with E.F.B. does not say that the colony doing the robbing must necessarily be diseased afterwards—this we have found to be a fact by giving resistant colonies foul combs as an experiment to see what would happen.

* * * *

Through the courtesy of the Editor of the "Beekeeper" I am in receipt of one of the aluminum combs mentioned in April issue of the Journal. Needless to say the comb is a fine bit of mechanical work, and if the claims of the manufacturers and of beekeepers who have tried it are to be relied upon, it surely looks to be at least worth a trial anyway. It is $\frac{7}{8}$ of an inch thick and the comb fastened in the Hoffman frame weighs 13 oz. net. One of our Hoffman frames picked up at random weighs 17 oz. so the metal comb has no disadvantages in way of great weight over the wax combs. Of course the wax comb weighed had some pollen cells in which would add to weight and it had also had some brood reared in it as well. The aluminum comb is made of a continuous strip of crimped metal folded back and forth, and while each cell has two holes at base, it is stated that the bees fill them up at once and queen occupies the cells as readily as the waxen ones. The comb has a slight covering of wax over tops of cells—sprayed on I presume, as the wood work of the frame has some wax on it as well as the metal comb. Severin of the Imperial Valley, Calif., has recently purchased 2000 of these combs according to the Editor of the "Beekeepers' Item," and in a testimonial from this gentleman, he stated that he has shaken many colonies affected with American Foul Brood on to these combs and the disease has not reappeared. Just why this should be the case with one shaking any more than with wax combs is not clear to me and I am a bit skeptical on the point. Claims that these combs can be disinfected if taken from foul colonies, appears quite feasible. Whether they will prove substantial for actual continuous use is another question, as they appear quite fragile and are easily bent out of shape. A wax extension which the bees give the cells may strengthen them a great deal and prevent edges of metal from being bent.

The Stretching of Combs and How to Avoid It

Other Points on Securing Good Combs

By Morley Pettit

A correspondent writes:

"As you know, frames wired horizontally usually have one to two inches of comb at the top unsuitable for brood, and a remedy for this serious defect is one of the crying needs at present."

THERE is no doubt that this is a common fault of combs built on full sheets of foundation, and it is a serious one. It reduces by that much a breeding space which many now consider is already too small in the 10-frame Langstroth hive. It also makes a constant barrier of honey between the brood and supers, forming one of the chief talking points of the advocates of divisible broodchambers. Furthermore, it is a needless handicap on the business, for by a better understanding and a closer application of the principles of comb-building the condition may be entirely avoided. It all depends on the support given to the foundation both during and after building. This in common practice may be wires for the foundation, and the shells left by a few generations of brood in the comb. Once the latter stage is safely reached there is not much danger of further stretching.

To begin with, the stock Langstroth frame is without wire where wire is most needed, near the top. Then, if a sufficient number of wires in the right place and well stretched are properly embedded the foundation is better not to be fastened to the top bar at all. A few years ago the most authoritative teaching in America was that wires should be slack to allow for the stretching of the foundation. This at one stroke did away with any benefit the wires might be. The poor foundation was like the elephant's nose in one of Rudyard Kipling's Animal Stories. He was relating how the elephant originally got its trunk. Some other animal grabbed it by the nose and pulled until it stretched out long. It finally exclaimed "That's too much for me."

Use of Wires.

It has been generally taught that wires are used mainly to prevent the breaking of combs in extracting and in moving bees. Experience has shown me that they are of minor importance in the extractor, for if comb-baskets are not well braced wires will not save the combs, and if they are wires are not necessary. It is entirely up to the manufacturer of the extractor. Wires will help prevent breakage of combs in moving, but the shells left

by two or three generations of brood are worth more. I have used thousands of combs without wire in all parts of the hive and for most kinds of migrating, and can say from wide experience that the main and perhaps only advantage of wires is to hold the comb in shape until it can be used at least once for brood.

It may be that the metal comb is the answer to this hard and very important question. Aside from that some system of wiring seems the most practical way of bringing the young comb through formative stages to a safe maturity, after which it may hope for a long and useful life, barring accidents and disease.

A Satisfactory Frame.

In the Pettit Apiaries a special frame has long been used with the greatest of satisfaction. The topbar is plain on all sides and only $\frac{5}{8}$ inches deep. As no groove is used and the light topbar has sufficient strength the extra space is saved for comb. On the underside a small staple is driven in the middle before the frames are nailed up. The horizontal wires are placed closer together near the top bar than in the stock frame and an extra wire comes just $\frac{1}{4}$ inch below the topbar, being threaded through said staple for middle support. All wires are carefully strung as taut as can be without cutting into the wood. When foundation is put into the frame every wire is carefully embedded from end to end. If any wire happens to be slack in the frame it is sprung down in the middle, hammock shape, and carefully to avoid stretching of the foundation from slackness on the one hand, and buckling from too much tension on the other. The foundation is not fastened to the topbar in any way. The bees make that their first duty.

Now what happens when the heat and weight of bees come on the foundation in the hive? As there is clearance between each sheet and its bottombar the whole sheet may spring down slightly under the added weight of clustering bees. This does not cause stretching tension in any part, as all wires can give slightly and to about the same extent. No rigid topbar fastening has it by the nose. One or possibly two rows of distorted cells may be built next to the topbar but that is all. The whole sheet of foundation is drawn out with cells quite as perfect as the manufacturer made them.

We believe that this system of wir-

ing without fastening foundation to the topbar gives a much higher standard of combs than the stock frame. But to our way of thinking the advantage does not stop there. In fact in designing the frame it was of secondary consideration. Having no groove and wedge to fuss with we can put in foundation twice as fast, and that is a job for the busy season. When foundation in frames has to be carried over winter, frost usually breaks it loose from the topbars, or when supers of wired foundation have to be carried to out-yards vibration often breaks it. This never happens in our case as it is loose from the topbar already and the spring of the wires takes up the vibration. Even if we did not get better combs we would much prefer our system of putting foundation into frames. While acting as Provincial Apiarist I sent sets of these frames out to a number of Ontario beekeepers as one of a series of co-operative experiments and they were very favorably received.

But do not let the beekeeper fondly think his new combs are out of danger when all cells are safely built to normal strength. The common practice of spreading combs in the extracting super, leaving eight or nine instead of ten, is a fruitful source of stretched comb. Especially when they are new, the undue weight of honey this treatment requires them to carry, while also subjected to the weakening effect of extreme heat which usually prevails during a good flow, often causes the best-wired combs to sag out of shape and be completely spoiled for brood-chamber use.

From the standpoint of getting good combs another important point is to never place or leave foundation in a hive except during a good honey flow, and **never place foundation in a brood-chamber.** The former statement will be generally accepted, the latter may cause exclamation. I refer to the space which is so commonly found vacant or filled with drone comb next the bottombar. Combs built on foundation cut the right size and placed in supers under right conditions do not have this objectionable feature. It is probably caused by light or cool air or both coming in at the entrance. These improperly admitted will cause combs to be cut away; but that is another story.

In conclusion then, the remedy for stretched combs is a proper system of wiring whereby all parts of the sheet are adequately supported. We think best not to fasten it to the topbar. Then avoid overloading new combs and if at all convenient have a few generations of brood reared in them under conditions whereby the cells would be used right to the topbar.

The Combination System and the Honey Flow

By G. A. Deadman, Brussels

It has been repeatedly said, and rightly too, that it is essential, that our bees winter well if we are to get results during the honey flow that is to follow. Good wintering is more than having all our colonies alive the following spring. It is rather that they be uniformly strong in bees ready and waiting, it may be, for the work before them. We want to especially avoid having weak colonies, colonies that too frequently are only ready for the honey flow when it is past and gone.

With rain galore the prospects for a profitable season with the bees are bright, but we must have the bees. I don't know anything more disappointing to the apiarist than plenty of clover, favorable weather, but no bees.

Good Queens.

It is very essential that we have good queens. I mean queens especially that will not fade away in early spring or thereabouts. The combination system is especially helpful in this; just how this is brought about I will leave for a future article, when it will be more in season than now.

For the present, then, we will confine ourselves to the winter's supply of either honey, sugar syrup, or both. I suppose no one could have been more zealous than the writer for feeding bees. Had feeders everywhere. Fed for stimulation and fed for winter stores. Those were the days, however, when we not only knew no better, but our time was not considered so valuable. It would weary you were I to relate it all. It will be sufficient for the present to tell you the conclusions I have arrived at.

Feeding for Stimulation.

As far as my experience goes, feeding to stimulate is wasted effort in comparison to having plenty of winter stores to draw upon. Feeding for winter is another story. If the honey granulates in the combs, as friend Byer tells us in the last issue of *The Beekeeper*, then feeding is essentially the only alternative. I am of the opinion though, that sugar syrup is better than honey for the early months of winter at least. Just how much better the honey is for the latter part of early

spring I am not prepared to say. But whether you feed sugar syrup or leave sufficient honey the combination system is ideal. When taking the photo of my apiary as reproduced in the April issue of *The Beekeeper* I was prevented from getting a more extended view by the apple trees at the end of the rows. Consequently only two of these rows are shown in full. There are thirteen in all, the same length as the two near the centre. There are a few hives that have no half depth hive in combination, and none in the photo with the half hive below.

A Choice of Four Ways.

When preparing for winter we have a choice of four ways. One is the deep hive alone. Another a shallow below, then a shallow above, and then the shallow by themselves, usually three of them. In preparing for winter, we usually have the half hive in combination somewhere. There is one thing that is essential in a northern climate, which is that the one above, whether it be the shallow or deep, should have sufficient winter stores to carry the bees through till the warm weather comes.

Of the 275 colonies we packed last fall one was the deep hive above, probably fifty or so the shallow below. Some five or six were in shallow Langstroths, the hive body being a depth of six inches and regularly catalogued. If I had to confine myself to the shallow system alone this is the one I would choose. Those I have are eight frame, and in conjunction with the eight frame Langstroth should be excellent. The eight frame Langstroth hive too frequently is not large enough, and more frequently never has sufficient stores for winter use when the honey flow closes. Now tell me what more can we want than to simply place above it a shallow filled with honey. With this combination you have what I believe is better than either a ten or twelve frame. You have more comb space and better arranged than these can be. Those that have the shallow below were those that either had sufficient honey in the deep frames to carry them through or required so little more that they were fed sugar syrup to make up. We fed about two bags of granulated sugar all told.

The remainder we gave a half hive above full of honey regardless of what they had below. While many beekeepers were perplexed because of the uncertain sugar supply we felt we were masters of the situation, and so easily done—for it only took the fraction of a minute to satisfy their needs in this line.

A Pleasure and Delight.

And if it was a pleasure to so quickly give them an ample supply it was a delight when looking over them last March to find much of this untouched but ready for any emergency. And it has been needed, I expect, but do not know, for I have not been near them since then. I expect to take a peep at them though about the time the never to be forgotten 24th arrives.

"A fellow feeling makes us wondrous kind," and so Mr. Byer has our sympathy, and I believe he is correct when he says about the meanest problem he ever confronted is to have to be running from apiary to apiary to avoid colonies starving to death. The peace of mind, saying nothing of the extra work, is worth about all it costs to have colonies with plenty of stores.

Solid Slabs of Honey.

I like this combination system, for we can then prove by some things what others are trying to solve. For if solid slabs of honey are the best, we have them, and if empty cells for the bees to cluster on are best, we have them too, and we have both where they should be, the honey above and around, and the empty cells below. This is not all, however, for whether it is wise to have a super of combs below for the winter is for ever settled if we have the equal and better than this can possibly be. And can you picture a more ideal brood nest than we have, for in the early winter they have the partly empty combs to cluster on and access to every part of the hive through the bee space that separates the top bars of the lower hive and the bottom bars of the upper ones.

The Safety Valve.

We call this half hive in combination our safety valve. If a colony is extra strong, this additional comb space will give them ample room. You can have abundance of winter stores and yet have empty cells to cluster in. For those who have a superabundance of winter stores this may not be room enough, with an eight-frame, though it should be. From my experience, with the deep Jones frame on the one hand and the long Langstroth on the other, a colony will build up faster with the former than with the latter. In other words, give the extra or surplus space below rather than at the sides. My experience has been that the half depth hive below is seldom a hindrance, so we believe it pays us to have one in combination either above or below ready when occasion calls for it, for we do not want our queens lacking room except when the eggs she lays will be too late for the honey flow and too early to be of service in supplying young bees for the winter to follow. With either an eight or ten frame Langstroth in combination with the shallow you have much more cell space than either a twelve-frame or a Dadant, and in a more manageable form.

No change in Canadian beekeeping of the past half century is more marked than the Government's relation to it. During the first half of this period the beekeepers had to "paddle their own canoe." Those who presided over governmental affairs were content to leave the honey industry to private enterprise.—*The American Bee Journal*.



An apiary that has grown from a small beginning. Forty-six colonies built up from one and still "going strong." The bees have paid their way since the beginning, and a few hundred dollars to the good. Owned by Alex. Gray, Claremont, Ont.



Looking for the Queen. In the apiary of Mr. Wm. Mordin, Gladstone, Manitoba. (Photo by Immigration and Colonization Branch.)

The Place of the Bee Escape in the Production of Extracted Honey

By R. F. Holtermann

THERE are bee-escapes and bee-escapes. I have seen bee-escapes which did not work properly, and the ones depending on them condemned the escape boards. The escape allows the bees to go down to the brood chamber but not to return to the super. Let me say now I never heard of bees in the super feeding the bees through wire cloth in the brood chamber. This is entirely imaginary, and if they did, where would they put it at the close of the honey flow or during the honey flow, when an unoccupied cell is immediately filled by honey or the queen? Until the advent of the Hodson wire cloth bee-escape board I had no use for a bee-escape board, because with several supers on and the only ventilation what little can pass through the bee-escape a mass of bees shut in and under the excitement of such confinement on any warm day would be liable to melt down the combs.

For that reason and when extracting or wanting to extract all in an apiary at once I use the wire cloth bee-escape board.

The Use of the Escape.

The bee-escape board is often of as great advantage to the inexperienced and small beekeeper as it is to the extensive beekeeper. Yes, even more so. The novice, as a rule, cannot control bees as well, is more likely to irritate them in handling and during the robbing season start up robbing. If a man or woman has the apiary close to neighbors, it is a much more quiet way to take off either comb or extracted honey by means of the bee-escapes. I have had the wire cloth bee-escape board under five 12-frame Langstroth supers, and under proper conditions would expect it quite safe to be able to remove the honey 12 hours after putting on.

Working Conditions.

Under what conditions do they work?

Bee-escapes to work need either a queen or brood below. If there is no brood chamber in a hive, then there is nothing to draw the bees through, and the escape for one part of the hive to them is not different to the other. Do not forget it, all the brood must be below the escape or the bees, at least the most of them, practically all, will stay above the board with that brood.

Then, if the bees are gathering absolutely nothing, they have no desire to leave the hive, and they will be slow to pass through the escape. I prefer putting on the escapes in the morning, not at evening, for the sooner bees can be induced to want to leave the hive, and in that way pass through the escape, the better.

We have a tool, the invention of Mr. Bainard, Lambeth, by means of which the supers are pried sideways, breaking all the comb which connects the combs below with the combs above (burr combs). We use this before putting on the escape boards and avoid leaking honey when removing the supers.

By the use of bee-escapes and reasonably quick work, the surplus honey can be removed at any time without a particle of robbing. Of course in doing this a person has to observe the usual precautions, such as keeping covered combs not protected by the bees.

It should not be necessary, but it might be well to say that when putting on the escapes one must recognize that these combs of honey are going to be unprotected as soon as the bees leave them, and there must be no opening through which outside bees can get at this honey. We see that every quilt entirely covers the top of the hive and that there are no open cracks from supers, etc., not fitting together properly.

In closing, let me say that Mr. Jas.

Armstrong, Cheapside, one of the men connected with the apicultural department at Guelph, and an extensive beekeeper himself, told me that one could go to each hive shortly after the escape board has been put on, place their ear against the hive and tell by the sound if the bees were on the move or not.

Where for any reason, there is blocking of the escape vent above and the bees do not intend to go down, there will be comparative quiet.

HERE AND THERE WITH THE BEEKEEPERS

Short Reports of Ontario Conditions

Welland Co.

March 24, 1919.

The consumption of winter stores has been fully 10 pounds per colony above normal. Among beekeepers losses have been light. "People who keep bees" have lost heavily through insufficiency of stores, the bees dying in March and April. We put in 70 one-lb. packages from the south this spring, and they are working now on fruit bloom and raising lots of brood. Looks as if we would have most of them in the supers at clover time.

J. F. DUNN.

Iroquois

May 23.

Notwithstanding the fact of it being wet and cold bees have built up wonderfully well with practically no spring loss, plenty of honey coming in to keep bees going. At present hard maple, dandelion, and fruit bloom yielding bountifully when weather is fit for bees to fly, and clover is coming everywhere. Prospects are splendid everywhere for a fine honey crop.

R. E. L. HARKNESS.

Lambeth

May 21, 1919.

Bees in Middlesex County to date, as far as is known to the writer, were never in better shape than this season. At present there is lots of rain with fine spells between times. Dandelions are plentiful, and hard maples and willows are yielding well. Small fruits such as plum and cherry are showing well, and apple blossom shows great promise. With the amount of rain at present clover is making a wonderful showing. The only thing that will spoil our expectations is a heavy frost. Barring that, there is likely to be an excellent honey harvest.

D. ANGUISH.

Chatham

May 26.

The past month has been very showery and at times cold, so that the bees have had a hard time to gather enough stores but during the last few days have done better. Fruit bloom is just about over here.

C. E. CHRYSLER.

Inglewood

May 27.

Bees are in fairly good condition in this district. On May 24th our local Beekeepers' Association and the Toronto Association held a joint picnic and bee demonstration convention at A. R. Bruns-kill's, Cooksville. The day was fine. A good crowd in attendance. Jas. Armstrong, President O.B.K. Association, was in charge

and a number of local beekeepers assisted on the programme. All seemed pleased and profited.
H. G. SIBBALD.

Zurich

May 27, 1919.

Too much rain and cold east winds retards the progress of the bees somewhat in this locality. A yard unprotected from the east showed the result compared with others. In general bees have not suffered very much from spring dwindling and are going well ever since fruit bloom and dandelion came in. There is very little apple bloom here. Clover looks fair. Some bees are swarming now. JACOB HABERER.

York Co.

May 19, 1919.

Weather conditions here in York Co., up to date of writing (May 19th), have been anything but favorable for work with the bees. To-day, for the first time this spring, we have had a smell of fresh nectar in the yard—the honey coming in from willows which are now in bloom. A late backward season always means getting a move on if many bees are kept, as bloom lasts a shorter time than when season is early, and the days for spring examination are very few before the fruit bloom is over and a dearth of nectar takes place. J. L. BYER.

Guelph

May 26, 1919.

Bees are doing fine just now. Those that fed in the backward weather just past will be well paid for the cost and trouble. Things look as if we might get a fair crop in this section. F. W. KROUSE.

Better Protection for the Beekeeper in B.C.

Fresh legislation, introduced by the Minister of Agriculture, for the better protection of the beekeeping industry in British Columbia, has been passed by the Provincial Legislature, the Foul Brood Bees Act of 1911 having been amended under the title of the Apiaries Act, 1919. The new act provides that if foul-brood exists or makes its appearance in any district the Minister of Agriculture is empowered to declare an area infected and to define certain limitations inside of which hives containing bees may not be moved without an inspector's certificate showing that they have been examined and been found to be free from disease within a period of two months prior to such movement.

In order to have a complete record of all persons keeping bees in the Province, the act provides that all beekeepers must register their names and addresses with the Department of Agriculture on or before the Thirty-first day of March in each year and obtain a certificate of registration. A small registration fee will have to be paid, viz., \$1.50 up to and including six hives, and 25 cents for each additional hive up to twenty, but not exceeding in any case a maximum fee of five dollars. Registration for the current year must take place on or before the first day of June, 1919.

Where any diseased or infected bees, hives, appurtenances, or appliances, are destroyed under the direction or order of an inspector pursuant to the act, such equitable compensation as the Minister of Agriculture may deem fit may be paid to the owner thereof.

Under section 6 it is provided that no beekeeper shall keep any bees except in a frame hive, so that it will be necessary for all bees in hives on fixed combs to be transferred to movable frames.

An offence against the act is constituted by any person permitting or leaving exposed any honey or comb, except within a hive in which bees are kept, where bees can gain access to same. Neglect of this precaution in the past has doubtless been a most frequent cause of the spread of Foul-brood.

Another provision of the Act requires that all honey produced within the Province and offered for sale must be labelled "British Columbia Honey" and the net weight stated on the container.

Our Correspondents

In this department of The Beekeeper we give a cordial welcome to all our readers to express their opinions on any subject of interest to beekeepers. The publication of a letter, of course, does not necessarily imply an agreement with the views expressed.

Stimulative Feeding

EDITOR, The Beekeeper:—I have been interested in the articles on spring feeding to stimulate brood rearing that have been appearing in the recent numbers of The Beekeeper. Does it pay? I think it does.

During the last three months I have been doing some feeding, not because I thought my bees were short of stores, but because I thought I could stimulate brood rearing.

I did some feeding early in March. Each day when the weather was warm enough I took a pail of warm diluted honey that had been scorched when melting up cappings, and poured it into a large open air feeder. This feeder is a galvanized vat or tank about 30 inches wide by about 60 inches long and 6 inches high, and is filled with boards one quarter thick standing on edge and reaching clear across the tank from side to side and being wide enough to come up level with the top. They are spaced three-eighths of an inch apart in order to allow the bees to pass down the sides of the boards after the honey, and are raised one quarter of an inch from the bottom so that the feed may flow along the bottom.

I next selected two colonies for observation and found that when we had three or four days fine enough to feed that the queen laid very heavily. While if there were the same number of days that I could not feed, laying ceased. It is true that if I fed too much so that the bees were not able to finish it up before the weather turned cool in the afternoon that there were sometimes probably half a pint of dead bees around the feeder. But I think their places in the hive were taken, by many times the number of young bees.

Another thing, I had no tendency to rob even when the bees were having their first flights in the spring. S. B. BISBEE.

P.S.—Thanks, J. L. Byer, for the boost you gave me in your letter in the April number of The Beekeeper, but from the number of requests for a copy of my address given at the Convention, of which I have none, I am afraid you have helped to get me into a lot of trouble.

EDITOR Beekeeper:—I just want to endorse what Mr. R. E. L. Harkness says in your April issue on spring feeding. I have tried it for several years. Last spring I put out one hive that was starving. Part of them were down on the bottom board, wings extended and quivering. I poured some warm syrup on them and some more on the bees between the frames, took out one frame of comb, filled

one side with syrup and put it next to the bees, then put an Alexander feeder under them. They gave me as much surplus honey as any hive I had that needed no feeding. F. J. LEE.

Lee Valley, Ont.

Value of Bees in Relation to Fruit Growing

A GREAT many of our valuable fruits are sterile, or, in other words, non-productive unless they are pollinized by other fruits of the same variety. Ninety-nine per cent of the pollen is carried by the insects, and it is a safe estimate that seventy-five per cent is carried by the busy little honey bee. Thus the value of the honey bee to the fruit grower is beyond estimation, because without it many of your fruit trees would not bear sufficient crop to warrant the spraying and care of them. Not only does the bee scatter the pollen but it gathers the nectar that would otherwise go to waste and makes it into honey, which is a valuable farm product; therefore, it has a distributive as well as a productive value.

Now for a fruit grower to be a success in raising fruit he must understand the growing and care of it. The same applies to fruit growers who have bees and expect to get results from them. First study and learn all you can about caring for them. Second, don't put your bee stands out in the orchard under the trees. Why? Because it is too cool and damp for them. For bees to do good work the temperature of the hive on the inside should be about 90 degrees. The professional bee men keep their bees out where they can get plenty of good, warm, spring sunshine. The trees where the hives are are never well sprayed. The bees object and the man spraying naturally sustains the objection. There are more scale and worms on these trees than any of the others in the orchard.

Therefore, if you have your bees around under the trees, move them out at once, where they can do better work. They will scatter more pollen and increase their production of honey.

Middlesex Bee Men Meet

Beekeepers of Middlesex County held a very successful convention on May 10. There was a large turnout of members, many young men being present. Mr. John Newton, of Thamesford, gave an excellent address on the subject of Foul Brood, and criticised the present methods of dealing with the disease as ineffective. Only experienced beekeepers should be employed as inspectors he contended, and the remuneration sufficient to attract the best men.

Mr. E. T. Bainard gave some excellent advice on the handling of pound packages. Most of those present lamented the fact that the general cold weather had made a backward season.

A County Association that Has an Official Organ

It is not every county beekeepers' association that can boast of having an official organ all of its own. Recently, however, there came to our desk a copy of "Bee Craft," the official organ of the Kent (England) Beekeepers' Association. In a letter to the editor of THE BEEKEEPER, Mr. Jarman, editor of "Bee Craft," states that the paper is "produced from start to finish by amateurs in a shed built by the printing staff in a back garden." Although only a small 16 page paper, "Bee Craft" contains much practical information for its readers and is a credit to the Association producing it.

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Three Banded and Golden Italian Queens



Untested—\$1.00 each; 6 for \$5.00; 12 for \$9.00.

Selected Untested—1 for \$1.25; 6 for \$7.00; 12 for \$14.00.

Send for Price List. Cash with order.

W. R. STIRLING

Queen Breeder RIDGETOWN, ONT.

BEE SUPPLIES

Nailed and Painted
F.O.B. Brantford

Double-walled hive, complete with storm cap; made to fit summer floor-board and hive-cover, \$3.00 each; lots of 5, \$14.00.

Lock cornered super \$1.00 each; 5 for \$4.75.

Reversible floor board—.55c each, 5 for \$2.50.

Telescope hive-cover, galv'd iron—.90c. each, 5 for \$4.00.

Walter Fleming

BRANTFORD

ONTARIO.

Items of Interest

The Chief Dominion Fruit Inspector in Halifax, Mr. G. H. Vroom, has issued a statement showing the total production of apples in 1918. He places it at 864 boxes and 827,665 bbls. Of this amount the home consumption is estimated at 200,000 bbls. There were shipped from Halifax to England 218,855 bbls. and 864 boxes and there were shipped through Truro to Canadian points 201,148 bbls. There were used in the manufacture of cider, vinegar, and in the canning factories, 86,337 bbls. Of the apples sold in Canada 48,852 bbls. remained in Nova Scotia, 28,774 bbls. were consumed in New Brunswick, 88,500 bbls. in Quebec, 28,793 bbls. in Ontario and 7,788 bbls. at points west of the Great Lakes.

The Ontario Department of Agriculture is conducting an energetic campaign in the interest of potato production in the province. Demonstrations will be conducted this year in 18 counties. Early crops will be specialized in, in the counties of Essex, Kent and Lambton and late varieties in Carlton, Dundas, Grenville, Ontario, York, Middlesex, Huron, Durham, Norfolk, Peel, Dufferin, Wellington, Halton and Wentworth counties. In the fall potato institutes will be held in these counties and an effort will be made to form potato growers' associations with a provincial organization.

The city of St. Catharines has established a municipal rose garden. Some months ago Ex-Mayor W. B. Burgoyne sent his cheque for \$1,000 to the city, for that purpose. A piece of land has been selected and recently the first rose bush was planted. The variety planted was the Duchess of Wellington. About 900 rose bushes have been planted. It promises to be a beauty spot of which the city will have good reason to be proud.

DEPENDABLE
INVESTMENTS

A.E. AMES & Co.

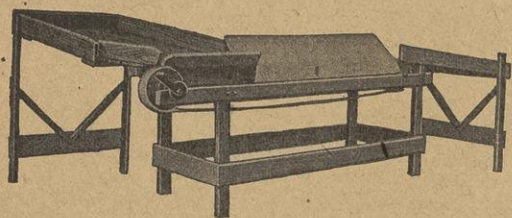
ESTABLISHED 1889

UNION BANK BUILDING, TORONTO

MONTREAL

NEW YORK

SUGGESTIONS
ON REQUEST



The Gifford Fruit Sizer

FOR APPLES, PEACHES AND PEARS

Simple in construction. Made of strong material. Carry it any place. Weight, 200 lbs. Capacity, operated by hand, 300 bbls. in ten hours. Impossible to bruise fruit it does not drop. Gives cheek measure on every apple. Guaranteed to size fruit to your satisfaction. Write to-day for illustrated booklet and prices. Agents wanted.

R. J. LOWRY, Canadian Distributor

Box 245, St. Davids, Ont.

FEED THE LAND

By using the best Manure and get

GOOD CROPS

For Nurseries, Fruit Growers and Gardeners.

Sure Growth Compost

(A Composition of all Natural Manures)

Makes poor land fertile and keeps fertile land most productive.

Supplied by

S. W. Marchmont

133 Victoria St., TORONTO

Telephones: Main 2841. Residence, Park. 951

Say you saw this ad. in THE CANADIAN HORTICULTURIST

QUEENS! QUEENS!

We can supply the leather colored Italian queens promptly at the following prices:

	1.	6.
Untested	\$1.35	\$ 7.75
Tested	1.75	9.50
Selected Tested	2.25	12.00

Breeding Queens, \$6.00 each.

If you are thinking of requeening your apiary in July or August we can make you close prices on quantity lots and send them to you in small shipments as you need them. Let us know how many you want and when you want them.

We can supply pound packages of bees for July shipment. Order now.

BEE SUPPLIES.

We are making very prompt shipments of supplies of all kinds. Telephone or telegraph orders receive special attention.

F. W. Jones & Son

Manufacturers of Beekeepers' Supplies.

Breeders of Bees and Queens.

BEDFORD - QUE.

BEE SUPPLIES

of every description.

Root goods made in Canada. Beeswax made into foundation. Ask for prices on honey and wax. Canadian catalogue on request.

The Canadian Bee Supply and Honey Co., Ltd.

73 JARVIS ST. - TORONTO, ONT.

Potato Shipments to the U.S.

WHILE there are no special restrictions now in force relating to the export of Canadian potatoes to the U.S.A., it would be well to bear in mind that only Canadian potatoes which come up to the standards or grades set for potatoes by the U.S. Department and the U.S. Food Administration, are accepted in the U.S.A.

These grades, according to which potatoes have hitherto been admitted into the U.S.A., and with which the Canadian exporters are quite familiar, have been recently revised as stated below, with the more important changes printed in black. The revised grade specifications became effective on and after February 10th, 1919.

U. S. Grade No. 1.

This grade shall consist of sound potatoes of similar varietal characteristics, which are practically free (a) from dirt or other foreign matter, from injury, sunburn, second growth growth cracks, cuts, scab, blight, soft rot, dry rot, and damage caused by disease, insects, or mechanical or other means.

The diameter (b) of potatoes of the round varieties shall be not less than one and seven-eighths (1 $\frac{7}{8}$) inches, and of potatoes of the long varieties one and three-fourths (1 $\frac{3}{4}$) inches.

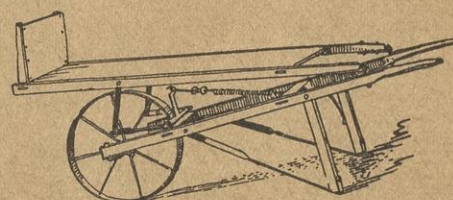
In order to allow for variations incident to commercial grading and handling, five per centum by weight of any lot may be under the prescribed size, and, in addition, six per centum by weight of any such lot may be below the remaining requirements of this grade; but not more than one-third of such six per centum, that is to say not more than two per centum by weight of the entire lot, may have the flesh injured by soft rot.

U. S. Grade No. 2.

This grade shall consist of potatoes of similar varietal characteristics which are practically free from frost injury and soft rot, and which are free from serious damage (c) caused by sunburn, cuts, scab, blight, dry rot, or other disease, insects, or mechanical or other means.

The diameter (b) of potatoes in this grade shall be not less than one and one-half (1 $\frac{1}{2}$) inches.

In order to allow for variations incident to commercial grading and handling, five per centum by weight of any lot may be under the prescribed size, and, in addition, six per centum by weight of any such lot may be below the remaining requirements of this grade; but not more than one-third



Beekeepers and Fruit Growers cannot afford to be without this Barrow.

Sole Agents for Canada
BEEKEEPER'S SUPPLIES
Of every description

Root and Dadant Foundation

ASK FOR CATALOGUE

The Canadian Bee Supply & Honey Co.,
Limited

73 Jarvis Street - - Toronto

HONEY CANS

We are prepared to quote on full line of Honey Containers.

When writing for prices state quantity required of each size.

American Can Co.
HAMILTON, ONT.

Fruit Baskets

WITH a big fruit crop there will be a shortage of six and eleven quart baskets. The wise grower will get his baskets in hand quickly. Our trade mark "KAYBEE" is stamped on every basket we make. Call for this brand and good quality is assured you. Our selling agents are:

For the St. Catharines district:

The St. Catharines Cold Storage Co.,
F. A. Sheppard, Manager,
St. Catharines, Ont.

For the Peachland district:

The Peachland Co-operative Co.,
Chas. I. Haynes, Secy. and Treas.,
R.R. No. 3,
St. Catharines, Ont.

For the district between Hamilton and Peachland:

A. Hewson,
Grimsby, Ont.

All other territory:

The Owen Sound Office.
We have warehouses at Winona, Grimsby and Jordan Station.

Don't delay your purchasing.

Keenan Woodenware Manufacturing Co.

Owen Sound - Ontario Limited

of such six per centum, that is to say not more than two per centum by weight of the entire lot, may have the flesh injured by soft rot (d).

Canadian Bred ITALIAN QUEENS

Untested after June 15th., \$1.25 each; \$12.00 a doz. Tested, \$2.00 each. Choice breeding queen—\$5.00. Tested breeder—\$10.00

I guarantee you a square deal.

JOHN A. McKINNON
ST. EUGENE, ONTARIO.

MOTT'S Northern Bred Italian Queens

have proved for the last 12 years to the Canadian friends to be the best of E.F.B. resisters. Hardy, hustlers and gentle.

Sel. tested, \$2.00; Unt., \$1.00; 6, \$5.50. 12, \$10.00.

Plans "How to Introduce Queens and Increase," 25c. Lists free.

E. E. MOTT Glenwood, Mich.

Explanation of Grade Requirements.

(a) "Practically free" means that the appearance shall not be injured to an extent readily apparent upon casual examination of the lot, and that any damage from the causes mentioned can be removed by the ordinary processes of paring, without appreciable increase in waste over that which would occur if the potato were perfect. Loss of the outer skin (epidermis) only shall not be considered as any injury to the appearance.

(b) "Diameter" means the greatest dimension at right angles to the longitudinal axis.

(c) "Free from serious damage" means that any damage from the causes mentioned can be removed by the ordinary processes of paring without increase in waste of more than ten per centum by weight over that which would occur if the potato were perfect.

(d) "Soft rot" means a soft, mushy condition of the tissues, from whatever cause.

The first copy of a new monthly magazine entitled "The Canadian Fertilizer", appeared in May. It is printed in Toronto and will be devoted to soil betterment, improved cultivation, and the treatment of plant dis-

eases throughout Canada. It is printed on a good quality of paper and the first number contains a number of instructive articles.

I. F. MILLER'S STRAIN Italian Queen Bees—For Sale

By return mail after June 5th to the 10th, or your money back. Northern bred, for business from my best SUPERIOR BREEDERS; gentle, roll honey in, hardy, winter well, not inclined to swarm, leather color.

Queens a specialty, twenty-five years breeding experience. Safe arrival and satisfaction guaranteed.

Unt., \$1.00; 6, \$5.50; 12, \$10.00.

Sel. Unt., \$1.25; 6, \$6.75; 12, \$12.00.

I. F. MILLER
R. F. D. No. 2, BROOKVILLE, PA.

PRACTICAL QUEEN REARING

is the title of the new bee book, cloth bound, 110 pages, finely illustrated, which has just been written by Mr. Frank C. Pellett, former State Apiarist of Iowa and well known bee-keeping writer.

For many years there has been a demand for a book which would give in concise form the many different methods of queen rearing, as the Doolittle, Pratt, Alley, Miller, Dines and others with variations as practised by the large queen breeders.

You have this in this new bee book.

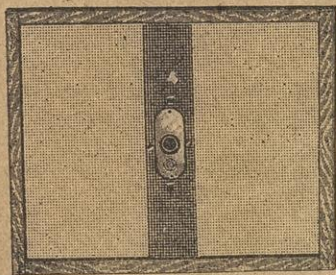
Send for your copy now and learn for yourself how to rear queens from your best colonies to advantage. Variations of plans may be of great value also to queen breeders.

Price postpaid, \$1.00, or with the American Bee Journal, one year only, \$1.75.

(Canadian postage 15 cents extra.)

AMERICAN BEE JOURNAL
HAMILTON, ILLINOIS

The Hodgson Ventilated Bee-Escape Board



Patented January 8, 1918

We have secured the sole right to manufacture and sell in Canada the HODGSON VENTILATED BEE-ESCAPE BOARD (Patented). This Escape Board has been highly commended in "Gleanings in Bee Culture," and has had an extensive sale among bee-keepers of the United States.

Price complete with Bee Escape, 75c

Board without Escape - - - 55c

The Ham & Nott Company, Ltd.
Brantford, Canada

Mr. Beekeeper! Which Do You Prefer?

Black Queens—

that are so good at playing hide and seek when you want to find them in the wing-clipping season.

Old Queens—

that stop egg-laying in the fall of the year so early that you have principally aged bees to go into the winter with, the result being SPRING DWINDLING.

Black Bees—

that are excitable and run out the entrance of the hive as soon as you open the cover; that sting at every opportunity; and that lay right down on the job and die when EUROPEAN FOUL BROOD attacks them.

Italian Queens—

that stick right on the comb and even continue laying eggs when the frame is lifted, and are so readily seen when looking for her in clipping season.

Or Young Italian Queens—

that continue egg-laying until quite late in the fall, even though there is no honey flow, giving you a good bunch of fresh young bees to go into the winter, bees that have sufficient vitality when spring comes to nurse the new brood and gather EARLY pollen, while the queen is on the job EARLY in the spring ensuring a GOOD STRONG COLONY of bees for the first honey.

Italian Bees—

that stay on the combs and can be handled with a minimum of smoke or discomfort because of stings, and that WHEN ATTACKED BY EUROPEAN FOUL BROOD ARE BETTER ABLE TO RESIST IT THAN ANY OTHER KNOWN BREED.

We specialize in Canadian-Bred ITALIAN QUEENS. For sale at fair prices:

Untested — 1 for \$1.00, - 6 for \$5.50, - 12 for \$10.00, - 25 for \$20.00, - 50 for \$37.50.
Select Untested — 1 for \$1.25, - 6 for \$7.00, - 12 for \$13.00, - 25 for \$26.00, - 50 for \$50.00.

Rumford & Fretz

Forest, Ontario



Carhartt's Allovers

**A Practical and Useful Garment
for Horticulturists**

IN spraying, painting, or working around your car, Carhartt Allovers protect your clothing from spot or stain. My Carhartt Allovers are made in one piece of a tough, durable denim cloth. All seams are double stitched; all buttons are concealed, while the points where the strain comes are reinforced to prevent tearing or ripping. A special feature is the swing pocket which keeps tools from falling out when bending or stooping. Save your clothes—more expensive now than ever—by wearing Carhartt Allovers. They provide complete protection.

Sold everywhere; moderately priced

Hamilton Carhartt
President

HAMILTON CARHARTT
COTTON MILLS, LIMITED

Toronto Montreal Winnipeg
Vancouver Liverpool, England

Northern Ontario

A vast new land of promise and freedom now open for settlement at 50c an acre in some districts—in others, Free.

Thousands of farmers are responding to the call. Here, right at the door of Southern Ontario, a home awaits you.

For information as to terms, regulations and railway rates to settlers, write to

H. A. MACDONELL,
Director of Colonization,
Parliament Bldgs., TORONTO, CAN.

G. H. FERGUSON,
Minister of Lands, Forests and Mines.

POULTRY YARD

Profit Making Pointers

WHEN the breeding season is over, kill the roosters. They are a detriment to egg yields rather than otherwise and fertile eggs spoil very quickly, whereas infertile eggs will keep good for weeks without special care even in the hottest weather. The feed bill, too, of one to a half dozen useless roosters is not an inconsiderable item.

Plan to market at least a part of this year's hatch of cockerels in the broiler stage. All cockerels of the Mediterranean breeds, except those reserved for breeding, should be marketed from eight to 12 weeks old. With the general and meat purpose breeds, a part of the cockerels may be carried over for roosters in the fall, but, with present feed prices, we would prefer to market a part of these as broilers.

Give the chickens every chance. The start that a pullet gets in its first three or four months has a lot to do with its profitability as a layer. Hopper feeding from five weeks on is the best insurance that the growing birds are fully nourished and crushed oats is the best all round food to keep in the hoppers.

Eggs placed in storage in the month of May or early in June keep better than storage eggs collected in midsummer. This applies as well to home preserving of eggs as to storage on a commercial scale. Last year we stored fifty dozen or more eggs when the market price was down and sold them in February for over 50 cents a dozen. The eggs kept perfectly. They were infertile in the first place, absolutely new laid.

Save the Little Chicks

FORTY per cent of the chicks hatched on farms by hens, it has been estimated, are lost through neglect of the poultry raiser to confine the hen. Where it is the custom to let the chicks shift for themselves with the old hen the result is a large mortality in chicks.

The brood hen is a good provider for her chicks and the first thing in the morning her first thoughts are to get something to eat for her brood. So she goes chasing off through the wet grass for bugs and insects. Possibly five chicks out of her brood of 12 are weak and cannot keep up or else get lost in the grass. The loss can be avoided by confining the old hen.

Hen Discouragers

A louse-infested hen and a mite-infested hen house are discouragers of egg-production and reduced egg production in these days of sky-high prices of feeds means the useless depletion of the purse of the owner of both hen and hen house. A louse-infested hen or a hen kept in a house that is largely infested with mites lives on the owner because the owner allows mites or lice to live on her.

To keep these mites out fumigation helps, but no agent acts more quickly nor more thoroughly than ordinary kerosene. When crude carbolic acid is added, the mixture becomes a sure killer and a disinfectant as

well. The right proportion is about one fluid ounce of strong crude carbolic to one quart of kerosene. Two methods of application are possible and practical. If mites are actually in the house, paint or spray all the wood work and the floor, if wooden, with either the kerosene or the mixture. If the mites have restricted themselves to the roosts and roost supports only, apply only to the roosts and roost supports.

Chickens will thrive on a great variety of soils, but certain kinds are more adapted than others to successful poultry keeping. If possible, heavy clay soils should be avoided. They are hard to keep clean or sanitary. A rather light porous soil is preferable; this is drier in wet weather and not so hard in dry weather as a heavy clay soil. A wet soil is colder than a dry one.



PAT. MARCH 16 AND NOV. 9, 1897
PAT. IN CANADA NOV. 2, 1897
AND JAN. 25, 1900

AN EXCELLENT PLANT FOOD

Kills Bugs, Prevents Blight
Non-Poisonous

Send 30c for pound box, and Dr. Twitchell's book, "Home Garden Nuggets," post-paid.

BUG DEATH CHEMICAL CO., LTD.
ST. STEPHEN : : N.B.

PERRY'S SEEDS

Alpine and perennials, unique collection; many new varieties unobtainable from any other source.

Hardy and adapted for Canadian climate.

HARDY PLANT FARM, ENFIELD, ENGLAND

APPLE BARRELS

New standard-machine made, best quality. Delivered anywhere in Ontario and Quebec. Write for prices.

Contracts made with Fruit Associations and others.

Sarnia Barrel Works

SARNIA : : : ONTARIO.

TREES & SHRUBS
BROWN BROTHERS CO.
NURSERYMEN LIMITED
BROWNS NURSERIES, ONT.

Niagara District Notes

F. G. H. Pattison, Winona, Ont.

DURING the past month the general character of the weather in the fruit belt has been cool and wet. Warm, sunny days have been few and north east winds have been very prevalent. At the present time (May 20th), however, a decided change for the better has taken place, and during the past three days we have had warm and sunny weather, which has brought out a blaze of blossom on peach, plum and early cherry trees. Pear trees are fast coming into bloom and apple trees will follow shortly.

The bloom is very profuse all over the fruit belt from Hamilton to the Niagara River, and foolish reports are being published by the daily press as to "bumper" crops of peaches, etc. All experienced growers know that an exceptionally heavy bloom is by no means always followed by a correspondingly heavy crop of fruit. Indeed, the reverse is frequently the case, excessive bloom seeming to weaken the blossoms in many cases so that the trees do not set as much fruit as when the bloom is more moderate.

During the period of April 24th to 26th we were visited by two severe frosts, but no serious damage seems to have been done to fruit in this district, except in some

places to early strawberries and tomato plants in cold frames. The same frost did a great deal of damage to orchards in certain counties in the States of Ohio, Pennsylvania and New York; also to the strawberry crops in Maryland and North and South Carolina, where the damage was very serious. Fruit and garden truck growers in South Essex also sustained serious losses; one grower near Leamington losing about 50,000 tomato plants and another 5,000, which had just been transplanted for the third time; even cabbage plants transplanted to the fields were frozen in many places. Prince Edward county also suffered extensive injury to young tomato plants in the bed.

As far as fruit trees are concerned the season is about average for earliness. Usually the third Sunday in May is considered to be "bloom" Sunday, and on the 18th, peach, early cherry, and plums were in full bloom and there was also bloom on many early pear trees. Market gardens are in a very backward state. In many cases the ground has been too wet to allow of planting, and even on high, well-drained land, where sowing and planting have taken place, there has been little or no growth until the last few days. Spraying started



We Build
GREENHOUSES
and Glass Enclosures

For over half a
Century it has
been our Business.

Send for catalog

Lord & Burnham Co.

Limited, of Canada
TORONTO MONTREAL
Royal Bank Bldg. Transportation Bldg.

Beautify Your Grounds With a Permanent Frost Lawn Fence.

Our Lawn Fences are both ornamental and protective. They are perfectly woven—the spacings are always even and the uprights straight. The bowed tops are neat and firm, each upright being securely interlaced in the laterals, (see illustration). They cannot become loose and unsightly.

We weave all Frost Lawn Fence in our own mills, on power-driven automatic looms. We also apply an even, non-peeling coat of galvanizing, which gives a lasting service. **Frost Fences Are First.**

Gates, either single or double, are supplied to match the fence.

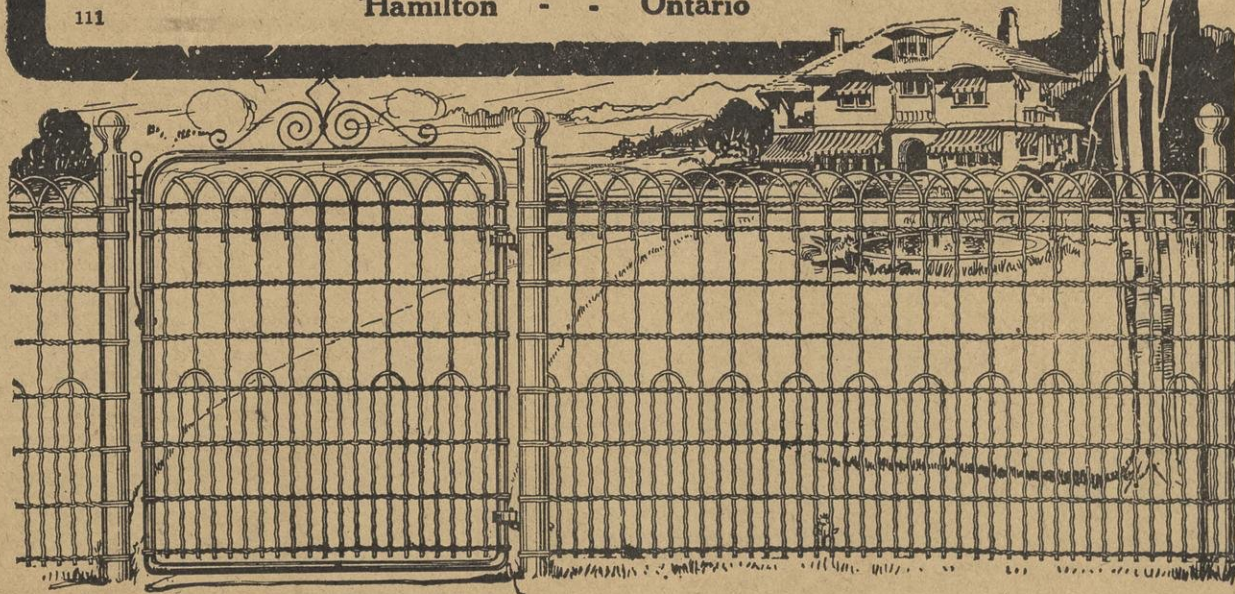
Our catalog shows several other styles of **Frost** Ornamental Lawn Fence. Our dealer will gladly show these to you. If you do not know the **Frost** dealer in your locality, write us direct.

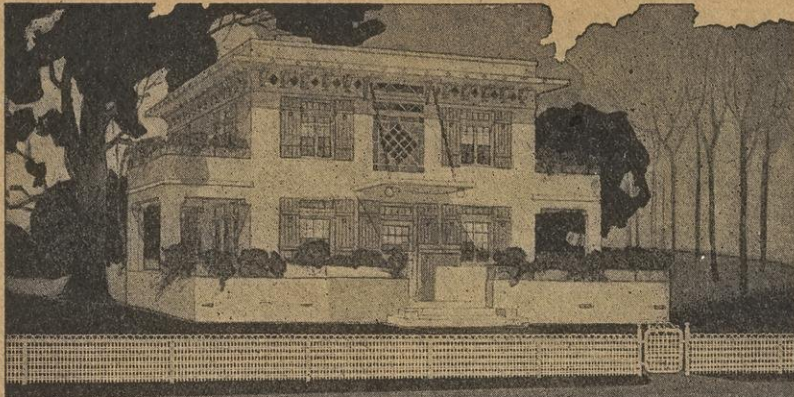
We make fencing and fence supplies for every purpose.

Frost Steel and Wire Company, Limited

Hamilton - - Ontario

111





Add to the Beauty and Dignity of Your Residence

AN "IDEAL" Lawn Fence surrounding your property will cost little and immensely improve its appearance and exterior value.

On request, we will be pleased to send illustrated booklet describing various types of "IDEAL" Lawn Fence, Gates, Vine Trellis, etc., quoting freight-paid prices ranging from 8 cents a running foot.

Ideal Lawn Fence

IDEAL FENCE & SPRING COMPANY OF CANADA LIMITED
WINDSOR ONTARIO

15

Preserves Leather - Kills Axle Friction

Imperial Eureka Harness Oil

—soaks into leather. Keeps water out. Prevents drying and cracking. Keeps harness strong, soft, pliable—lengthens its useful life and saves money. Comes in convenient sizes.

Imperial Eureka Harness Oiler
—simple and convenient. Should be in every barn.



Imperial Mica Axle Grease

—keeps the metal spindle from contact with the hub-lining. Coats both with a smooth covering of mica and the finest grease. Kills friction and makes axles and wheels last longer and run easier. Helps the horse and saves wagon repairs. Sold in many sizes—1 lb. to barrels.



IMPERIAL OIL LIMITED

Power - Heat - Light - Lubrication
Branches in all Cities

At all Dealers

in early, but was much interrupted by the wet weather. On the high and well-drained lands the first lime-sulphur spraying was finished in good time, but on the lower lands growers had a very hard fight to get it done before the buds opened. There seems to be a decided revival in fruit growing this spring. Nursery stock has been in keen demand and the nurseries have been almost completely cleared out of stock in spite of the high prices. Strawberry, raspberry and currant plants have been especially called for. In trees, peach, cherry, plum and pear have had the greatest call and there has also been a good demand for all kinds of apple trees, except Northern Spy, for which there is but little call. Grapevines also have had but a poor sale, most fruit growers being afraid to plant them owing to the uncertainty overhanging the sale of wine.

Journeying through the fruit belt and giving careful examination to the orchards one cannot avoid the conclusion that even in the Niagara Peninsula a large proportion of the orchards are too thickly planted. At the time of planting, it is true, the trees look far enough apart, but their subsequent growth and development are not fully taken into consideration.

At Winona the jam factory of E. D. Smith & Son is preparing for operations to begin before the end of May. Their strawberry buyer is now in the South arranging for a supply. The nursery section of the E. D. Smith & Son's Helderleigh farms reports that the sale of nursery and strawberry stock is the heaviest this year that they have experienced since war was declared. Owing to the injury done the strawberry crop in Maryland and the Carolinas the Beamsville Preserving Company is not likely to open up this season until the local cherry and raspberry crops are ready for picking.

Real estate has been very active recently in the neighborhood of Beamsville, and a number of fruit farms have changed hands at good figures.

Ninety-eight dollars per thousand for 11-quart baskets is the wholesale price quoted this season at the Stoney Creek Basket Factory. A comparison of this price with that of a few years ago shows that class of basket has doubled in price. Before the war the price of netting for covering baskets was three and one-quarter cents per yard, now it is nine and one-half cents. Basket nails have also doubled in price, while labor has advanced from 50 to 100 per cent.

Fruit growers in the neighborhood of Stoney Creek say there is every indication of a good crop of fruit this year, including peaches, which many thought were injured by frost. Canned fruits and vegetables which were quite plentiful in the early months of the year are becoming exceedingly scarce. Canned fruits have been exported to such an extent that there is now a decided scarcity, and the stocks of vegetables have been reduced to a narrow margin, the only exception being pears, of which there is still a fair supply. Mr. Dryman, President of the Dominion Cannery, has recently returned from England, where he was trying to arrange for the export of a portion of the coming pack. On the matter of price largely depends the question of an export market for these products. If there is a full pack the price will be moderate and in that case there will be room for sufficient export trade to prevent a glut on the market. The canning industry is pumpered by the uncertainty of the packing season, which makes it very difficult to set a future price, and for that reason hard to meet United States competition in foreign markets. Cannerymen in the Baltimore section start packing two weeks earlier and have

A Garden for Every Home

The Best Seeds That Grow! Steele, Briggs' Seeds

Nothing better to sow or plant for good results. Tested on our own grounds—and proved also at experimental farms.

Send for our new catalogue. It is free. It tells all about them. If you cannot get them from your local dealer, send to us direct.

Steele, Briggs Seed Co.

Limited

"Canada's Greatest Seed House."

HAMILTON TORONTO WINNIPEG

THE TRIED AND PROVEN

GARDEN SPRAYS ARE GRASSELLI

*Lime Sulphur Solution
Arsenate Lead (Paste and Powder)
Bordeaux Mixture Paste*

THE
GRASSELLI CHEMICAL
CO., LIMITED

HAMILTON TORONTO MONTREAL

KILL 'EM

Potato Bugs, Cut Worms or other
Garden Insects

WITH

**ACCO SPRAY
POWDER**

Costs less than half the price of Paris Green—equally effective by Government tests made in 1918. Easy to mix and use. Will not injure the tenderest foliage.

Put up in ½, 1, 5, 10, and 25-lb. packages. Sold at all stores.

Harold F. Ritchie Co.

Limited

10-14 McCaul St. - TORONTO
Ontario

Never in the history of Canada were so many seeds, particularly vegetable seeds, sown, and such a large number of gardens planted, as in 1918. Many thousands of families discovered for the first time the pleasure that can be derived from the small home garden, and the delight of having fresh, crisp vegetables from their own gardens.

The Dominion Department of Agriculture, after a careful calculation, estimated that in 1917 between \$20,000,000 and \$30,000,000 worth of food was raised on vacant lots and backyard gardens in Canada, and no doubt this was greatly increased last year.

The gardening enthusiasm will still continue because so many homes will have learned to appreciate to the full the true value of home grown garden produce as compared with commercially canned vegetables. That the world's food supply is still far below normal is of course well known. This knowledge, and a commendable desire to lower the high cost of living, will also considerably influence similar gardening efforts this year.

CULTIVATION.—When preparing your garden be sure to cultivate it well. Well cultivated ground is essential to success. It must also be carried on throughout the summer to keep down weeds and conserve the moisture in the ground.

GOOD SEED.—Above all things, secure good seed—with the best germinating qualities. Labor and soil count for little when poor seed is used.

FERTILIZER.—For best results most soils, particularly vacant lots and back yards need at least some fertilizer. A quantity of commercial fertilizer will go far toward ensuring a satisfactory crop.

INSECTICIDES.—Do not let the insect pests and blight take the cream off your crop. By spraying your vegetables at the proper time you will secure healthy, growing plants.

Any of the leading seed, fertilizer and insecticide firms are always only too pleased to supply special information.

Your valuable time and your valuable labor will bring the best results only when you sow reliable seeds.

KEITH'S SEEDS

Are Proven Reliable

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Over half a century of public confidence.

GEORGE KEITH & SONS

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Soluble Sulphur

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Everything for Spraying

Highest Quality

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PANSY

"Canadian Beauties"

(Award of Merit, Guelph Horticultural Society, 1918.)

If you wish to enjoy Pansies of great Perfection in form, coloring and size, we offer you, under the above title, a choice product. Every flower is a queen; every plant a picture to behold. It is a blending of every imaginable color and combination of color. Per packet..... 50c

Pansy, "Royal City," mixture. Packet 25c

Aquilegia, lovely long spurred Colum- bines. Packet 25c

Iceland Poppies, "Pearls of Dawn"

(Perennials), beautiful bright

shades, very choice. Packet 25c

Delphinium—"Majestic Giants"

from a choice collection of named varieties. Packet 25c

WM. McSKIMMING, Pansy Specialist
233 ELIZABETH ST., GUELPH, ONT.

Douglas Gardens

CATALOGUE For 1919

Will be completed with an extra list of 100 new kinds of Dahlias and Roses, also all kinds of

**SPRING BEDDING
PLANTS**

Standard Fuchsias, Carnations of the finest varieties, Heliotrope, Cowslips, Salvia, Salpiglossis, Snapdragons, Pentstemon, Lobelias, Pansies, Ageratum, Verbenas, Asters and Stocks.

Erick Erickson

OAKVILLE - ONTARIO

Compare Fuel Costs

Reduce the cost of cooking in your home. Use the economical New Perfection Oil Cook Stove that burns Imperial Royalite Coal Oil instead of costly coal and wood—that does away with ash pan drudgery—that gives you gas stove convenience.

The New Perfection provides abundant heat for every cooking purpose—an instant and intense heat concentrated directly on the cooking—the result of the Long Blue Chimney burner. Its clean flame, set high or low stays put—needs no watching—burns without smell or smoke.

The New Perfection keeps the kitchen cool in summer—clean the year round. Already used in more than 3,000,000 homes.

Select your size and style to-day.

For Sale by Dealers Everywhere

NEW PERFECTION
THE ALL SEASON
OIL COOKSTOVES



IMPERIAL OIL LIMITED
Power - Heat - Light - Lubrication
Branches in all Cities

an uninterrupted season, while here a frost may occur early in the fall that will lessen the Canadian packers' production by half and more than double his costs. There is but little doubt, however, in the case of a good crop that there will be a good export demand for Canadian canned goods. Reports from the west say that the Dominion Canners Co. has absorbed over 50 per cent. of fruit and vegetable canning concerns in British Columbia. This Western Branch will be operated independently of the Eastern plants.

Improvements at Vineland

WITH a view to increasing the value of the Horticultural Experiment Station at Vineland, the equipment has been materially increased. Two new greenhouses, each 30 feet wide by 75 feet long have been erected. These are connected by a house 16 feet by 56 feet. It is proposed to make this central connecting house a show house and to use the others largely for propagation, plant breeding and seed production work with vegetables. Dwarf apple trees grown in pots will be used for tree fruit investigations.

The strawberry is to receive special attention in the garden work in future. Upwards of 50 acres of land have been added to the farm. In order to improve the mechanical condition of the soil an extensive system of tile drains has been put in. As a further improving medium a large part of the acquired ground has been limed. Four thousand five hundred peach tree seedlings and hybrids were planted during the past year. These have been put in sufficiently close to allow room only for the fruit coming into bearing in order that the worthy sorts may be saved and the others discarded. A number of improved varieties are looked for from among the seedlings and hybrids. One hundred and fifty apricot seedlings, an equal number of pear seedlings, besides two acres of hybrid strawberries and one acre of named strawberries have been put in.

A further development has been the establishment of a nursery for young seedlings for the plant breeding work. Of these 33,000 grape hybrids and 23,000 gooseberry seedlings are under test. As a result of these extensions the Experimental Station bids fair to be of still greater service to the fruit growing industry in the Niagara Peninsula.

The Canadian Horticulturist is a very useful magazine and has been beneficial to me in numerous ways.—Thos. Finney, Sydney Mines, Cape Breton, N.S.



**We Solicit Your
Consignment**

**Send for
Shipping Stamp**

Good Prices Always

For Your Fruit and Vegetables

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

Canada Food Board License Nos. 3-007, 3-008 and 3-009.

Branch Warehouses:
Cobalt and Timmins.
Sudbury, North Bay,

PETERS, DUNCAN LIMITED
88 Front St. East, Toronto



References: The
Bank of Nova Scotia,
King and Victoria
Branch, and Com-
mercial Agencies.

National Service Girls

The Ontario Government Public Employment Bureau is arranging again this year to provide girls and women for work on the fruit farms of the province. Last year over 3,400 girls and women were employed in this way. Arrangements have been made to conduct camps this year at Grimsby, Beamsville, Vineland, Jordan, Niagara-on-the-Lake, St. Williams, Vittoria and Burlington. Most of the girls will be needed for fruit work beginning about June 15th and continuing until after the peach and grape harvest.

The following wages are the minimum agreed upon:

When working on piece and time rates, each picker shall be guaranteed one dollar (\$1.00) per day—rain or shine—six days a week—unless her weekly earnings have already exceeded nine dollars (\$9.00) for the current week.

A flat rate of seventeen cents (17c.) per hour will be paid as a minimum wage to all girls sent out by the Bureau for hoeing, weeding, and other vegetable work. It is to be distinctly understood that girls are to be paid at a higher rate if their work is such as to warrant an increase.

Minimum piece rates—

Strawberries.....	2c per quart.
Raspberries.....	3c per quart.
Blackberries.....	2c per quart.
Gooseberries.....	2c per lb. (stripped).
Black Currants.....	3c per lb.
Red Currants.....	25c per 11 qt. basket.
Cherries.....	20c to 30c per 11 qt. basket.

Arrangements for peas, beans, cucumbers, tomatoes, peaches, grapes, and apples, are to be made at a later date.

If conditions in a patch are such that the majority of National Service pickers are not able to make a wage equal to the hourly rate, the piece rates are to be increased until all faithful and efficient workers are able to equal the minimum wage of 17c per hour.

The matter of hours to be arranged later—in most cases nine hours will be considered a working day.

Annapolis Valley Notes

Eunice Buchanan, Berwick, N.S.

Until now, May 17th, the weather has been cold and unfavorable for much seed sowing. However, the fruit growers are glad to have the fruit buds retarded, which give promise for a wonderful display of blossom in a few days. The weather has become sunny, but chilly winds continue.

Labor conditions are not what some farmers expected at the close of the war. With the exception of those who have returned to their home farms, returned men make very little difference so far. Laborers are not very plentiful, but those farmers who are willing to pay high wages appear to have all the help they need. Other employers say that with the high wages it will not pay to put in crops at the present price of produce. However, during the last month, potatoes, eggs and butter have been steadily advancing.

Roses and other perennial flowering things have wintered well in most gardens. Tent caterpillars have already made their nests in unsprayed trees.

Doubleday Page & Co., of Garden City, N. Y., has recently published a new book entitled Mexico under Carranza, by Thos. Edward Gibbon. This gives an interesting account of conditions in Mexico during the past four or five years.

A Tip Top Investment

Foresight is the greatest factor in saving yourself time, money and annoyance.

Don't continue sending good money after bad—by buying poor roofing to patch and repatch your old roofs. Invest in

PAROID

A NEPONSET ROOF

and obtain lasting satisfaction, durability and economy.

Once Neponset Paroid Roofing is laid it forms an ideal roof, either on new buildings or over old shingles. It can be put on quickly without litter or fuss. Costs half the price of shingles and pays for itself by wearing for years.

Neponset Paroid Roofing can be used on any building no matter how large or small. Its fire and weather-resisting properties give it first place among roofings.

Neponset Paroid Roofing is made in three colors, red, green and slate grey.

Sold by Hardware and Lumber Dealers.

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Mills: Hamilton, Ont.; Pont Rouge, Que.

Warehouses: Toronto, Montreal, Winnipeg, Calgary, Edmonton, St. John.

209



OTTAWA LADIES' COLLEGE

New Fireproof Building

Academic work up to the first year University. Seven successful applicants for matriculation last term without failure in a single subject. Music, Art and Handicraft, Household arts, Physical Culture, Etc. Ample grounds. The Capital offers exceptional advantages.

For Calendar apply to J. W. H. Milne, B.A., D.D., President.

Do Your Banking by R. F. D.



14

Make the mail your messenger; and save yourself the long rides to town.

Deposits may be made—butter and cheese cheques cashed—money withdrawn—just as easily and safely by mail as in person.

Write the manager to tell you all about this convenient plan of **Banking By Mail**—or call in and have it explained, the next time you are town.

THE MERCHANTS BANK

Head Office: Montreal. **OF CANADA** Established 1864.

With its 119 Branches in Ontario, 37 Branches in Quebec, 1 Branch in New Brunswick, 2 Branches in Nova Scotia, 27 Branches in Manitoba, 41 Branches in Saskatchewan, 69 Branches in Alberta and 8 Branches in British Columbia serves Rural Canada most effectively.

WRITE OR CALL AT NEAREST BRANCH.

British Columbia

The British Columbia Traffic and Credit Association is the name of a new organization that has recently been launched in British Columbia. It will represent the principal fruit and vegetable shippers of the province, both co-operative and private. The secretary of the association is R. M. Winslow, who formerly was the secretary of the British Columbia Fruit Growers' Association, and Provincial Horticulturist. The association has already been in existence for a month and promises to be of a great value to the fruit industry of the province.

The necessity for such an association has been brought about by the fact that the fruit production of British Columbia has been increased from 300 carloads in 1910 to 4,000 carloads in 1918. A continued increase is expected. The vegetable production is additional and is of corresponding value. The members of the association market 90% or more of the total production of the province. The main purpose of the association is to deal with matters of traffic and credit particularly with the definition and uniformity of trade terms, the standardization of trade practices and the standardization of credits.

In a circular that has been issued the association announces that it expects to advance and protect the fruit vegetable and kindred industries of British Columbia in the following ways:

By compiling information for the benefit of members in respect to all transportation matters.

By adjusting, or assisting to adjust any losses, differences, or disputes which may arise between members and carriers, or others, in respect to fruit, vegetables, and other produce in transit or otherwise.

By co-operating with the shippers of British Columbia, and others to obtain improved transportation facilities for fruit, vegetables and other produce.

By co-operating with the shippers, and others to improve the quality of the products; to standardize packing and grading; to introduce improved methods of packing and shipping.

By adjusting, or assisting to adjust, on behalf of members any dispute which may arise, whether in respect to quality, or from any other cause, either between members, or between members and any other person or persons, corporation or corporations.

By compiling for the benefit of members information in respect to home and foreign markets.

By assisting the shippers of fruit, vegetables and other produce of British Columbia in any other way that may be deemed advisable.

By co-operating with shippers, and others, in any other matters which may advance or protect the fruit, vegetable and kindred industries of British Columbia.

At a meeting held early in May between the directors of the Hatzic, B.C., Fruit and Mercantile Trade and representatives of the Canning Co., including the Dominion Canners, the canners offered the growers 15c for cannery berries. The growers held out for 17c. The canners claimed that the price in Ontario was 16c and that the cost of operation was greater in British Columbia than in Ontario. They contended that they could not compete with Ontario produce on the prairie markets if they paid over the price that they offered.

Eastern Directors of the Dominion Canners' Association recently visited British Columbia. Following their visit negotiations were entered into which resulted in the purchase of several factories and in the

SKINNER
SYSTEM OF IRRIGATION
Control complete. Prevents drought losses. Reduces labor bills. Increases profit. Special Portable Line for \$15.75. Send for new Bulletin.
THE SKINNER IRRIGATION CO.
217 Water Street - Troy, Ohio.

VEGETABLE PLANTS
50 Cauliflower Plants (Snowball) 45c.
50 Transplanted Celery Plants (Golden Self-Blanching) 80c.
Prepaid, shipped successfully everywhere. Ask for price list of vegetable plants.
HEROLD'S FARMS
FRUITLAND, ONTARIO, NIAGARA DISTRICT.

Canada's Opportunity On the Highway of Success—What has that to do with GATES? Everything!
PEERLESS LONG SPAN GATES
The gate pictured below is a companion to the Peerless Perfection farm fencing, strong, durable, with heavy tubular brace, which stiffens it like a steel bridge. It swings true and rigid as an oak door, hung by a master mechanic. Lateral and upright wires securely clasped at all intersections and stretched upon a strong rigid frame of tubular steel electrically welded into one solid piece.
For Looks, Wear and Service In appearance a Peerless Gate says: "I am a guardian here." For durability it is of heavy open hearth steel wire, galvanized and can't rust at any point. For service it is put together to last a lifetime and is the cheapest best gate made. You will be interested in our Catalogue. Write Today for Literature describing all our many styles of Gates, all kinds of Farm and Poultry Fencing for farm, ranch, residence, park, etc. It will pay you well to get acquainted with Peerless Perfection standard of construction. Write nearest office today. Do it now.
THE BANWELL-HOXIE WIRE FENCE CO., Limited
Hamilton, Ont.
Winnipeg, Man.

Deafness



Perfect hearing is now being restored in every condition of deafness or defective hearing from causes such as Catarrhal Deafness, Relaxed or Sunken Drums, Thickened Drums, Roaring and Hissing Sounds, Perforated, Wholly or Partially Destroyed Drums, Discharge from Ears, etc.

Wilson Common-Sense Ear Drums

"Little Wireless Phones for the Ears" require no medicine but effectively replace what is lacking or defective in the natural ear drums. They are simple devices, which the wearer easily fits into the ears where they are invisible. Soft, safe and comfortable. Write today for our 168 page FREE book on DEAFNESS, giving you full particulars and testimonials.

WILSON EAR DRUM CO., Incorporated
960 Inter-Southern Bldg. LOUISVILLE, KY.



We have a large stock of all sizes

FLOWER POTS

FERN OR BULB PANS

AZALEA POTS
and Rimless Pans

Orders Filled Promptly.

Send for Prices

THE FOSTER POTTERY CO., Ltd.
HAMILTON, ONT.

formation of the Dominion Cannery, B.C., Limited. This company is to be capitalized at \$1,000,000 and will have its head office in Vancouver. A provincial charter has already been obtained. The officers of the company are David Marshall, M.P., president, Aylmer, Ontario; R. L. Innes, vice-president, Hamilton; F. G. Evans, secretary-treasurer; R. L. Cliff, manager, and F. L. Cross, of Kelowna, supervisor, who constitute the first board of directors. This company has bought out the canneries of the Vantoria Canning Company in Vancouver, and of the Western Cannery at Kelowna and Penticton. The operations of the Food Products Company of Vancouver, which is an affiliated company of the Dominion Cannery, will be merged with those of the large

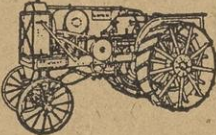
er institution. With the purchase of the British Columbia canneries the company will carry on its operations in this province on a much larger scale than ever before, but along similar lines to those which have proven so successful in the East. Many varieties of fruit and vegetables will be canned, and high-class jams will also form an important part of the activities of the company.

Our whole family are interested both in fruit and flowers. The Government Demonstration orchard is on our farm. We all take a great interest in The Canadian Horticulturist.—Mrs. A. Marshall, Abbotsford, Que.

Bulletins and Reports

During the past couple of months a number of unusually interesting and instructive bulletins and circulars have reached The Canadian Horticulturist. Among these might be mentioned the following:

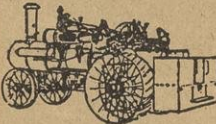
The Dominion Department of Agriculture at Ottawa has issued three bulletins, two of which are by G. E. Sanders and A. G. Dugan, of the Entomological Division, who are connected with the laboratory at Annapolis Valley, N.S. One of these bulletins is entitled "The Apple Bud Moth and Their Control in Nova Scotia," and the other, "The Fruit Worms of the Apple in Nova Scotia". Both bulletins deal comprehensively with these subjects and give the results of the



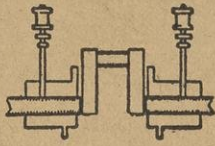
For Gasoline Engines,
Tractor, Auto or
Stationary
POLARINE OIL
STANDARD GAS
ENGINE OIL
For Kerosene Engines
Tractor or Stationary
POLARINE OIL
HEAVY
POLARINE OIL A
IMPERIAL KERO-
SENE TRACTOR OIL
IMPERIAL KERO-
SENE TRACTOR
OIL EXTRA HEAVY
(Recommended by
many tractor manu-
facturers)



For Open Bearings of
Farm Machinery
PRAIRIE
HARVESTER OIL
—very heavy body,
resists cold, won't
thin out with
moisture
ELDORADO
CASTOR OIL
—a thick oil
for worn and
loose bearings



For Steam Cylinder
Lubrication,
whether Tractor or
Stationary Type.
CAPITOL
CYLINDER OIL
—the standard pro-
duct for steam
cylinder
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THRESHER
HARD OIL
For Grease Cup
Lubrication of
Bearings, a clean
solidified oil high
melting point.



*A Correct
Lubricant
for every
Farm
Machine*

There is an *Imperial Oil man* and a supply of Imperial Farm Lubricants near you. Both are at your service. That is why they are there.

Lengthen Engine and Farm Machine Life with Proper Lubrication

Durability and good service from each farm machine depend upon each getting oil exactly suited to it. If you are using Imperial Farm Lubricants, the high quality of your oils and greases is assured, but this is not enough. It is of vital importance that the **right** lubricant be used for each purpose and each machine.

The lubrication needs of a steam engine differ greatly from those of a gas engine. Different types of bearings—different machines—all require different lubricants. Knowing the right oils and greases to use, and using the proper

Imperial Farm Lubricant for each machine, may save you the price of a truck or tractor. Imperial Farm Lubricants are available everywhere. Sold in one-half, one and four-gallon sealed cans and in steel half barrels and barrels.



IMPERIAL OIL SERVICE

Imperial Service clears up the subject of oils and there uses for you. The *Imperial Oil man* is ready to advise you on lubrication problems. You can consult him free, but his advice may be worth a lot of money to you.

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Power Heat Light Lubrication
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excellent work that has been conducted by their authors in Nova Scotia. Both bulletins are illustrated. The third bulletin is entitled "The Diseases of Tomatoes" and is by W. A. McCubbin, of the Field Laboratory of Plant Pathology, at St. Catharines. Any one interested in the growing of tomatoes will find much helpful information in this bulletin.

Then Central-Experimental Farm at Ottawa is distributing Circular No. 17 entitled, "Home Grown Seed of Annual Vege-

tables", and Pamphlet No. 22, which deals with the culture of cabbage and cauliflowers. Both are written by the Dominion Horticulturist, Mr. W. T. Macoun and are seasonable and helpful.

The annual report of the Entomological Society of Nova Scotia contains almost 100 pages. It gives a full report of the papers read at the annual convention held in 1918. Copies may be obtained from the Nova Scotia Department of Agriculture, Halifax.

Lovers of roses will be delighted with the 1919 American Rose Annual distributed by the American Rose Society, of Harrisburg, Pa. It is a book of nearly 200 pages, well illustrated, and contains numerous worthwhile articles by well-known leaders in the culture of roses. Included in the report is an article by A. W. Nelles, entitled "Riding a Rose Hobby in Montreal", of which further mention may be made in The Canadian Horticulturist.

The Ontario Department of Agriculture is distributing the 14th annual report of the Ontario Vegetable Growers' Association. It is well illustrated and contains in full the papers and addresses submitted at the annual convention held last January. This report has been issued with a promptness that is unusual and commendable.

The results of the excellent experimental work that has been conducted by the horticultural section of the Michigan Agricultural College are contained in two bulletins and two circulars recently issued. Bulletin 95 entitled "Muskmelon Culture in Michigan" is by C. W. Waid. It is well illustrated and for a short bulletin deals with the subject comprehensively. Profs. Eustace and Pettit are the authors of Bulletin 93, which gives a "Spray and Practice Outline for Fruit Growers". This bulletin deals with common diseases and insect pests and gives the most approved methods of control. Such crops as currants, gooseberries, raspberries, strawberries, tomatoes, muskmelons, cucumbers and others as well as tree fruits are dealt with. "Raspberry culture" is a title of a helpful circular by Prof. R. E. Lloyd. He is also the author of a second circular entitled "The Culture of Currants and Gooseberries". Both these circulars are well illustrated and deal with practically all aspects of the culture of these crops.

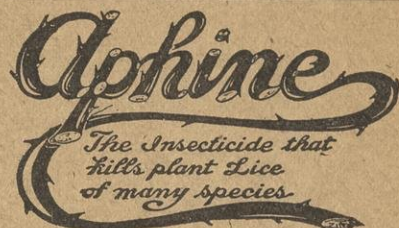
Bulletin No. 184 by the Massachusetts Experimental Station, at Amhurst, Mass. is entitled, "Late Dormant Versus Delayed Dormant or Green Check Treatment for the Control of Apple Aphid". Some helpful conclusions based on the experiments conducted are published.

"Rhubarb Anthracnose" and "Rhubarb Leaf Spot", are dealt with in Bulletin 213, issued by the University of Illinois Agricultural Experimental Station, Urbana, Ill.

Amateur fruit growers who desire to make a success of fruit in their home gardens will find much helpful information in Farmers' Bulletin 1001, issued by the United States Department of Agriculture, Washington, entitled, "Growing Fruit for Home Use". This bulletin contains just the class of information amateur growers need to have. It describes the best soils, the stocks to use, season of planting, preparation of the soil, pruning and training, and discusses numerous other similar points. While some of the information relates to fruits not grown in Canada a considerable portion of it will be found helpful by Canadian fruit growers.

A series of helpful papers have been issued by the New Jersey Agricultural Experimental Station of New Brunswick, N.J. These are entitled, "Leaf Blight of the Tomato", "Asparagus Growing in New Jersey", "Insect Enemies of Greenhouse and

Ornamental Plants", "Early Tomato Growing in New Jersey", "Diseases of Tomatoes", and "Potato Diseases in New Jersey". All these circulars are timely and helpful in character.



A concentrated liquid which, when diluted with water as per directions on can will prove a wonderful weapon of defense to guard house or garden plants, vegetables, fruits or flowers from the ravages of Aphid (Green Fly) as well as thrips, soft scale, currant worm, and cabbage slugs. Fully guaranteed and sold by all seedsmen.

Fungine controls rust and mildew

Accepted by successful gardeners everywhere as the standard remedy for the control of mildew, rust and various other fungi that attack vegetables, fruits or flowers. Does not stain foliage.

Vermine destroys worms, maggots, etc.

Good for potted plants, in which it destroys eel and angle worms as well as for sterilizing the garden soil which it rid of maggots, grubs, worms and root lice.

Above three remedies have been on the market for many years and are for sale at all seed stores. For further particulars apply to

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SEEDS

Wholesale

**Improved Farm Root Seeds
Improved Vegetable Seeds
Improved Flower Seeds**

Seedsmen please enquire for our SPECIAL PRICES

"Licenses are not now required for the export of Vegetable Seeds to the British Colonies."

**KELWAY & SON, Wholesale Seed Growers
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The Fruit & Produce Market

The Commission firms undertook with consignments of fruit and general produce. They will be pleased to have you write them for information, shipping stamps, etc., if you have fruit or vegetables for sale.

H. J. ASH

44-46 Church St. - Toronto, Ont.

CONSIGNMENTS OF FRUIT AND VEGETABLES SOLICITED

Shipping stamps furnished on request
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32 West Market St., Toronto, Ont.
Wholesale Fruit and Produce Consignments Solicited.

Canada Food Board License No. 3-045, Class II., Div. B., and 3-046, Class II., Div. C.

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See advertisement on page 178.

Canada Food Board License Nos. 3-007, 3-008 and 3-009.

FOR SALE and WANT ADS

Advertisements in this department inserted at the rate of 15 cents a line, each line averaging seven words. Part lines count as whole lines, minimum of two lines accepted. Strictly cash in advance.

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QUEENS.—Golden or three band—Each \$1.50; six \$7.50. Also nucleus. A. R. Simmons, Claverack, N.Y.

HARDY ITALIAN QUEENS, one \$1.00; ten, \$8. W. G. Lauver, Middletown, Pa., Route 3.

"SHE SUITS ME."—Italian queens, untested, \$1.15 each. For 10 or more, \$1.00 each. Allen Latham, Norwichtown, Conn., U.S.A.

QUEENS.—Ready for delivery now, pure Italian queens, either 3-Banded or Golden. 1, \$1.25; 6, \$7.00; 12, \$12.00; 50, \$47.00; 100, \$90. Select Tested, \$2.00 each. Safe delivery guaranteed. GEO. W. BROWN, Lynnhurst Apiary, Wilson, Wisconsin.

BEES FOR SALE.—Pure Italians of Dr. C. C. Miller's famous honey gathering strain in ten frame Lanstroth standard hives. Write for prices and particulars. D. E. McDonald, Rutland, B.C.

ITALIAN QUEENS—Northern-bred, three-banded, highest grade, select, untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, 1, \$1.00; 12, \$11.00; 50, \$45.00. Send for circular. J. H. Haughey, Berrien Springs, Mich.

QUEENS—3 banded Italians selected, untested \$2.50, selected tested \$3.50. Safe arrival and satisfaction guaranteed. Clinton Bradway, Monson, Mass.

ITALIAN QUEENS.—Select breeders, \$2.00; Bees, 1 lb., \$2.25. EASTERN LABEL CO., Clintonville, Conn.

SWARTS GOLDEN QUEENS produce Golden bees of the highest qualities. Satisfaction guaranteed. Mated, \$1.00; 6 for \$5.00. Tested, \$2.00. D. L. Swarts, Lancaster, O., Rte 2.

HONEY

HONEY WANTED.—Clover, Basswood; will ship you 60-lb. tins, and if in August we cannot agree on the price you can pay for tins. G. A. Deadman, Merlin, Ont.

REAL ESTATE

ALL KINDS OF FARMS.—Fruit farms a specialty. Write, stating requirements. W. B. Calder, Grimsby.

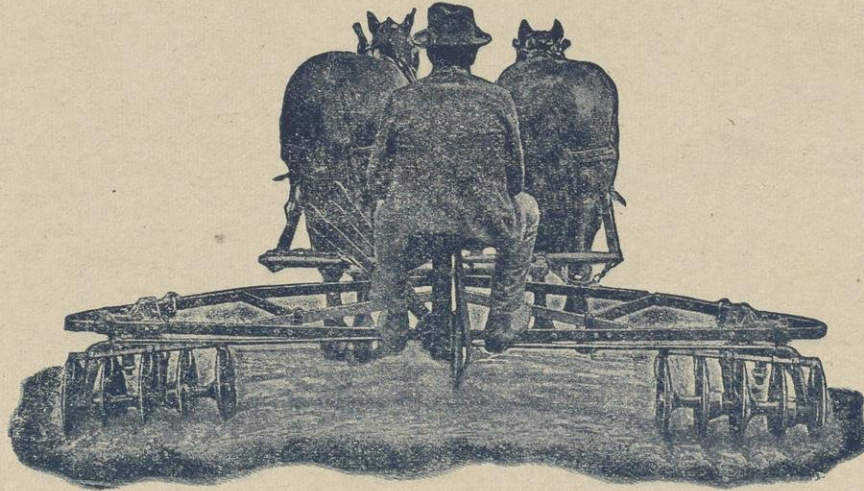
SEEDS, BULBS, PLANTS, SHRUBS

ORDER FALL BULBS NOW and save half. Get Import Bulb Catalogue at once. Morgan Supply House, London, Ontario.

C. KEUR & SONS, Hillegom, Holland. Bulbs of all descriptions. Write for prices. New York Branch, 32 Broadway, Room 1014.

FOR SALE.—25 Aster plants for 25c, postpaid. Finest mixtures of colors. Herold's Farms, Fruitland, Ontario, Niagara District.

Massey-Harris



Dependable Implements for Fruit Growers

Massey-Harris Garden and Orchard Implements are invaluable helps in the producing of better crops.

They are thoroughly dependable, being made with the same high grade of materials and workmanship as the big farm implements, which are of world-wide fame because so uniformly good and reliable.

ORCHARD DISC HARROW—Reversible and adjustable. Gangs can be adjusted to either throw the soil from or to the trees and vines. Extensions can be furnished for working under branches. It has ten 16-inch discs, cuts 5 ft. 6 in., and with long extension frame, measures 10 ft. 1 in.

VINEYARD PLOWS—The Vineyard National Gang Plow is made expressly for Vineyard work. Its capacity is 17 to 20 inches wide and 4 to 7 inches deep, land wheel and handles are set well in away from the vine, and clevis is extra long, allowing horses to be hitched away from the vine.

GRAPE AND BERRY HOES—The ideal tool for the cultivation of grapes, berries, peaches and plums and all kinds of small trees. A great time and labor saver that improves the quality of the fruit.

SPRING TOOTH HARROWS—Ten, Fifteen or Seventeen Teeth. The Ten tooth size is one section, and can be furnished with handles for vineyard work when so ordered.

CULTIVATORS—We carry a great variety of Cultivators for cultivating small fruit, vineyards and orchards. The Massey-Harris 9-Tooth Cultivator is adapted to a variety of work both in field and vineyard. With attachments it can also be used for furrowing or ridging. Extension frame can be furnished for orchard cultivation.

SCUFFLERS—Our No. 6 Scuffler is especially adapted for flat cultivation among garden vegetables and strawberry alleys. It is rigged with five steel Standards, two Oval points, one 12 inch and two 10 inch sweeps.

GET IN TOUCH WITH THE MASSEY-HARRIS AGENT.

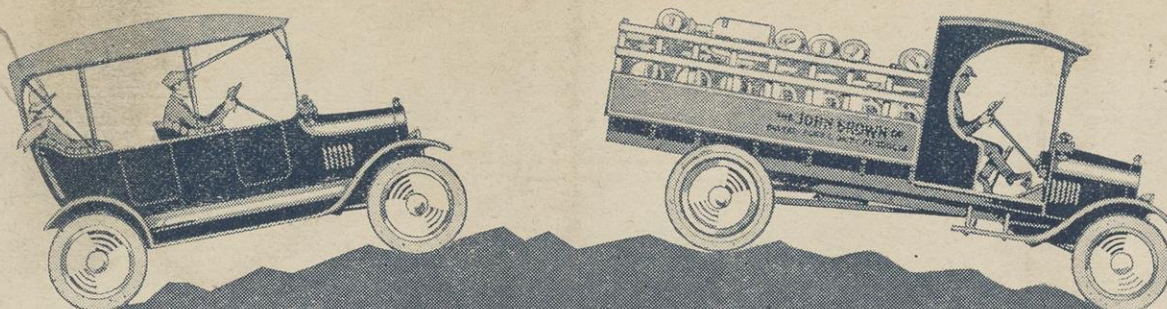
MASSEY-HARRIS CO. Limited

Head Offices—Toronto, Ontario

Branches at—

Montreal, Moncton, Winnipeg, Regina, Saskatoon, Swift Current,
Yorkton, Calgary, Edmonton. Transfer Houses—Vancouver and Kamloops.

Agencies Everywhere



Like the teeth of a buzz saw!

YOU'VE stood in awe before a buzz saw and watched it literally tear its way through a piece of material. Being driven at such a terrific speed, it produces results that are almost startling. But if you were to run the buzz saw at a much slower speed, and take some of the keenness off the teeth, then you would have an action very similar to that of road bumps, ruts and rough places as they rack, strain and wear out your Ford Car or Ford One Ton Truck.

The thousands of sudden, heavy impacts, while not sufficient to cause instant breakage, yet cause great and unnecessary wear on all parts, particularly the power unit and the tires.

It has been proved by nearly a million Ford owners that by properly cushioning their machines against road shocks and vibrations with Hassler Shock Absorbers, that you save at least 30% of the ordinary tire and repair expense, and that your Ford's depreciation is decreased a like amount. You also obtain considerable increase in gasoline mileage, due to the smoother running. Hasslers prevent squeaks, rattles and deterioration, for the spiral, conical springs of chrome-vanadium steel compress on either upward or downward movements.

In addition to all of these savings you have such greatly increased comfort that your Ford Car or Truck rides and drives as well as the highest priced heavy models. It steers easily, holds the road, travels safely at high speed, and the general and good satisfaction you derive from its use is increased astonishingly by Hassler Shock Absorbers.

Hassler Shock Absorbers can be put on in a very few minutes, either by you or your garageman. There are two types, one for all Ford Passenger Cars, the other "Double or Twins" for the rear of the Ford One Ton Truck.

10-DAY TRIAL OFFER

Don't ride without Hasslers because some one tries to discourage you. They are a quality product—worth their price. The Hassler dealer in your vicinity will put them on for 10 days' trial. Your money refunded if you say so. Write for name of dealer and Trial Blank.

ROBERT H. HASSLER, Ltd. 183 Sherman Ave., North
HAMILTON, ONTARIO, CANADA

THE HASSLER GUARANTEE:
Absolute Satisfaction or Your Money Back.



Shock Absorber

PATENTED
MADE IN CANADA.

The conical springs set at the angle shown prevent sideways and allow for the most resilient downward action. The springs compress on either upward or downward movements—do not stretch out of shape—do not allow up-throw. Hasslers last as long as the Ford and make it last.

