The Canadian horticulturist & beekeeper. Vol. 37 [Vol. 24], No. 6 June 1914

Peterboro, Ont.: Horticultural Pubishing Company, June 1914

THE CANADIAN HORTICULTURIST & BEEKEEPER

PETERBORO, ONT.
JUNE, 1914

VOLUME 37. No 6
$1.00 a Year

The Canadian Horticulturist

Regular Edition

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The Canadian Horticulturist

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Reducing the Cost of Production*

Prof. H. A. Surface, Harrisburg, Pa.

GOOD fruit land is generally cheaper than rich or more level farm land that may be less desirable for fruit production. Proper fruit soil produces trees of good size, and fruits of best quality and in large quantity; thus reducing the relative cost of production. Proximity to market or shipping station, to reduce the cost of hauling, is an essential factor.

Where there is good air drainage or local elevation, spring frosts do not so often injure blossoms or tender buds or fruits, and thus there are more frequent and larger crops, resulting in relative cost reduction.

Well drained soil means healthy, vigorous trees. Wet soil means poor trees, and worst of all, apple tree diseases, such as root rot, collar blight, and others. Instead of a good income from a fine crop on healthy trees money must go to replace dead ones, or there will be very serious loss that comes from leaving vacant places in the orchard. Wet orchards should be well drained; but the economy of dynamiting is yet to be proven in general, for we know where it has been very unsatisfactory.

Good varieties are quoted constantly in price above poor kinds. Compare today's quotations on Stayman Winesap, Rome Beauty or Baldwin, with those of Ben Davis, Smith Cider or Shockley.

Adapted varieties give finer fruits and larger yields than those not adapted to the region, and of course as these sell more easily and for higher prices, they help to reduce the relative cost. A very important economic consideration is that it pays all commercial growers of a community to put their efforts into growing perfectly only those varieties (often but one or two) that are decidedly best there.

Healthy young trees from reliable nurserymen mean ready vigorous growth without stunting by transplanting, and large early crops, if properly handled. Trees not true to variety ordered may mean years of loss.

Plant at sufficient distance, and on the square system. The writer now plants all permanent apple trees forty feet apart and all others at twenty. This permits profits from inter-cropping, cultivating each direction, and the development of large trees with full crops.

Low-headed tops cheapen the cost of production by reducing the work of pruning, spraying, thinning and picking; and prevent heavy loss by wind falls, as well as mulch their own soil.

Reduce the necessity for expensive commercial fertilizers by growing legume cover crops. The writer uses chiefly crimson clover with buckwheat and harvest the latter. One orchard gave eighty-four bushels of buckwheat this year. In another the crimson clover was sown with cow horn turnips, and we now have a good stand of the former, with over one hundred dollars worth of excellent turnips, without detriment to the young trees.

Nitrogen, the expensive element in commercial fertilizers, is not needed where the legumes are grown in an orchard. We need buy only muriate of potash and acid phosphate, and need but little of these where orchards are comparatively young and occasionally cultivated.

Pruning can be done at any time of the year, if not too severe; and necessary severe pruning can be done at any time during the dormant season. Thus it is a "filler" job that can be done with economy when more important work is not pressing.

For cover crops we grow our own seed between the cultivated tree rows in the young orchards, and in any orchard that will not produce fruit that year.

A uniform head of symmetrical trees helps to maintain the income by insuring fruit where otherwise there would be vacant spaces.

Plant varieties to ripen in succession, and thus keep the pickers engaged.

We make all our own spray materials, saving time and expense by preparing stock solutions during bad weather.

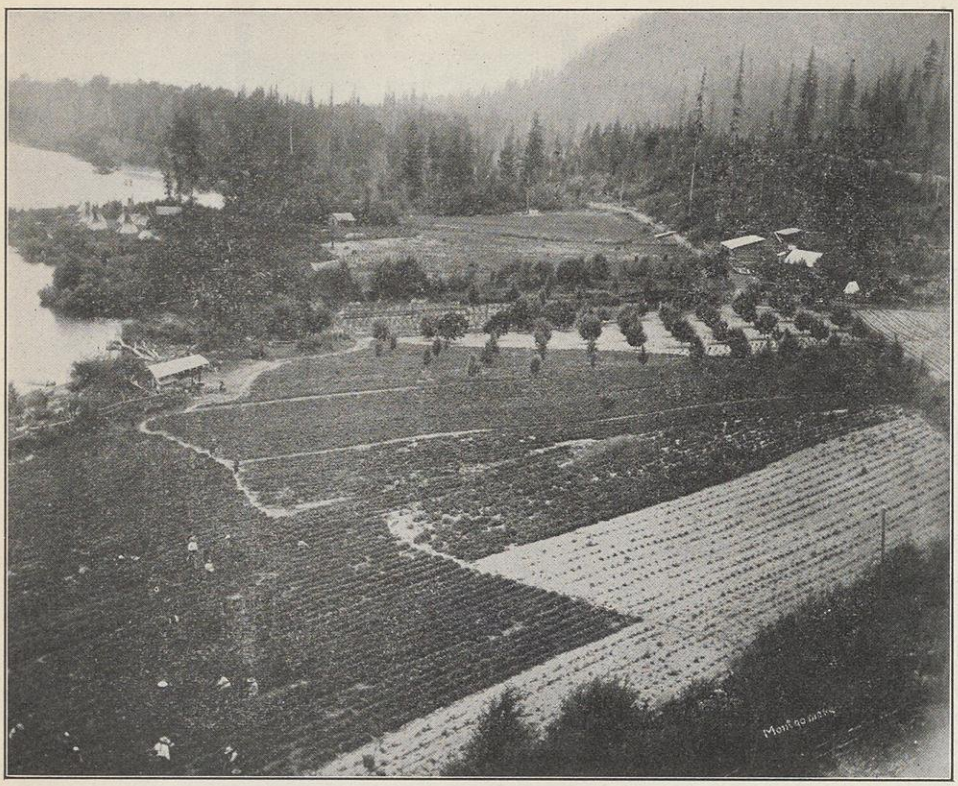
We spray as many times as are necessary, but no more. This is four (or at most, five) times in the year for pomes, and three times for drupes.

Owing to our low-headed trees the thinning is done easily and quickly, mostly from the ground, and chiefly by

A Revenue Producing Orchard in the Georgian Bay District

This orchard, owned by Wm. Reekie, Camperdown, Ont., has been sprayed, pruned and fertilized. It consists principally of Gravenstein, Snow, Spy, Baldwin and Spitz varieties. At the time the photograph was taken Mr. Reekie expected it to produce two hundred barrels an acre.

*Extract from an address delivered before the members of the Niagara Peninsula Fruit Growers' Association.



A Productive Strawberry Plantation in British Columbia

This four-acre strawberry plantation, owned by O. J. Wigen, Wyndel, B.C., produced 53,000 quarts of strawberries. Mr. Wigen grows Kellogg thoroughbred plants. (Photo copyrighted by The R. M. Kellogg Co.)

women and girls, thus greatly reducing the cost.

There is much less financial loss from fallen fruits from trees with very low spreading tops, because less droppings and less bruising.

Low trees permit economy in time and methods of picking.

Cooperative or wholesale buying of supplies and selling produce helps much in reducing the cost.

Our friends may expect us to recommend the elimination of spraying for the scale by the introduction of scale parasites (of which much recently has been printed) but we can not yet be sure that in all orchards they will do their work as thoroughly as they have in our own and in hundreds of others we have carefully inspected in Pennsylvania. It is surely worthy of careful consideration. We have discovered and published regarding certain entomological conditions, and have been criticised by a few who have been too narrow to understand or believe them, and of course by certain agents of scale-spraying materials. We have seen enough to give firm faith in the adequate reduction of the San Jose Scale by minute internal hymenopterous parasites. If any unprejudiced person will come to Harrisburg, Penn., and go with me to see a score or more of orchards that have been cleaned of San Jose Scale by the parasites, and then not agree that these natural agencies have been efficient in suppressing the scale I am willing to pay the expenses of the trip. Hence, our recommendation to "Reduce the cost of production by the application of modern methods."

How Often and When to Spray*

Prof. L. Caesar, Provincial Entomologist, Guelph, Ont.

IT is difficult for one who has not lived in Nova Scotia to advise Nova Scotia growers how often and when to spray. We shall, I believe, all agree on at least two of the applications, namely one just before the blossoms burst, beginning with the earliest varieties, and then going right on with the later, and the other just after the blossoms have nearly all fallen, say eighty to ninety per cent. of them off. Without these two in a wet cold May or June no one need hope to control apple scab. One of these is almost as important as the other.

There will be a difference of opinion as to the other sprayings necessary. I think you should carefully test the value of one earlier application. Try it on at least one-third of the orchard and continue it for at least four or five years, as one year's results are often quite inconclusive. When this application should be put on is a debatable question. If you have oyster shell scale, blister mite or much canker to combat it should be before the buds burst or just as they are ready to burst. If these things are not troublesome I should feel like suggesting that the spraying be done not before but as the buds are bursting, or just after they burst, so that the unfolding leaves may be covered with the spray mixture and protected against scab until the application just before the blossoms open can be given.

As for any later sprays one must be guided by the weather. I think it probable that it will pay to spray again about ten days after the codling moth spray. It seems to me that better results will be got by not waiting for two weeks as ordinarily recommended, because each week after the blossoms fall the danger of apple scab begins to grow rapidly less and the all important thing is to get the apples safely through June because there is seldom danger in July.

All are aware that two years ago the injury by apple scab was done chiefly in the latter part of August and September. This injury could have been largely prevented by an application of spray mixture the last week in August, supplemented perhaps by another about two weeks later.

*Extract from an address delivered before the Nova Scotia Fruit Growers' Association.

The Production of Gooseberries*

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

ONE difficulty in growing gooseberries is to bring them to maturity without having them become slightly scalded. A few hours exposure to a very hot sun will scald them very badly causing the skin to become tough and destroying the flavor of the berry. I remember three years ago we lost quite a quantity of fruit which was exposed in this way. We have one patch of three thousand bushes planted out in the open and that particular year we had them just a little over half picked by a Saturday night. Sunday was a roaring hot day and as a result we had stewed gooseberries by Monday. You could notice the cooked odor quite a distance.

At the same time another patch of nearly one thousand bushes, just across a lane but planted under peach trees remained practically uninjured on acount of the shade afforded by the trees. Gooseberries seem to require shade for their best growth. Even in England the best and largest berries require shade for their best growth.

They can be grown in an orchard with very little extra work as they can be cultivated lengthwise when the orchard is worked and a one-horse cultivator can be used crosswise. Two bushes can be planted between the trees in the row. Spraying can be done easily and the picking of them is more of a pleasure than being picked and pricked to small bits in the sun. Our Whitesmith patch under

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

the trees averaged six quarts to the bush, while the other one which is in the sun averaged three quarts.

English varieties are not propagated to any extent in this country, the main part of them being imported, as nurserymen find that they can do this cheaper. American varieties are usually grown by mound laying, which consists in throwing up the earth in June when the young shoots are a few inches long. They root in this and are left on the stools for a year when they are planted out in the nursery rows for another year. English varieties may be propagated in this way, but they are usually left on the stools for two years.

Cuttings six or eight inches long, taken in August or September, and stored as currant cuttings will succeed with American varieties and with English sorts in England but stronger plants are produced by the layering methods.

Gooseberries require the same cultivation as the currant. It is important that it should be shallow and frequent. Some people use a mulch system claiming that they can obtain good results and also prevent mildew to a large extent. Plantations thus treated have borne large crops for twenty years. The mulch which is usually straw should be at least six inches deep and may be thrown on the bushes in the winter and placed in the spaces in the early spring. It conserves moisture, prevents weeds and keeps the fruit clean. Its chief advantage is the prevention of mildew but its use has largely disappeared on account of improved methods in spraying.

PRUNING

Gooseberries bear on two-year-old wood and canes should not be allowed to remain after they are five years old. The young bushes do not require much pruning for the first three years except to cut back about half the new growth each year. This encourages the development of fruit spurs all along the branch instead of having them situated mostly at the ends. Low branches and those which have been injured should be removed as well as superfluous new wood.

When pruning we have to keep in mind that the bearing canes or branches will not last forever, so young shoots should be saved to take their places. For English varieties leave five or six bearing branches and as many more young shoots. More branches may be left in an American variety on account of their smaller size.

The idea of thinning out the bush to admit sunlight is altogether wrong, as the crop may be severely injured by the hot rays of the sun.

The Culture of Raspberries and Strawberries

Jos. Frappe, Stirling, Ont.

TO make a success of growing small fruits one should not do things simply because others do. There should be a good clear reason back of everything. The more thought and intelligent workmanship one puts into any work the more pleasant and agreeable it becomes; and this is abundantly proved in the culture of berries. There is a pleasure in the great windrows of luscious fruits, the work is light and agreeable, and the profits to the painstaking are often large.

For the little care and work that are required, no farm house or even village home with a small garden should be without an abundance of the most wholesome, delightful and fragrant of foods—the delicious strawberry and raspberry. They are far better than medicine, for with ripe fruit in the home sickness often becomes a stranger. The little toil required in setting out, caring for, and picking is repaid a hundred fold in health and happiness.

It is better to have the soil for strawberies rich with some good fertilizer, as barnyard manure. On poor soil the same amount of work is required, with only a quarter the crop.

If the ground has been cleaned by a summer fallow or some hoed crop, such as potatoes, it will save a good deal of labor. Weeds grow fast in strawberries. The ground must be well drained. Berry plants "cannot stand wet feet." A place well sheltered so that snow is likely to remain long on the ground is favorable.

For ordinary cultivation the plants are set out in rows four feet apare and eighteen inches apart in the row. Some place the rows as closely as three feet, and if they are kept narrow enough by trimming the ends of the runners the plan is good. But it is never wise to have the rows too wide or matted, as besides giving weak plants it interferes with the picking.

For a small patch dig small holes with a hoe, make a small cone shaped mound in the centre of each, and over this place the plants, letting the roots hang around the cone, but deep. Then cover and pack tightly. This enables the moisture to rise by capillary action. Lastly cover with a loose layer of earth. This keeps the moisture from escaping.

Avoid planting too deep, or too shallow. Large patches may be set out by using a spade, trowel or better a dibble. An opening is made, the plant inserted the proper depth, the roots shaken well out, and then the earth is pressed tightly against it with the hand or foot.

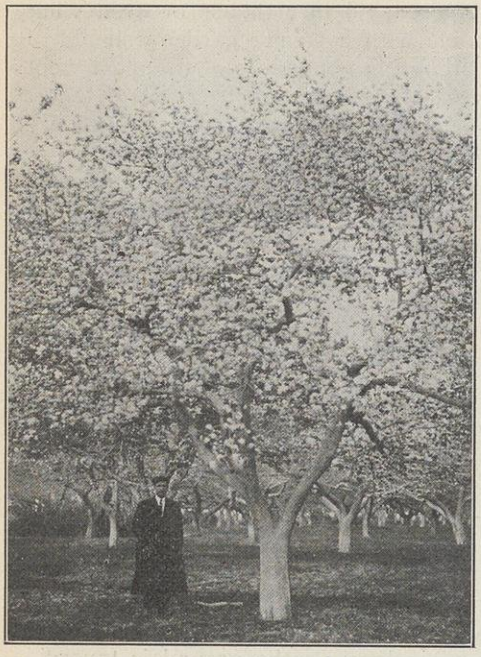
In the spring after the leaves are nicely started I go through and trim off the ends of the branches, cutting off a third or a quarter of the length, and removing dead wood. The remainder will do much better if this is done.

Directions given for the strawberry are also applicable for the raspberry. Land sloping gently to the north is favorable to the raspberry as the changes of temperature are not so sudden. This location also more nearly approaches the state of the wild strawberry. What is termed "winter-killing" is more properly spring killing.

Plants are generaly set in rows six feet apart and three feet apart in the row. If the soil is good a row of carrots or other vegetable may be grown in the intervening spaces the first year.

A Well Sprayed Apple Orchard

In this orchard, owned by W. J. Owens, Duntroon, Ont., fifteen pounds of lime to the barrel was used. This gave the trees their white appearance and assisted in the making of a thorough job.



Prospects for a Bumper Apple Crop in an Essex County, Ont. Orchard

Many varieties of raspberries will do well in one locality, and produce small stunted plants and crumy berries when grown not more than a mile away. As an instance of these I might name the London, though there are many others with this fault that are sold at high prices.

Factors in Fruit Growing

Prof. H. A. Surface

Avoid injury from insects by knowing those that are most liable to appear, and watching for them or their work. For their suppression, follow the teachings of the most modern entomologists. In all cases, for economy of production, practice the methods of prevention rather than of remedy. Spray for insects once when dormant, with strong lime-sulphur; for the apple aphis make this application immediately after leaf buds burst; also use an arsenate with the fungicide for each of the subsequent sprayings.

THINNING PRACTICE

Modern horticulture so emphatically demands that the operation of thinning be practiced that especial attention must be directed to this process as a means of (a) increasing the size of fruit, (b) obtaining uniformity of size, (c) eliminating defective fruits, (d) equalizing the distribution of the load, and in consequence opening the top uniformly without breaking the branches, (e) giving uniformity of color, and (f) above all else, preventing exhaustive production this year, thus making it possible to set fruit buds for next year's crop, resulting in annual rather than biennial crops.

Fallen or bruised fruits are prevented by growing them on very low headed trees, which properly brace themselves with their branches; also by picking before they are dead ripe. Injury from falling is avoided by a good mulch under the trees.

The bruising of fruit by harvesting must be avoided by careful handling from start to finish. Any person who cannot handle fancy fruit more carefully than eggs should grow only Ben Davis apples and Kieffer pears. The grain bag over the shoulder is still too often used for picking. Pick in baskets or picking buckets. Do not press, bruise, or rub fruits. Handle just as little as possible, and keep the "bloom" on apples and plums particularly, as this is one of the elements in the quality we wish to produce.

Finally, to obtain the highest degree in quality let the fruit mature on the trees. Fruits picked green do not develop with their best flavor or color. This is why, in every region, fancy "home-grown fruits" are preferred by consumers to those grown elsewhere and picked unripe to stand shipping.

Thinning the Apple Orchard*

J. M. Robinson, Kentville, N.S.

THINNING should always go hand in hand with spraying. The following table shows results obtained from twenty of the most careful sprayers in ten companies of the United Fruit Companies of Nova Scotia, giving the per cent. of number threes obtained. The percentage of poor fruit could have been greatly reduced by thinning, as can be seen by the figures taken from thinned apples from very large trees at Kingsport. This is not necessarily a correct comparison but is given to show that the per cent. of number threes can be cut down by thinning:

	1912 % No. 3	1913 % No. 3
Gravenstein, 20 best sprayers	36	35
Blenheim, 20 best sprayers	15	28
King, 20 best sprayers	22	36
Ribston, 20 best sprayers	25	32
Gravenstein, thinned (1913)		19
Blenheim, thinned (1913)		12
Ribston, thinned (1913)		16

These figures show that even though thorough spraying is done we often have fifteen per cent. or more of scabby and defective fruit on the trees. Often too a great many varieties set so full that it is impossible to get a high percentage of number one fruit and consequently the percentage of number threes is high, which generally gives poor markets. In each of these cases it will pay the grower well to thin.

In paying visits to a number of orchards last season I was very much impressed by this fact. Blenheim and Ribston bore heavily generally and though free from scab would not give good satisfaction in packing on account of the great number of small and poorly colored specimens. If from twenty to thirty per cent. of these apples had been removed a surprising difference would have resulted in the grade obtained.

Again, the percentage of number three and cull grade is often nearly proportional to the percentage of scabby and defective fruit on the trees, and by thinning off sometimes fifteen to twenty per cent of this part of our crop the grade will be raised greatly and the yield not materially decreased. The expense of thinning moreover is not great and the work is easily done. In Kingsport last season large trees bearing eight to ten barrels, were thinned in three quarters to one hour each, or at a cost of approximately two cents a barrel, calculating labor at twenty cents an hour. The extra expense in grading unthinned fruit easily offsets this and the gain in grade is from thirty-five cents to fifty cents a barrel tree run.

I consider thinning of great importance as it aids greatly in appearance, which is our weakest feature in fruit growing in the Annapolis Valley. Greater profits for money expended may also be had from thinning than from any other orchard operation.

*Extract from an address delivered before the members of the Nova Scotia Fruit Growers' Association.

What they Cost.—It often happens that when we continually hear of the ravages of certain insect pests, that we suddenly realize the enormous amount of damage they are doing, and immediately adopt measures to render their attack less and less in the future. When we hear in cold figures what the annual loss in orchards amounts to every year, it makes us "sit up and think." In the year 1904, Mr. C. L. Marlatt, of the U. S. Bureau of Entomology, went very carefully into the question of what our insects cost us, and he estimated that the annual loss due to fruit insect pests amounted to the enormous sum of $27,000,000. That is, twenty per cent. of all fruit crops grown in the Republic to the south of us is annually destroyed by injurious insects. Some years the percentage in some districts will be as high as forty per cent.—Arthur Gibson, Chief Asst. Entomologist, C.E.F., Ottawa.

Basic slag, which is a cheap form in which to apply phosphoric acid, can be used to advantage in large quantities by crops which are gross feeders. If the soil is rich in vegetable matter or acid, the acids will help to dissolve the insoluble forms of phosphoric acid and make them available for the plant.

Cottesmore Hall, Cobourg, Ont., One of an Increasing Number of Suburban Mansions in Canada—Fig. 1

The Gardens of Cottesmore Hall, Cobourg, Ont.

T. S. Hall-Abell, B. Sc., Cobourg

NOT very far from the gardens of Bagnall Hall, Cobourg, a description of which appeared in the January number of The Canadian Horticulturist, lies the beautiful residence and gardens of Mr. Wallace H. Rowe, the president of the Pittsburg Steel Company. All that the ingenuity of man could acomplish has been done to make this residence a palace, the grounds fairy-haunted glens, and the gardens veritable wonderlands. Bounded on the south by the old Kingston Road; on the west by Cottesmore Avenue and on the east by a meandering creek which flows from the Baltimore hills out into Lake Ontario, the whole vista is so pleasant that one has to be quite strong-willed to drag oneself away.

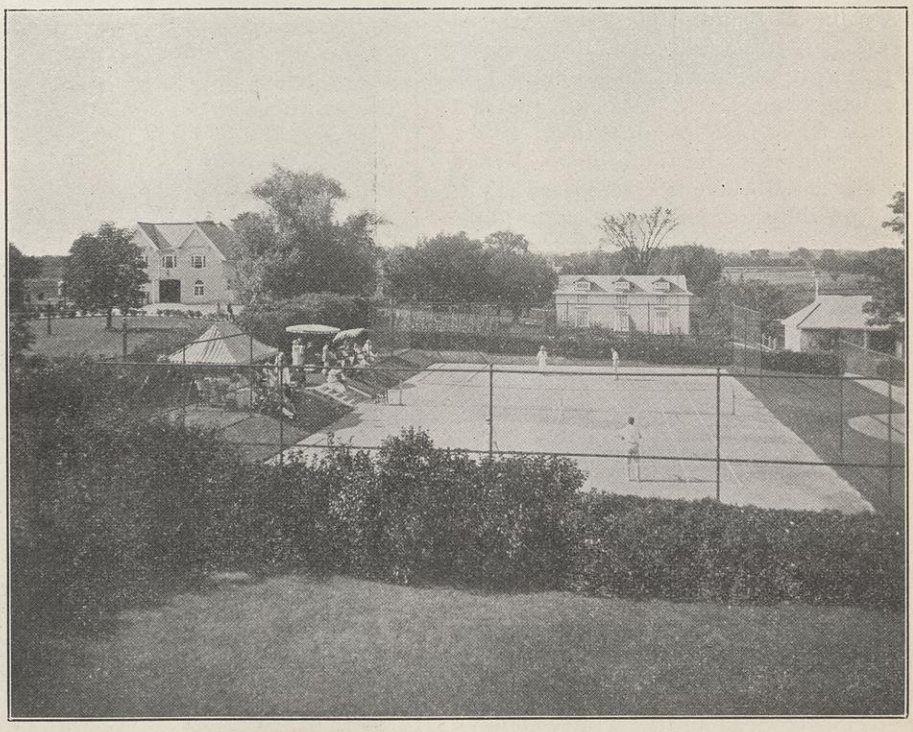
The Hall itself is built most substantially of cut Kingston stone, the frontage being one hundred and sixty two feet. In figure one a good view of it is obtained. The bush hydrangea in the right foreground, the weeping ash and maples also show well in this cut, which gives the south west aspect. The front entrance from Kingston Road has massive hammered iron gates with heavy lamps, flanked by maples. It opens invitingly into an avenue of more maples that are in excellent keeping with the rest of the estate. These gates were made by the Canada Foundry Company, weigh quite a few tons, and cost several thousand dollars. Part of the finer work on them required two or three years to accomplish.

Most of the trees shown in the illustrations have been in the hands of the dentist. All rottenness has been removed, and all holes filled. They look good enough to stand for centuries.

The driveway is made on the Telford Road system. The other paths are macadam on ten inches of crushed stone.

Figure two is the clay tennis court—originally the upper half of the vegetable garden—enclosed by a cedar hedge, and surrounded again by lilacs, high bush cranberries and bush honeysuckles. In the background of this illustration and to the left are the stables, to the centre the poultry house and to the right the tool house, while two beautiful English white hawthorns also show up well to the right of the willows. This photograph was taken from the nursery window in the rear of the house, and the view is due north.

In figure three we see part of the formal garden laid out in double Maltese



The Clay Tennis Court With Border of Shrubbery—Fig. 2

The Formal Garden Showing Part of the Perennial Border—Fig. 3

Cross formation. Perennial borders circumscribe all the beds, and the rose here reigns supreme. One is not exaggerating when one says there are thousands upon thousands of rose bushes here. McGredy of Porterdown, Ireland, supplied the majority of these, and they consist of the choicest the earth produces. One bed alone contains the following: In the centre, King George V., and around are Mrs. Maynard Sinton, Mrs. Muir MacKenna, General Jacqueminot, Madame Abel Chatenay and Etoile de France. Others are Mrs. Wallace H. Rowe, Kaiserin Augusta Victoria, John Laing, Liberty and Frau Karl Druschki, the last the best white rose in cultivation.

The two large chestnuts on the left of this cut and the apple tree to the right, stand on the spot where one of the three brick houses originally stood. These houses, of course, were demolished at the time the plans were approved of. In figure four is pictured an artificial pond formed by damming the creek; and the German irises in the foreground with the dogwood, Cornus Siberica, altogether make this spot a charming retreat on a summer day. The maples on the east side of the entrance drive can also be seen well in this cut.

Mr. Rowe bought the land in 1904, and in 1908 was in residence. The landscape architect, Mr. F. G. Todd, of Montreal, the man who laid out Sir William McKenzie's palace, spared no pains, brains or money, and from motley cut-up farms covered partly with old brick houses, has been evolved a most splendid residence and grounds, a pleasure to its owner, a valuable asset to the town of Cobourg, and a beauty spot for Canada. Mr. Buckler, the gardener, and his staff of assistant gardeners are to be congratulated on the very smart and correct apperance of the whole at all seasons.

When transplanting many varieties of rooted plants the iron trowel is very useful.—H. M. Speechly, Pilot Mound, Man.

Summer Care of Roses

By an Amateur

Frequent cultivation will keep rose plants thrifty and strong and will counteract the ravages of insects materially. After the leaves are well out an application of arsenate of lead, two ounces to a pail of water, applied with a sprayer so that every leaf is covered, will kill all chewing insects. The arsenate of lead leaves a white sediment on the leaves, but this will be all washed off by the rains and by the necessary sprayings with pure water before the roses open.

Weak solutions of ordinary soap dissolved in warm water and applied with a sprayer to the under side of the leaves will hold the thrip in check, while spraying with the garden hose in the evenings will get rid of the aphis, which infects the young and tender growths. Mildew will not likely trouble plants in good locations, but if it should appear, it is best held in check by dusting the plants with flowers of sulphur or soot while the plants are wet with dew, and allowing it to remain for a day or two and then washing it off with water from the hose. If it appears in the autumn, when cool nights follow warm days, it will not do any considerable harm.

While the first cost of many varieties of paeonies may seem high, it is really the most economical plant one can buy, from the fact that it represents a permanent investment and one which pays annual dividends of increase of at least one hundred per cent.—J. H. Bennett, Barrie, Ont.

The Artificial Pond, A Charming Retreat in the Garden—Fig. 4

Lawn and Garden Hints for June

PLANTS for bedding may be placed in the open early this month. In color schemes, harmony should be the first consideration. Do not attempt too much.

Be sure to have plenty of mignonette in the annual flower beds. It is a useful flower for cutting. Other common annuals worth growing in every garden are marigold, petunias, zinnias, poppies, portulaca, calliopsis, and balsam.

Keep the perennial border well cultivated and clean. Pick off all flowers when they commence to die.

Plant some gladiolus bulbs, and plant some more two weeks later for a succession of bloom.

Get the window boxes ready and put them in position as soon as danger of frost is past. The time has come to look after your hanging baskets.

You can increase the size of your pansy flowers by watering two or three times a week with water in which cow manure has been soaked. They will take lots of it.

Hollyhocks are well worth growing, but do not plant them singly. They make a better effect when grouped.

Keep ahead of the insects on rose bushes. If you have not already done so, give the leaves a good sprinkling of helebore.

Sprinkling plants and bushes once a day with water alone will keep down many pests.

Dahlias planted now usually will give better results than if planted earlier.

For best results in the flower garden, four essentials in June are thinning, weeding, cultivating and watering.

Sweet peas should be watered often. Never let the ground get thoroughly dry, and do not keep it too wet.

Old geranium plants that have become tall and unsightly can be cut back to within a few inches of the old hard wood. Keep them in soil that is moist but not wet. When growth starts re-pot into a pot one or two sizes smaller, using soil composed of two parts of loamy potting soil and one part of fine sharp sand. Water well and let them grow.

Do not allow weeds to get a start in a newly-made lawn. Keep the turf thick and velvety, and the weeds will be in the minority.

Keep the mower going. The body of the sward can be increased by frequent mowing. It is better to mow often rather than too closely.

To have large flowers of sweet peas disbud and allow only a few of the buds to grow to maturity.

Keep the walks and drives clean.

Keep the soil about the shrubs spaded and suckers cut down.

Portulaca, candytuft, sweet alyssum, and phlox may still be planted.

Canna beds of one color are more effective on a lawn than mixed colors.

It is safe to set out any of the annuals or vegetable plants after June first.

Keep the blossoms picked off the pansies and sweet peas if you want flowers throughout the season.

Cultivate the vegetables, fruits, and flowers thoroughly if you would be successful.

A good time to trim the spiraea Van Houttei and other spring flowering shrubs is just after they are through flowering.

Watch the roses for insects and either keep them picked off or spray with insecticides. Soapsuds makes a good spray to get rid of the aphis. Use a clean soap that is free from chemicals.

vegetables for winter use at small expense.

Tulips may now be dug to make room for other plants. Take up tops and all and store in some cool, shady place until the foliage dries, then they may be cleaned and put in a cool place in the sacks till October, when they may be replanted.

Spiraeas and other plants blooming early in the spring may now have some of the wood that bore flowers taken out, making room for the new growth which will produce the flowers next year. Careful atention to these things means better plants next year.

VEGETABLE GARDEN

Set out late cabbage and celery.

Continued cultivation means success in the garden.

Early peas should be in evidence now.

Spring's Ever Welcome Feast of Beauty: Garden of C. O. Stillman, Sarnia, Ont.

Transplanting is almost entirely done in May and June—as soon as the seedlings can be handled with the thumb and finger. A good tool to use is a sharp pointed stick about the size of a pencil. The plant can be loosened with this without disturbing those that are to be left in the row. It is also a good tool for making the hole for the plant. For larger plants, as those transplanted from hotbeds or cold frames a trowel or large dibber will be useful. Keep all the soil possible about the roots, and firm the soil around the ones left in the row as well as those reset.

Do not let the roots dry out, and shade the reset plants for three or four days if the sun is bright

Keep the dahlia plants pruned and tied to stakes for best results. Too many stems produce poor and inferior flowers.

Have you looked up any of the canning outfits? They save the fruit and

Better plant a few rows more for later use.

Dwarf horticultural or cranberry beans make excellent shell beans. It is not too late to plant them now.

Cucumbers may be sown now with good results.

Have you made several plantings of peas and corn?

Swiss Chard takes the place of other leaf crops for "greens" in hot weather, and kale makes good "greens" late in the fall. Plant them now.

Remove all blossoms from newly set strawberry plants. They take too much strength from the plant and thus do not allow it to make the best growth of vine.

Don't plant small fruits or bushes between the tree in the orchard. They soon become a nuisance. Potatoes or beans may often be planted to advan-

Tulip Beds, Queen's Park, Toronto, Ont.

tage. Corn should not be used, as it shades too much.

Because of limited space the rows of vegetables in a home garden are usually close together, and often the seed is planted thickly in order to have a large yield. This is a mistaken idea, as the plants cannot develop to their full size if crowded. Vegetables grown for their roots should be given as much space as a mature plant needs. The very early radishes which are ready for the table in three or four weeks can be thinned out as used, but the larger varieties should be allowed two or more inches of space. Beets can be thinned out and used for greens, giving those left to mature, about three inches of space.

Plants grown for their foliage, as lettuce, parsley, and spinach need more room than those whose roots are edible; and those which bear fruit, need plenty of room in which to develop the fruit bearing branches.

Seeds of vining plants, as cucumbers, melons, squash, and pumpkin are usually planted thickly, as the early bugs and cutworms take some of the plants. Only three or four should be allowed to grow in each hill. Nearly all plants can be transplanted, some of them, as lettuce and parsley, seeming to grow faster after being reset than before. The best guide as to the room needed is a good reliable seed catalogue or garden text book, which usually gives the size of a fully developed plant.

To bring the best price on the market, strawberries must be clean, evenly graded, and of good quality. Do not use old packages for marketing. They are unsanitary and detract from the selling value of the fruit.

Are the currant bushes well filled with nice, large fruit? Small fruit is not always chargeable to a poor variety, but is sometimes due to poor culture and no pruning. Currants are borne largely on wood three or four years old. Older wood should be pruned out and enough young wood also to prevent crowding. This may be done early in the spring or in the autumn. Cultivate and add barnyard manure to the plants occasionally.

Results from Home-Grown Seed

Leslie Harris, Brome Co., Que.

I have been experimenting to test the relative merits of seeds saved from my own garden as compared with those obtained from the seedsmen, and find that it is well worth while to collect as much as possible of my seed myself. I had often been warned not to risk the failure of my flower and vegetable gardens by planting my own seed since, it was said, Canadian-grown seed was almost sure to be perfectly ripened owing to the early frosts and uncertainty of the seasons in our climate. But anyone with good judgment can distinguish seeds that are plump and properly ripe from those which are not, and it is my experience that home-grown seeds germinate better and in larger proportion than bought ones.

Having bought a large quantity of sweet peas of the rarer varieties (some of them cost me a cent a-piece for the seeds) I wished to test them in comparison with some of the same varieties which I had saved from my garden last year. I planted them in individual pots in the greenhouse, to be set out in the open later when the ground should be ready. Ninety-five per cent. of my own peas came up promptly and were growing strongly before the bought ones had put in an appearance. Several days later the bought seed began to come up in a half-hearted way, but only about one in ten of those planted germinated, and most of the plants were spindling and weak-looking.

I made the same test with pansy, aster, larkspur, and other seeds, with the same results, though in a less marked degree, all the bought seed used being from the most reliable dealers, yet in every case proving less vigorous than that grown in my own garden.

Killing Dandelions

Cut the dandelion roots off below the surface of the ground.

Gasoline or kerosene, applied at the crown of the dandelion, will kill individual plants.

When only a few stray plants appear persistently use the spud, or knife.

On badly infested lawns, good results may be obtained by spraying with sulphate of iron. Use one and one-half pounds of iron sulphate, which can be purchased at any drug store, to one gallon of water, remembering that it will discolor clothing and cement walks.

Apply the spray three days after the lawn is cut, on a bright day when the possibilities of rain are slight.

The solution should be applied with a sprayer which gives a fine mist-like spray —a sprinkler is not satisfactory.

The lawn should be sprayed about once a month during the summer, and not cut or watered for three days after the solution is applied.

Whatever method of eradication is used, it is always well to reseed the lawn in April, June, and September.

For reseeding, eight or ten pounds of seed should be used on a lawn, one hundred by one hundred and fifty feet. The seed should be sown broadcast, raked in, then watered.

A good lawn-grass mixture is fourteen pounds of Kentucky blue-grass, two of white clover, and two of red-top seed— buy good clean seed and mix it yourself.

Besides this reseeding, it is well to scatter nitrate of soda over the lawn before a rain or just before the lawn is sprinkled. Fifty pounds will fertilize a lawn one hundred by one hundred and fifty feet.

We have learned by experience that in a border where continuity of bloom is desired all the tall plants should not be put at the very back. The late blooming sorts are most of them tall, and if they are all kept in the rear there is a dearth of bloom near the front in late summer or autumn unless annuals are used, most of which do not go well with perennials.—W. T. Macoun, C. E. F., Ottawa, Ont.

The Beekeeper

With which has been Incorporated The Canadian Bee Journal

Vol. 24 JUNE, 1914 No. 6

European Foul Brood

Warrington Scott, Wooler, Ont.

EUROPEAN foul brood usually attacks the larva at an early stage of its development. while it is still curled up in the base of the cell. A small percentage of the larva dies after capping or close to be capped, and the first indication that is easily observed is a slightly yellow or grayish discoloration, and an uneasy movement of the larva in the cell. A little later the larva is usually flattened against the base of the cell and has the appearance of being melted. Later the color changes to a decided yellow or grey. The disease is quite variable in its symptoms and is often a puzzle to the apiarist.

The question may be asked,—"Is there not a stage of the disease which will always appear the same?" I would answer "Yes." After the disease has been in a colony for a sufficient length of time for the perforated caped cells to appear the diseased larva in these cells always have the same appearance, or nearly so. I always look for these perforated cells, when inspecting as a positive proof of the disease being present. Open one of these cells with a tooth pick and note the contents of the cell. I have always found them to be nearly a coffee brown in color and very offensive in odor. If you insert the toothpick in the brown mixture or dead larva and withdraw it, the contents will string out sometimes nearly an inch and then break and fall. If you notice closely you will find that there is no trace of the appearance of a larva left. The skin or outer coating of the larva has been eaten completely away by the growing germs, which multiply sufficiently in quantity to thicken the watery part of the larva into this jelly like matter. This jelly like matter soon dries into a dry scale or lump, and will be removed by the bees as long as the colony remains sufficiently strong in bees to do so.

Pickel Brood or Sac.-Brood has a different appearance from European Foul Brood. The skin of the larva is always present, and when broken the internal part is of a watery nature, entirely different from that previously described.

I have had some six years' experience with European Foul Brood since it first appeared in my apiaries. There is no use treating black bees unless they are Italianized some time soon after treatment; one month after treatment would do. The longer one waits the more certain is the disease to reappear. It reappears in some colonies even after they were Italianized before treatment. In these cases I have generally found that by changing the queen, the colony usually cleans up the disease. If the disease returns in an Italian colony to such an extent that say half of the brood is dead, I have found removing the queen for five days before introducing a new one,works well, as it gives the bees a chance to clean up the combs before the new queen has a chance to lay. If more than half the brood is dead I would treat the colony. It is useless to describe the treatment, as a full description can be found in Bulletin No. 213 which can be obtained by writing to Morley Pettit, Provincial Apiarist, Guelph, Ont.

ITALIANIZE

The best advise I can give to all beekeepers is to "Italianize." Don't wait for European Foul Brood to reach your bees but Italianize as soon as possible. You will be able to save considerable loss by doing so, if you use Italian queens raised from vigorous stock. It is a very important point, that some Italians seem to be more immune to the disease than others. I have used the Golden bee with good results, but I cannot say that the three banded or leather colored Italians will not do as well under the same conditions, provided they are of vigorous strain. Vigor seems to count more than color. In buying queens I would advise trying to ascertain if the breeder you intend buying from has stock of the high standard so necessary in combating foul brood. Where it is at all possible I would advise the beekeeper to buy a breeding queen and raise his own queens. The sucecssful honey producer of the future must keep his queens young, that is he must not keep a queen longer than two seasons for the best results, and I am not sure but it will pay well to re-queen every year. It is very important when combating the disease to see that all queens are young. I have known several cases where the diease returned, apparently for no other reason than that the queen became old. In order to keep bees up to a high standard of vitality it requires strict attention to the re-queening part. This can be done much more satisfactorily if the queens can be raised in the apiary they are to be introduced in.

As I mentioned before, it has been six years since European Foul Brood started in my bees, but still there is always a little hanging around, and it breaks out in a colony or two every year. In other colonies a few cells can be noticed in the early part of the season. These few cells always disappear during the honey flow, but the colony or two spoken of usually remain diseased throughout the entire season, but after re-queening them they usually are free of the disease the following season. This experience makes me think that the beekeepers of Ontario will always have European Foul Brood to contend with, but by strict attention to re-queening it will be possible to keep it in control so as not to interfere with honey production but very little. The remedy for the disease is exactly in line with the system of beekeeping that must be followed in order to obtain the highest success, even if foul brood never existed. As the American beekeepers have said of European Foul Brood, it is a blessing in disguise. This is true to a large extent, as it makes it necessary for all beekeepers to adopt better methods or drop out of the ranks. Where they only partially observe the requirements their success will correspond with the efforts they put forth. During my inspection trips I have visited many beekeepers who had treated their bees and the disease had returned to them. They all seemed discouraged and complained of their neighbors not cleaning up their bees properly. Now, I have found that it makes but little difference whether your neighbors clean up properly or not, as it is next to impossible to keep any apiary entirely free from European Foul Brood. Keep your bees up to a high standard of vitality and it will make but little difference whether your neighbors are careless or not.

The National Field Day at Forks-on-the-Credit

ONLY a heavy down-pour of rain prevented the first National Field Meet, May 25th, from being a record-breaking attraction. Despite the unpromising weather one hundred enthusiastic beekeepers met with Friend Sibbald at Forks-of-the-Credit. When the train arrived, at ten o'clock, the clouds had broken, and the three-quarter mile trip to the apiary ground gave ample opportunity to view the scenic beauties.

The wants of the inner man were duly attended to, lunch being served in real picnic style. After lunch, Mr. William Couse gave a demonstration of hive manipulation, many matters of interest being discussed the while. The colonies opened were as fine a lot of Italians as one could wish to see, and were in splendid condition .

A most interesting talk was that given by Mr. Dadant of the American Bee-Journal, who pictured some of the methods practiced in European apiculture as gleaned from a four months' trip last summer. It was Mr. Dadant's father who introduced American methods in France and Switzerland, and incidentally into Italy.

In France, two styles of movable frame hives are used: One has thirty frames, twelve inches deep, all in one storey. It is simple to manipulate but difficult to extract from. The other is the Quinby hive with our system of one-half storey supers. Very little comb honey is produced in France. The honey is extracted by crushing the combs and after the honey is seperated the combs are melted. In southern France the bees are hived mostly in willow baskets covered with cow dung. The honey is removed by smothering the bees and the hive is then thrown away. The people think the swarm is the young bees and the old colony is the one killed.

The best of modern methods are followed in Switzerland, which country is ahead of either the United States or Canada. No straw or box hives are used. There are twelve thousand members in the various beekeepers' associations. Comparing the Swiss and Italian bees Mr. Dadant remarked that the latter are too good for Switzerland; they get up too early and stay out too late. This is the fault of the climate, not of the bees. Very few of the bees of Italy are of bright golden color and they are very quiet. The members of the Italian associations are mostly well-to-do people who teach the peasants. The finest and largest apiary in the world is that of Count Penna, who raises queens in a specially equipped laboratory. Italian honey is sold very cheap—six and seven cents a pound wholesale—yet the Mutual Association last year sold $600,000 worth of honey. Space does not permit of giving a more extensive account in this issue of Mr. Dadant's admirable address.

A method of strengthening comb foundation was exhibited and explained by Mr. Alysough of Innerkip, Ont. Instead of wiring, he uses three pine slivers which are imbedded in the foundation, and extend from the frame head to about three-quarters way down the frame. The drawn out comb exhibited was straight as a die. Mr. Alpaugh, who believes in using undressed lumber for making hives, and only three-eighths inch for the side, as the moisture escapes more readily.

A telegram was received from Mr. E. R. Root, Medina, Ohio, stating that his car of bees has just arrived from Florida, which would necessitate his staying at home.

Mr. E. B. Holmes, of Athens, Ont., made some happy and humorous references appropriate to the occasion. He did not tell us that he was Irish, but he let the cat out of the bag when he referred to the true beekeeper as one who though flooded by the waters of reverses would arise Phoenix-like from his ashes.

That a greater effort should be made to develop the home market was the idea expressed by Mr. I. Kenyon, Camillus, N.Y. Mr. Kenyon also gave some pointers on uncapping. He cuts down with the knife, tilting the top of the frame a bit forward. He finds that it makes a cleaner job and if it is properly attached, no water collects in the steam tube of the knife.

Readers of The Beekeeper can easily imagine that not all the information was obtained from the addresses. During the intermissions a perfect hum of conversation arose from various interested groups. Just before supper some photographs were taken. After the remainder of the eatables were done away with, three rousing cheers were given for Mr. and Mrs. Sibbald, which brought this exceedingly pleasant outing to a close.

The Use of Steam in the Workshop

Dennis Nolan, Newton Robinson, Ont.

STEAM may be used as a means of conducting heat for various uses, such as rendering wax,—either melting combs, old or new, melting cappings, or in using the wax press. With a small boiler steam can be generated, carried and applied for various purposes such as I have mentioned more economically, more safer and handier and better than where tanks or boilers are placed on stoves or furnaces.

We put into use nearly fifteen years ago a small boiler of upright design. It was forty inches high by eighteen inches in diameter with nine two-inch tubes. It had a six inch base or ash pit with a hand pump by which the boiler could be replenished with water when cold or when there was steam pressure. This boiler is known to the trade as a "feed cooker" made for farmers' use for steaming feed and so forth, and cost about thirty dollars. A seven inch stove pipe may be attached. It is fitted with a tight fitting fuel door and damper and is in every way safe and reliable as the boiler will stand a cold water pressure of one hundred. It has gauges and a safety valve.

The boiler occupies very small space in the room. It may be placed in an adjoining room or building, or it may be placed outside in the open for temporary use. A one-half inch pipe connection runs from the boiler to which may be attached different lengths, branches or pieces of pipe of this size, with valves to shut off with.

For melting combs we use a large melting box lined inside with tin and the bottom concave in shape. A wire basket or perforated zinc basket hangs inside this box which is large enough to hang our frames in to the number of about twenty with a space of four inches below the bottom bars of the frame. Fifteen or twenty minutes in this box cleans about all the comb out of the frames and by giving them a shake while removing them piping hot leaves the frames almost perfectly clean. This mass of melted comb is then ready for the press or may be pushed to one end of the basket and more combs put in.

The steam enters one end of the melting box near the centre. This end of the box is two inches higher than the other end, where the melted wax and so forth runs out of a pipe at the bottom of the box. The steam, melted wax, water and honey then goes through a separator which carries off the steam in a pipe leading to the stove pipe, the wax on one side and honey and water on the other.

This separator is simple in construction. I made mine from two by ten honey tins, one just a little larger than the other so the mouth of one telescopes the other one.

The first tin stands upright. The overflow from the melting box enters it near the top. A tin division reaching from the top to within one and a half inches of the bottom divides the tin in the centre. There are two overflow pipes about

The Apiary of Albert Berdan, Ostrander, Ont.

two-thirds of the way up the sides of the can, three-quarters of an inch in diameter. The one on the side where the mixture enters is one half an inch higher than the one on the opposite side of the partition. This first pipe skims the wax while the honey and water being heavier settle under the partition and run out on the opposite side.

The other tin is then placed bottom end up over the first one described. A tin pipe that runs from this one to the stove pipe, carries off the waste steam.

We use a "Sibbald" press in connection with this melter. A stem pipe runs down along the side of the cheeses to nearly the bottom of the press. The steam warms the water and keeps up an agitation of the water among the cheeses which helps to get the wax out when pressing.

For re-melting wax in cakes we have a tank surrounded by water in a larger tank with a pipe running into the water to warm it. Steam may be advantageously used for liquifying honey in the tank as less or more heat may be applied at will in order to maintain just the required temperature.

Sugar syrup may also be made very nicely with steam. After using syrup made this way for years I believe that it is the best way.

Run a pipe to nearly the bottom of a tank or large barrel with a faucet at the bottom. Put in the required amount of sugar and water (allowing for the water from the condensed steam), turn on the steam and begin stirring with a stick. In a short time all will be dissolved, when the syrup may be drawn off and another batch made.

A Beekeeper's Model Workshop

E. T. Brainard, Lambeth, Ont.

IF the beepkeeper is skilful with carpenter tools, and especially in keeping a keen edge on them he will be enabled to make a good profit during the winter months making up his own beehives and shipping cases. A large shop with plenty of windows will be required. The second story of the honey house, if the roof is high enough, will answer. In one end under a window build a solid bench of two inch plank. I prefer an iron bench vise to any other, bolted under the end of the bench. For small nails, screw nails, tacks and staples, make a nail cabinet using empty cigar boxes for drawers. A sample nail fastened on the end of each box makes it very convenient.

We have used a three-horse power gasoline engine for about ten years and have found it very satisfactory, although we expect to use hydro when it comes to Lambeth. Gasoline engines are not dangerous but the gasoline is if handled carelessly. If you have trouble in starting your engine in cold weather, fit a small tin can under the intake air pipe of the gasoline mixer more properly known as the carburetter. Put in the can a teacupful of boiling water. The steam will be drawn into the carburetter which will vaporize the gasoline and the engine should start at once. The same steaming process will work on an automobile engine but there may not be room for a tin can or saucer under the carburetter. If so wrap it up in a piece of cotton cloth and pour hot water over it. A little richer mixture of gasoline will assist. Don't fill the water cooler until after the engine is running.

We don't locate the engine in the honeyroom but prefer to have it just outside in a store room on a cement foundation. It is connected with a four inch belt to a counter shaft, one above into the shop and another below into the honey room.

In the centre of the workshop above place the saw table. In the roof directly over the saw put in a skylight, and for convenience in ripping long boards have windows, which may be opened, in line with the saw. The saw frame should be firmly secured to the floor with a heavy bolt for the saw must run at a high rate of speed to do nice work. Use small, fine-toothed saws with very little if any set. I like the Philadelphia saws the best. The saw guides must be true and acurate. The figure four cut off will work best in an iron groove. The ripping guide may be clamped on the table with two heavy screw clamps.

I have two pieces of a pocket rule inserted in the table to help set the ripping bar by, also another piece on the cut-off guide.

THE LUMBER TO USE

The lumber used for beehives should be dry white pine. Lumber sixteen feet long works up the best. For hive sides we use good barn lumber. A better grade is used for the frames. All lumber is kiln dried from ten to twelve days. and then dressed two sides at the mill. The frame material is re-sawed and dressed the right thickness. During very severe cold weather when a large amount of small material is to be cut up, I take the saw table down in the honey room. The shaft from which the honey extractor was run during the summer is here used to run the saw. A stove in this room makes it more comfortable. All saws are dangerous. I have found this out by experience having touched a saw twice in twenty years. Therefore, be careful.

Not much power is required to run a honey extractor and it does better work, leaving the combs much drier. We used a power honey pump last season with good success. We had a little trouble through the belt slipping at first, more especially early in the morning when the honey was cold. We found it best to drive the pumps from the main shaft at a low speed. The pump must be kept full while running. If run empty it will churn the honey and make it frothy. I intend to put on a two or three-speed arrangement so that the speed may be regulated. It would be an advantage to have a wire strainer in the bottom of the extractor to remove the coarser particles of comb and not allow it to go through the pump, as the pump acts as a grinder.

For melting wax or liquifying honey a galvanized iron tank about twenty-four by thirty and fourteen inches deep is a great convenience. A large tap in one end is used when making up syrup for fall feeding.

Notes from the National Beekeepers' Convention at St. Louis

Morley Pettit, Provincial Apiarist, Guelph

LEAVING Guelph at 8.30 a.m., Monday morning, February 16, 1914, I reached Chicago in the evening about 9.30, and changed to the Wabash train, reaching St. Louis in time for breakfast next morning. Travelling south all night, I expected a warmer climate, but found snow all the way, the only difference being that the farmers and others were teaming through the snow with wheels. Although there was plenty of snow sleighs were practically unknown of course. I found that St. Louis had just had a fall of fifteen inches of snow.

At the Planters Hotel the other beekeepers were assembling. There was not what one would call a large attendance for a large gathering, but it was a very representative one, and the privilege of meeting and conversing with these men from all parts of the United States was no small feature of the value of the trip. I shall first tell something of the organization of the National Beekeepers' Association, then of the men I met, and the ideas obtained from the meeting.

The National Beekeepers' Association has grown out of the North American Beekeepers' Association organized in the eighties, I think. That included Canada and the United States, and great gatherings used to be held, including many Canadians, a few times in Canadian cities, but usually in the States. Some small personal bickerings crept in which led to the name being changed. It has since been called the National Beekeepers' Association, and until a year ago the meetings were general. The directors were elected at large by mail ballots, and the feature of membership which appealed most strongly to Canadian members was the protection of legal rights which was granted to members. Two years ago the association undertook to do business for its members. It was reorganized, each State Association being made a branch entitled to send delegates in proportion to membership, the business to be done by these at the annual meeting.

The secretary, Mr. E. B. Tyrrill, of Detroit, had large plans for purchasing supplies for the members and securing sale for their honey. He was going to have representatives of the Association in all the large cities keeping an eye on the market, also frequent reports from local branches as to the holdings in the hands of beekeepers. The association would publish an organ, "The Beekeepers' Review," and would look after the distribution of the crop for members. This a tremendous undertaking, an ideal plan if rightly carried out, but the obstacles at present are insurmountable. Mr. Tyrrill made a brave attempt, but gave it up. The delegates at the St. Louis convention had the work of reorganizing the association.

While the reorganizing sessions were going on, general sessions were held to discuss the questions of management of bees. A large number of papers of practical value were read. These will be published from time to time in The Beekeepers' Review.

PROMINENT BEEKEEPERS

Amongst those whom I met at the convention were first the president, Dr. Burton N. Gates, of Massachusetts Agricultural College, Amherst, Mass. Dr. Gates makes a very efficient chairman; in fact during a large part of last year he was both president and secretary, as a large share of the duties of the latter fell upon him.

Dr. E. F. Phililps, Ph.D., in charge of apiculture of the Division of Entomology, Department of Agriculture, Washington, D. C. Dr. Phililps told us of experiments which he is conducting in the Zoological Laboratories at the University of Pennsylvania at Philadelphia, on the wintering of bees. The theory on which he is working seems to be that the life of a bee is not measured by length of days or weeks or months but by vitality. There are certain ideal conditions under which the vitality of the bees of the colony is conserved practically without loss. The problem is to discover what those conditions are. Of course leading factors to be considered are the temperature of the place in which the hives of bees are stored, the humidity and purity of the atmosphere, variations, disturbances, and so forth. I would not be surprised if in a few years expert beekeepers found it advantageous to place their colonies for winter in a repository, where they have temperature, humidity and other factors under control. Then by mechanical contrivances keep those conditions exactly right until the weather is favorable again in the spring for setting the hives out, and allowing the colonies to go to work.

A PROGRESSIVE ASSOCIATION

Wesley Foster, is Deputy Apiary Inspector for the State of Colorado. He told me something about the work of the Colorado Honey Producers' Association, which has been selling honey for its members and purchasing supplies cooperatively for the last thirteen years. They have established a central warehouse at Denver, where honey is brought in by the members from a reasonable distance. It is there graded and stored and insured by the association until sale is made for it. Members who live too far from the warehouse, store and insure their own honey, listing it however with the association whose manager makes sale for them as well. Where the association stores and insures the honey at the central warehouse, members are charged ten per cent. commission for making sale. Outside members who look after their own storing and insurance pay five per cent. A most efficient sales manager is employed, and the business of the associaiton has been carried on in a very satisfactory way financially since its inauguration thirteen years ago.

A LARGE APIARY

Mr. Polhemus, of Colorado, with his two sons, manages two thousand colonies of bees for both comb and extracted honey. They use two automobiles in their apiary work. Mr. Polhemus states that he goes alone in one and the two boys go in the other. The boys like to go faster than he does and he lets them go their gait, and he goes his. All the honey is brought home to one central plant for extracting and for grading. Originally two motor trucks were used for this purpose, but as they have been found to be rather heavy for rapid travelling, Mr. Polhemus has arranged platforms for his regular automobiles and the honey is brought home on these.

No queen excluders are used in the apiary work, the queens are allowed to go where they like in the hives. Every colony is looked over for swarming impulse, and supering once a week. As fast as combs of sealed honey are found they are removed, and empties put in their place. When an operator has a load of honey on his auto he takes it home and stores it there, going back for another load. The combs are then heated in a special room before being extracted. The nature of the honey and the cool nights makes it necessary to heat all honey before extracting for satisfactory results.

Mr. Polhemus has what he calls his country trade, meaning grocery stores in the small towns and villages, which take extracted honey in five and ten pound tins exclusively. In the larger cities the trade demands bottled honey. He has a bottling establishment in a large city some distance from his home, where honey which he has shipped there in sixty pound tins is liquified, bottled and placed in the stores locally. He makes four trips in a year amongst his customers, the retailers taking orders, and makes it his business to have honey on hand twelve months in the year, so that his customers can always depend on him to supply their needs.

(To be concluded in the July issue)

Work of the Association Defended

Editor, The Beekeeper: I have read a number of articles appearing in the American Bee Journal bearing on the question of overproduction of honey in Ontario. I notice that all these articles are written by men whose yearly product runs up into the thousands of pounds; and that so far no one has much to say for the small producer, the man who keeps from twenty to fifty colonies, and whose output is not more than one to two tons annually. It is somewhat astonishing also that a prominent officer of the Ontario Beekeepers' Association should have promoted this discussion in the columns of a bee journal published in another country instead of using the official organ of his own association where we might reasonably expect the discussion would be productive of the most good, and where we might better air any differences of opinion that we may have.

In one article the statement is made that the membership of the Ontario Beekeepers' Association increased by two hundred per cent. in one year, and that many of these were lured in by hearing of the big profits that others were making. If these people were all beginners, I scarcely think that the quantity of honey produced by them would affect the year's supply very much, as most people start with a few colonies. Many of the new members of the association, however, are men who have kept bees for years, and who have been marketing their honey in any old way. Their coming into the association need cause no alarm as heretofore they have been marketing their honey in direct competition with regular members. The idea of getting as many interested as possible is to make cooperators of all, and also raise the grade. If many have been lured into the business by reading a few highly-colored newspaper articles on the profits that can be realized with

so little labor, you may rest assured that their ardor will soon be dampened after a year or two of hard work. We should remember also that a good many leave the ranks of beekeepers every year, although nothing is said about them. The lower prices this season are not due to so many new comers.

CANADA'S PRODUCTION

I have been unable to secure any figures bearing on the annual production of honey in Canada, but to be on the safe side, will place it at fifteen million pounds for all grades. When we consider that the population is seven and a half million the possibility of over production is not imminent. The statement has often been made that there are millions of pounds of honey going to waste yearly for want of bees to gather it. There are districts where very few colonies are kept, and it is nothing short of national waste to allow this to continue. One can see that cooperation may be of little help to the man who produces honey in car-load lots and who has a good trade worked up. The scheme is more for the purpose of benefiting those who have small lots to sell, and are a long way from market. Cooperation, where there are large producers and small producers, is not likely to work very well, as the big fellow stands to gain less in proportion, and consequently is not likely to be very enthusiastic. Wherever it is in successful operation, it has been pushed forward by those who really felt the need of it, and who stick to it through thick and thin.

As I read the articles, I wondered if the writers, who were so anxious for others to curtail production for a year or so, were making any attempt to slacken off? Probably this coming season will find them doing business with the same number of colonies, and perhaps a few more. Neither can I see any good reason for any person taking a slam at the Ontario Beekeepers' Association because the attempt at cooperative marketing has not worked out as successfully as it might. A movement cannot be launched and carried to a successful issue without a hitch in one year, or perhaps in five. If cooperation is successful in marketing some lines of farmers' produce, it can be made so in others. It seems to me that the men who started this movement deserve all kinds of credit, and don't deserve to have a wet blanket thrown over their efforts by the very men to whom they should look for the most encouragement.

The rapidly increasing population of the western provinces offers a market of which as yet we have only touched the fringe. The rank and file of the beekeepers of the east are not acquainted with the trade connections and business methods of the west. Cooperation is the only means whereby this market can be properly developed. Ample proof for this statement can be found in the experience of our own fruit growers. A few of the largest of our honey producers have connections in the west but a selling force of a few men acting for a cooperative association and devoting their whole time to it could do the same work for every beekeeper in this province, and do it better. There is a movement on foot to-day to link up the farmers of the east and west by means of direct exchange between their cooperative associations. If the beekeepers of Ontario are going to be in line to share in the benefits of this scheme when it is developed now is the time to organize for cooperation.—Chas. S. Brown, Peterboro County.

An Enterprising Beekeeper

G. R. Chapman, Toronto

The subject of this sketch, Mr. Chas. E. Hopper, apiculturist, was born on a farm in York county nearly thirty-seven years ago. At the age of fourteen he was obliged to leave the Public School and help his uncle on the farm. At the age of twenty-four he left the farm for the city, where he soon realized his misfortune in not having a better education. Nothing daunted, he returned to his "home village," presented himself to the principal of the High School, and announced his determination of "learning a little." Without even an entrance certificate, he secured his senior matriculation in two years. Many were the jibes he received in the meantime, but, as he often said, "Fools who came to scoff remained to pray," and he persisted in his course. From the High School he went to the University, where he studied hard and long, taking a course in mechanical and electrical engineering. From the University he entered various manufacturing and engineering plants, all the time getting a broad and diversified knowledge which later on he was able to use to splendid advantage.

At present he is an engineer in the distribution department of the Toronto Hydro-Electric system, and it is to be noted that no service for light, heat, or power in that tremendous system can be installed without his O.K. This is by way of answer to his scoffers of former days.

But it is as a beekeeper that he shines. From early boyhood he had the responsible charge of an apiary on his uncle's farm, and the fever took such possession of him that he read all the back numbers of Gleanings and the American Bee Journal, as well as all the textbooks before he pretended to discuss beelore.

While securing his education he never lost touch with the art, and in the midst of difficult engineering and mathematical formulae he has been known to throw aside his study and "get back to the best of all" (his own quotation) by spending a day with the bees. Securing for himself a home in the city he proceeded to start an apiary in his back yard, which has now grown to a number of out apiaries.

The Toronto Beekeepers' Association was organized largely through his efforts. He is now its secretary. As an organizer he has no peer in the beekeeping ranks. At a great sacrifice of time and pleasure he organized a company to continue the sale of Roots Goods in Canada, there being a possibility of their sale being discontinued.

Through his efforts a splendid trade in honey is being built up in the West-end. "That Galley Avenue Bee Man" is perhaps more familiar to the average housewife than any other beekeeper in Canada. With a corps of experienced canvassers, who must at the same time be experienced beekeepers, he is developing a trade of such proportion that he is bound to become a dominating factor in the near future.

He is just now bent on organizing and promoting a great annual field day of Canadian beekeepers.

The average reader can scarcely realize the vast amount of work he accomplishes. Up at five o'clock he devotes several hours to getting honey ready for the previous day's orders. Then down town to "dole out the juice." In the evening he answers a correspondence that would stagger an ordinary man. He is literally a hive of industry from five a.m. to twelve p.m. six days a week.

A "Live Wire" Beekeeper

The secretary of the Toronto Beekeepers' Association, Mr. Charles E. Hopper, is here shown. He was a prime mover in the National Field Day held on May 25. Note the adjoining article by Mr. Chapman.

Mr. Hopper, as you may surmise, is an expert mechanic. He recently said he had never yet seen a hive that was accurate. Laying a scale on a hive of a friend who was boasting of his accuracy, he said, "Why that hive is 1-128th of an inch out." If he ever enters the manufacturing field, which beekeepers are urging him to do, the Canadian beekeepers will get accuracy with a vengeance.

Mr. Hopper lives with his sister. He is unmarried. To the joshing of his friends on his single state, he says, "I am too old to fall in love and too young to get married."

To the readers of The Beekeeper I take delight in introducing Chas. E. Hopper, a prince of good fellows, a delight to the profession, and a friend of the beginner.

Practical Pointers

Speaking at a spring meeting of beekeepers held in Lambton County, Mr. Jas. Armstrong, of Cheapside, Ontario, urged beekeepers to lay the foundation for a big crop by having all colonies strong in the autumn, with plenty of good stores and packed in good shape for winter. He advised to use only the best hive made from the best material and to have all parts interchangeable. He would use only standard goods if possible because in case of sale they are more readily disposed of.

In the spring of the year beekeepers should have the colonies as much alone as possible, provided they are sure they are supplied with stores. Give queens plenty of room to breed, place all supers on soon enough, about June 10th, and in many cases even by May 24th for fruit blossom honey to assist in preventing swarming.

Mr. Armstrong advised having all queens clipped in the spring so that in case of swarming the beekeeper may be saved "shinning up the trees with a tin can tied to him." Whenever possible, tie up the honey super next to the brood nest. By leaving the honey on the hive this way until the end of the season, we get a better

quality because the honey has been thoroughly "ripened" by the bees themselves.

Taking off honey too soon is the cause of its souring or fermenting after it has been bottled or placed in tins. Beekeepers were urged to use only pure Italian bees because of their being less vicious and better honey gatherers.

Beekeepers' Supplies

Editor, The Beekeeper: I have just read Mr. Bisbee's article on bee supplies in the May issue of The Beekeeper, and I have also read the article in the March number on the same subject. Both articles were of great interest to me as in the last year or so I have been puzzled not a little over the purchasing of hives and bee supplies. From my point of view, both Mr. Rahn, the writer of the March article, and Mr. Bisbee have been right in their statements but Mr. Rahn more so than Mr. Bisbee.

In the first place Mr. Bisbee is perfectly correct when he states his enthusiasm for the materials used by the Ham & Nott Co., but I think Mr. Rahn is right when he thinks the workmanship inferior and I suppose the latter refers to the same company, although he mentions no names. Now by workmanship, I refer especially to the frames. The frames made are too weak and of too thin materials to stand any wear and tear. I am sure that the majority of the beekeepers in Canada if they have ever had any experience with the Ham & Nott frame will bear me out in this, although the Ham & Nott people expressly wrote me that most beekeepers preferred their thin frames to the standard Hoffman frame from the United States. After I read this letter from them I made enquiries among the beekeepers that I knew and I have yet to meet one who was satisfied with their frame. Even an inspector told me that the frame ought to be improved and that he had suggested this to the Ham & Nott Company. Now, just because beekeepers have not expressed their views on this subject pretty generally is no sign that they are perfectly contented with the Canadian supplies or else why do they send to the States at all for them. I think it would be much better if the beekeepers did express themselves more on this subject as I am quite sure that the Ham & Nott Co., and any other Canadian company, would be glad to please if they only knew what the beekeepers want.

For myself, and I think that I am not peculiar in this, I want to buy the best and at a reasonable price, and whatever company offers the best inducements gets my business. Mr. Bisbee is right when he asks for publicity if we find that our supplies are not just what we wanted. I am giving a little with the hope that it may have some results as I do not like to send all the way to the United States to get satisfaction. I see no reason why the Ham & Nott Company could not make their hives cheaper if the Root Company can afford to make a cypress hive for only ten cents more on the retail price than theirs, which is of pine.

S. A. P. Stone.

P.S.—I would like to suggest also that prompter shipping would be a decided asset for the Canadian companies in increasing their business and giving satisfaction.

Read the Advertisements for Beekeepers on Page 161.

Spring Report on Beekeeping in Ontario

By Morley Pettit, Provincial Apiarist

FOR the purpose of reporting on the condition of bees in Ontario and the honey crop prospects for 1914, blanks were sent to a large number of beekeepers the latter part of April by the Department of Agriculture. One thousand one hundred and fifty replies were received, from which this report has been summarized.

The total number of colonies reported for the fall of 1913 was 41,318, for May, 1914, 38,222, being an average of thirty-three colonies spring count for each beekeeper reported. The winter loss of seven and one-half per cent. is the lightest it has been for several years. In 1913 it was eleven per cent., in 1912 fifteen per cent., and in 1911 fourteen per cent. What losses there were during the past winter were due principally to starvation by lack of sufficient feed in the hives.

So far as the condition of bees is concerned, the prospects for a good honey crop this year are very good, but clover is only in fair condition, having been very much injured in many localities by unfavorable weather conditions.

While a spring report is of value to determine the present prospects of the honey crop, there is no other farm crop so entirely dependent upon the weather conditions from day to day during harvest time. Any sudden changes will often check the secretion of nectar in the flowers and reduce the expected honey crop by hundreds of thousands of pounds.

The following is the detailed report arranged by counties:

County	No. of Reports received.	Crop Prospects.	No. of Colonies Reported—Fall, 1913.	No. of Colonies Reported—Spring 1914.	Per cent winter loss.	General Condition of Bees.
Algoma	9	Fair	128	113	10	Good.
Brant	23	Fair	1300	1215	7	Very good.
Bruce	35	Average fair	1235	1129	9	Fair.
Carleton	22	Fair to good	459	428	7	Fair to good.
Dufferin	12	Poor to fair	257	238	8	Fair to good.
Dundas	12	Fair to good	306	263	14	Fair to good.
Durham	21	Poor to fair	597	541	9	Fair to good.
Elgin	31	Fair	1307	1223	6	Fair to good.
Essex	21	Average fair	497	450	9	Good.
Frontenac	16	Average fair	838	787	6	Good.
Glengarry	15	Average fair	653	584	10	Fair.
Grenville	11	Fair	314	297	6	Fair to good.
Grey	51	Poor to fair	1658	1468	11	Average fair.
Haldimand	31	Fair to good	1695	1642	3	Fair to good.
Haliburton	1	Poor	14	8	43	Poor.
Halton	10	Poor to fair	971	931	4	Fair to good.
Hastings	22	Fair to good	542	471	13	Fair.
Huron	37	Average fair	2156	2050	5	Fair to good.
Kent	19	Fair to good	368	354	4	Good.
Lambton	48	Average fair	1746	1587	8	Fair to good.
Lanark	16	Poor to fair	488	432	11	Fair.
Leeds	30	Fair	1047	993	5	Good.
Lennox	20	Average fair	810	764	6	Fair to good.
Lincoln	31	Fair to good	1041	1015	3	Fair to good.
Manitoulin	7	Fair	266	203	24	Fair.
Middlesex	56	Average fair	2693	2533	6	Fair to good.
Muskoka	6	Fair	156	143	8	Fair.
Nipissing	7	Good	192	172	10	Good.
Norfolk	34	Fair to good	837	723	14	Very good.
Northumberland	31	Fair to good	977	916	6	Fair.
Ontario	33	Average fair	1077	1000	7	Fair to good.
Oxford	31	Fair	745	703	5	Good.
Parry Sound	6	Fair	94	81	13	Fair to good.
Peel	25	Average fair	1144	881	23	Fair to good.
Perth	28	Poor to fair	1082	1008	7	Fair.
Peterborough	18	Poor	269	241	10	Fair.
Prescott	16	Fair to good	1402	1334	5	Fair to good.
Prince Edward	17	Average fair	356	307	14	Fair to good.
Renfrew	11	Fair	480	442	8	Fair to good.
Russell	42	Fair to good	412	399	3	Fair.
Simcoe	43	Poor to fair	1554	1448	7	Fair to good.
Stormont	16	Fair to good	1065	961	10	Fair to good.
Thunder Bay	1	No report	145	133	9	Good.
Victoria	25	Poor to fair	1391	1284	8	Fair.
Waterloo	23	Fair	415	370	11	Fair to good.
Welland	29	Fair to good	719	614	14	Good.
Wellington	34	Fair	974	911	6	Very good.
Wentworth	17	Fair to good	567	550	3	Very good.
York	58	Fair	1879	1782	5	Fair to good.
	1158		41318	38222	7½	

Experiments at the Central Experimental Farm

THE report of the director of Experimental Farms for 1913, contains the following description of the work of the Horticultural Division:

The area of land in the Horticultural Division at the Central Experimental Farm, Ottawa, is ninety-nine acres, divided as follows—

Fruits and vegetables, 46 acres; Forest belts, 21 acres; Ornamental grounds, 30 acres; Nursery and rose garden, 2 acres; total, 99 acres.

On this land are grown tree fruits, small fruits, vegetables, forest trees, and ornamental trees, shrubs and herbaceous plants in more or less permanent plantations and in nursery rows. The lawns are extensive and require much care to keep them in good condition. Owing to the large number of experiments in progress, the work involved in giving the necessary attention to them on this ninety-nine acres is very heavy compared with what it would be on the same area under commercial crops, where the labor involved could be reduced to a minimum.

SUB-DIVISION OF THE WORK

The Horticultural Division may at present be divided into five parts or heads under which most of the work falls. These are as follows: Pomology, Vegetable gardening, Ornamental gardening, Plant breeding, Correspondence and office work.

In addition to these, or rather included in them, is the work in connection with the branch farms, the forest belts planted both for ornamental purposes and to test the rate of tree growth; meetings attended; publications; and visits to the horticultural districts for the purpose of studying conditions in different parts of Canada.

Under pomology is included the study of varieties of fruits for the purpose of learning their relative merits in regard to yield, season, quality and profit. It also includes the identification, classification, and description as well as the propagation, planting, and care of fruits, with experiments in cultural methods, including spraying. The exhibition and judging of fruits may also be grouped under pomology.

During the past year, this part of the work has received much attention. Many varieties have been described in detail on cards, which are filed for future reference and compilation. Varieties sent in for identification have been named, and the information sent to the correspondents. Many new varieties were propagated for test on the Central and Branch Farms and for trial in other places, and a number of new ones have been planted out at Ottawa.

Fruit was exhibited at the Provincial Exhibition, Quebec; the Central Canada Exhibition, Ottawa; and the annual meeting of the Society for Horticultural Science, at Cleveland, Ohio. Fruit was also judged at several places by Officers of the Horticultural Division. The general care of the orchards at the Central Experimental Farm also involved much work.

VEGETABLE GARDENING

This includes the testing of varieties of vegetables for comparison of their relative merits as regards season, yield, quality, etc.; the comparison of different strains of the same variety; cultural methods, and spraying; and the study of commercial methods, both in the field and under glass. In 1912 especial attention was paid to pota-

toes, though all the principal kinds of vegetables were under experiment.

ORNAMENTAL GARDENING

Under ornamental gardening comes the culture of ornamental trees, shrubs, and herbaceous plants; the study of their individual characteristics, such as height, form, coloring, and season of bloom, so that information will be available to Canadians to enable them to plant their places in such a way that the trees, shrubs, and herbaceous plants will blend or be contrasted with one another to form pleasing landscape effects. The education of the people by lectures and bulletins on ornamental gardening and the encouragement of the beautifying of home surroundings, so much needed in Canada, is also a part of ornamental gardening which received attention during the year. In addition, large collections of roses, irises, phloxes, paeonies, lilacs, gladioli, geraniums, and other ornamental plants have been got together to study. There was a fine display of these at the Central Farm in 1912, and visitors were much interested in them and pleased with the ornamental grounds as a whole.

The forest belts, planting in which was begun in 1888, furnish interesting data on the relative growth of the different timber trees and the merits of having the species or planting them in blocks of one kind. The annual measurements of a number of trees were taken in 1912, as in previous years.

PLANT BLEEDING

The improvements of fruits, vegetables, and ornamental plants by cross-breeding and selection and the study of the laws of inheritance in different kinds and varieties of horticultural plants is, in brief, the field of work which is covered in plant breeding in the Horticultural Division. Up to comparatively recent years, Canada has had to depend almost entirely on other countries for her new varieties of fruits, vegetables, and ornamental plants, and while many of these succeed admirably in this country, it is felt that, if originated in a climate more nearly like where they are to be grown than has been the case in many instances in the past, those that show especial merit are likely to prove more useful than those introduced from climates very dissimilar. During the past twenty-five years, much attention has been paid to the breeding of horticultural plants at the Central Experimental Farm. Many varieties of hardy hybrid apples, crosses between the Siberian Crab (Pyrus baccata) and the apple originated by Dr. Wm. Saunders, have already been introduced into the prairie provinces and have proved hardier than any previously tested there. Second crosses made by Dr. Saunders with more blood of the larger apples and having fruit of good marketable size were propagated in 1912 for introduction. Many varieties of apples of handsome appearance and good quality have originated in the Horticultural Division and the best of these have been sent out for test to different parts of Canada to compare with those already in the market. More than two hundred of these new sorts have been propagated, and eighty-two of the best, named.

A large number of seedling strawberries has been raised in the Horticultural Division, and some of the best are being propagated for introduction. Special attention is being paid to the development of early strains of vegetables which will be of great value in the colder districts of Canada as well as in the more temperate parts. Good progress was made in this work in 1912, and provision has been made for greater

available has been so limited that it was not possible to do much experimental work under glass, but with the five ranges now available it will be possible to do much more and better work.

Annapolis Valley Notes

The season still continues cold, and is probably the latest on record, the leaf buds of apple trees just beginning to unfold by the twentieth of May. Readers of The Canadian Horticulturist will remember that in August, of 1912 the Nova Scotia Government by special orders in Council passed a regulation prohibiting the importation of nursery stock from countries known to be infested with San Jose Scale unless such stock bore a certificate from Government officials that the nursery from which it came was free from this scale.

Under this regulation, no stock from Ontario was admitted into this province in 1913. But the Nova Scotia market for apple trees is very profitable for our Ontario friends, and consequently their nurseries received in homely parlance "a lick and a promise," which was enough, however, to obtain the desired certificate from their provincial inspectors for the stock to be marketed in 1914.

When this stock began to come to Truro and Digby, the Nova Scotia ports of entry, this spring, it had to undergo a different kind of examination and was found to be pretty generally infected with living scale, and was, of course, rejected. The United Fruit Companies had taken large orders among their members, all of which had to be cancelled at the last moment. Because of this careful work, the Provincial Entomologist, Prof. W. H. Brittain, received a vote of thanks from the Executive of the Nova Scotia Fruit Growers' Association that met at Kentvile on May 5th, where the following resolution was passed:

Whereas, nursery stock coming from points in the United States and Canada have been found to be infected with the San Jose Scale; and

Whereas, by prompt action and at great expense, this pest has been practically exterminated from Nova Scotia, after having been introduced on nursery stock from Ontario and the United States, and,

Whereas, the introduction of the San Jose Scale into Nova Scotia would seriously jeopardise the fruit growing industry of the province;

Therefore resolved, that the Executive of the Nova Scotia Fruit Growers' Association, here assembled, petition the Nova Scotia Government to refuse entrance to all stock found bearing Scale, whether from Ontario or from the United States.

M.K.E.

Mr. M. B. Davis, B.S.A., was recently appointed Assistant in Pomology to the Dominion Horticulturist. Mr. Davis is a native of Yarmouth, Nova Scotia. He graduated from the Agricultural College, Truro, N.S., in 1910, and after two years at Macdonald College, P.Q., graduated from that institution in 1912, receiving his degree of B.S.A. He then went to Bridgetown, N.S., where he remained until December 1st, 1913. While at Bridgetown he was manager of the Sunnyside Farm and Orchards. In 1912 he was elected secretary of the United Fruit Companies, and re-elected in 1913, resigning that office to come to Ottawa.

Death of Linus Woolverton

Linus Woolverton, M.A., passed away on May 7. As readers of The Canadian Horticulturist are well aware, the late Mr. Woolverton was one of the best posted and most prominent fruit growers in Canada. He was born in Grimsby, sixty-eight years ago, on the farm where he died, and where the first peach orchard in Canada was planted by his late father, Charles Woolverton.

Mr. Woolverton had spent practically his whole life in the fruit business, and his works on different subjects and phases of the business were widely sold and read. He was the author of "Fruits of Ontario," "The Apple Growers' Guide," and a number of other works. He edited The Canadian Horticulturist, and was secretary of the Ontario Fruit Growers' Association from 1886 to 1903, Inspector of the Ontario Fruit Experimental Association and secretary of the Board of Control from 1896 to 1906. In 1893 he was judge in pomology and Superintendent of Horticulture for the Dominion of Canada at the world's Fair in Chicago. Besides the foregoing he held many other important positions in the fruit associations and branches, and was a man whose opinion was always respected on any subject regarding fruit.

About two years ago he suffered from a slight stroke, and was ill for some time. The morning of the day he died he went down town as usual, but became unwell, and returned home at noon. Arriving there he became very ill, and passed away about five o'clock. He leaves a wife, one son, Charles Ernst of Grimsby, and one daughter, Mrs. (Rev.) Mode of Chicago.

Potato Diseases

There has been issued by the Department of Agriculture at Ottawa a well executed folder, Farmers' Circular No. 4, entitled "Potato Diseases Transmitted by the Use of Unsound Tubers," showing in natural colors, representations of specimens of diseased potatoes. Diseases and other blemishes represented are potato canker, powdery scab, hollow potato, internal brown streak, little potato disease, dry rot, wet rot, common potato scab, and stem and rot. Special reference is made to potato canker and powdery scab, the latter of which occurs already in Canada and should be carefully avoided.

The folder points out that, under the Destructive Insect and Pest Act of Canada any person using for seed potatoes infected by potato canker or powdery scab is liable to prosecution. Potato growers who suspect the presence of either of the latter diseases are requested to send specimens to the Dominion Botanist, Central Experimental Farm, Ottawa. This folder, prepared by Mr. H. T. Gussow, Dominion Botanist, will be sent free to those who apply for it to the Publications Branch of the Department of Agriculture at Ottawa.

Fruit Prospects

In Nova Scotia fruit trees have come through the winter in good condition, with no apparent injury to either buds or branches. The prospects are that an excellent apple crop will be harvested, inasmuch as the trees are well set with blossom buds. It has been reported that the conditions during last winter and this spring coincide almost exactly with those

which preceded the season of 1911, when the record crop of Nova Scotia was harvested. The weather still remains cool and the trees are somewhat late in coming out.

In Ontario conditions are generally favorable. The early winter was very mild, but during January and February severe cold weather was experienced throughout the province and a great deal of damage was done to the peach crop in the Niagara peninsula. All other varieties of fruit seem to have withstood injury and the buds have set for a good crop. There have been reports of a probable shortage in plums, particularly in western Ontario. It is not unlikely that such a condition will prevail, inasmuch as the crop harvested last year was a particularly heavy one, and one which might almost be considered exceptional.

British Columbia reports a mild winter and practically no injury in any of the fruit sections. The spring has been one of the earliest experienced for many years. The general prospects are that a large crop of all varieties of fruit will be produced.—Fruit Division, Ottawa.

Fruit Imports into Glasgow

The great bulk of the fresh fruit imported into Glasgow consists of well-known varieties of apples from Canada and the United States. The Glasgow market supplies all consumers throughout Scotland, and weekly shipments are forwarded regularly to fruit dealers throughout the north of Ireland and the north of England. The wide field that the Glasgow market is called upon to supply acounts largely for the remarkable expansion of the apple trade that has taken place in recent years. The approximate quantity that is imported annually is about 500,000 barrels.

North American apples are preferred in Great Britain to any others. The quality the regularity of varieties, the sizes, and the nature of the packages are considered superior to any known in the old world.

Apples are consigned to Glasgow in barrels and in boxes. The standard barrel of Ontario, Canada, containing about one hundred and forty pounds of fruit, is the one most preferred. Next to that is the barrel used by the growers in Western New York. Following that comes the barrel from the New England States, then the Hudson River barrel, and lastly the Nova Scotia barrel, the least favorably regarded of all.

Apples in boxes containing about forty pounds of fruit have been received in the United Kingdom, especially in Glasgow, for some years past, and have been greatly appreciated. The apples are regarded as the finest quality procurable, and sell accordingly. They come for the most part from Oregon, Washington and California, being carried across the continent and shipped at New York, Boston and occasionally Montreal. The business in these western box apples is well established, and the Panama Canal will doubtless be utilized in the trade when it is opened and when refrigerator ships are put on. If it is found that this effects economy in shipping, the business will be still further developed.

The prices of apples delivered vary accordingly to the nature of the season. British Columbia is the only serious competitor of the United States, and there is very little difference between Canadian values and those established is Oregon and Washington. Details of the apple trade are well understood here as it has been in existence many years.—Consular Report.

Apple Trade Statistics

During the season of 1913, two million nine hundred and six thousand, four hundred barrels of apples were grown in the Dominion, according to statistics compiled by the Department of Trade and Commerce. Of this total, two million barrels were grown in the Province of Ontario, or over two-thirds of all the apples produced in the country.

Recently Canadian apples have been realizing very high prices in the British markets, and it was reported that in Glasgow, Ontario Baldwins set a wholesale price of two dollars and seventy-five cents a box, and seven dollars and ninety cents a barrel. During March at a public auction in Liverpool, fifty-three barrels of Number one Spies from an Ontario packer brought as high as eight dollars and fifty cents a barrel.

According to reports received from the Dominion Fruit Inspectors, the quantity of Ontario and Nova Scotia apples received west of the Great Lakes in 1913-14, was as follows: From Ontario one hundred and seventy-eight thousand eight hundred and thirty-two barrels; Nova Scotia, nineteen hundred and eighty barrels. In the Ontario estimate, twenty-one thousand, eight hundred boxes are included, compared with six thousand five hundred boxes in 1912-13.

Eastern Annapolis Valley

Eunice Buchanan

The first aphides were found crawling on apple buds on May 8th, but there being so few or only one on a bud, they were hardly visible to the naked eye. However, an examination under the glass showed that the orchards were badly infested, but as aphides are very susceptible to changes of temperature things may not prove so bad as expected. We have had a cold, long spring, with frequent showers, which may check their development; should the temperature become warm and moist we may expect an enormous increase of the pest. The farmers are now on the alert and the United Fruit Companies have disposed of one thousand six hundred dollars' worth of "Black Leaf 40," and still have had to order more. Last year they handled only fifty dollars' worth. Young trees which were attacked by aphides last season are weak and lacking in fruit buds, where they have not been killed the growth has been arrested.

Unlike most insects, the aphis is peculiar in giving birth to living young; it is not unusual to see a big aphis on an apple leaf surrounded by a brood of little ones, very much like an old hen. The number of young produced in a day varies, but it is said to be from eight to twenty-five; these in a few days go on producing other young, so that a chain letter when compared with the multiplication of aphides is insignificant.

Not only do the aphides reproduce viviparously, but also parthenogenetically, until the fall when the males appear as well as females; finally eggs are laid and the insects (in our cold climate) winter in this stage. The eggs are laid, as a rule, at the tips of twigs, so that when they hatch there will be a supply of food near to the young aphides where they may suck the juice in the buds and thus continue the cycle. After the first generation some of the creatures develop wings and fly to other orchards; in this way the pest quickly spreads. The eggs are very hard, and it is difficult to kill them with insecticides, but the adult insect is easily killed if its body can be covered sufficiently to stop its breathing pores (having a long beak of mosquito style, it cannot chew poisoned leaves)—now comes the big "if" again. If we can suffocate it, the increase is arrested, but this must be done before the leaves curl, otherwise it is almost impossible for the spray to find its way to them; so if we can kill the "stem-mother," as the first of the season is called—and persuade neighbors to do the same—the source of the trouble has gone.

Apart from sucking the juices of the plant, the aphis damages the foliage by covering it (thus closing pores) with honey-dew, which they seem to produce for the benefit of ants. So if ants are noticed crawling up the trunk of an apple tree, look for aphis. Sometimes bees are tempted to collect this honey-dew, which spoils the sample of honey. There are many families of aphides, but Aphis mali is the one which concerns us at present.

On May 12th we had a severe white frost, with ice on the water, and next day a few flakes of snow fell; on the morning of May 2nd the ground was white with snow, which was followed by rain. A few people spray in the first week of May, but generally farmers began about May 11th, using lime-sulphur and Black Leaf 40. The Government sprayer began work in experimental orchards in Berwick on May 13th.

Planting and seeding are late, and vegetation backward, but there is promise of a big blossom show in the orchards.

The islands of Bermuda have removed the embargo on Nova Scotian potatoes. While this only effects a few Nova Scotians, it makes a considerable difference to many Bermudians, as they supply particular varieties of tubers to the Maritime Provinces to be grown and returned to them for seeding. Ordinary potatoes are not sent to Bermuda.

Germany's Apple Imports

Reporting to the Department of Trade and Commerce, Ottawa, Canadian Trade Commissioner, C. F. Just, writes from Hamburg as follows, regarding imports of apples into Germany:

"The apple imports from Canada fell off fifty per cent. owing to the short crop in eastern Canada. The British Columbia fruit has not yet entered this market, although apples from the northwestern United States

Peach Crop Injured

The reports, as published in The Canadian Horticulturist and elsewhere, that the peach crop of the Niagara District had been seriously injured by the cold weather last winter led Dominion Fruit Commissioner D. Johnson to send a representative to the Niagara District to investigate conditions. It was found that throughout the Niagara District the situation is a serious one. It is safe to predict that the crop of commercial peaches will be the lightest that has been harvested in twenty-five years.

Following mild weather during December and the earlier part of January, the temperature dropped on January 13 and 14 to between nine and eighteen degrees below zero, depending on the location, and was followed one month later by a similar cold period. The January frost was the cause of most of the injury, since a number of the buds had swollen during the previous six weeks. The cold spell in February also did damage. Throughout the Niagara peninsula the peach buds were greatly injured.

In some orchards not a live bud could be found, and where there were any live buds they were on trees of no commercial value, or trees which had been protected to some extent from frost by proximity to water. Along the shores of Lake Ontario, between Winona and Jordan, there was a scattering of buds on Triumphs and Longhursts. At Queenston on the Niagara River, a few buds were found on Englo's Mammoth and Triumph. In several orchards live buds of white flesh sorts were found, usually on the upper branches, and never more than a dozen on a tree. There is no section in which the injury was not great. More good buds were seen at Queenston than at any other point in the peninsula, and even there the number was so small that the amount of fruit produced will necessarily be very slight.

There are certain features that are worthy of consideration, inasmuch as they are the only ones upon which to base the probability that there will be a few peaches. The most important one is the development of retarded fruit buds. A comparatively large number of very small buds were found at several points throughout the district. These, on account of their size, were not so greatly affected by the extreme fluctuations in temperature. At the time of inspection they were still small, but there is some likelihood that a percentage of them will later develop and blossom, in that they do not show the dark centre which is characteristic of the larger and frozen buds.

In the second place, there are many orchards which are within a very short distance of either Lake Ontario or the Niagara River, and on account of the protection which they received from frost through more equable temperature, were found to bear a scattering of live buds. Only a few of these orchards were examined, and the conditions found in them must apply to other orchards in which conditions may be as good or even better than in those inspected.

Thirdly, it was noted that in cases where any buds had survived the winter, they were more often located in the upper branches of the tree than in the lower limbs. The tendency of frost is to settle, and in some cases a difference of from three to five degrees in temperature is noted between the ground level and a point fifteen feet higher. It is possible, then, that

many growers, making a hurried inspection of their orchards, would overlook the upper branches and presume from an inspection of only the lower ones that the crop was an entire failure.

OTHER DISTRICTS

The injury in Lambton county has not been so great as in the Niagara District, although here, too, the crop has been much reduced by frost. The white flesh varieties and Smocks have a fair percentage of live buds. Commercial varieties have not such a good showing, but the feature noted—that buds on lower branches were more severely injured than upper ones—was particularly noticeable here. The crop in Lambton county is never a large one—comparatively—and this year will be materially lessened. The fact that the injury was not so serious as in the Niagara peninsula may be credited to the fact that the county escaped the severity of the January frost and was only affected to any serious extent by the later one in February. Consequently, many of the hardier buds escaped injury, and on the varieties mentioned the indications are that a fair crop will be harvested and that even on the more commercial sorts the crop will not be a complete failure.

In the Essex peninsula the prospects are that a full crop of all varieties will be produced. In some instances, the fruit will have to be thinntd. The entire southwestern portion of Ontario seems to have escaped the worst of the cold weather, and the lowest temperature recorded in Ruthven (Essex) was four degrees below zero. The contrast between that section and the Niagara peninsula is a great one, and prices to the growers will be high. There is still some danger to be expected from a late spring frost, but once that is past the growers may feel assured of a crop quite as large as any harvested in previous years. It must be remembered that the acreage under peaches is yet a small one. Planting is being extensively done, and within a few years the Essex peach crop will have an appreciable effect upon the market. Even this year, in spite of the comparatively small number of Essex orchards in bearing, and in view of the scarcity of this fruit in Niagara, the crop will make a perceptible impression.

A short visit was made to Simcoe, in Norfolk county. Very few peach orchards have reached a bearing age, and on these the buds are practically all killed. Fairly heavy plantings are being made.

Items of Interest

In British Columbia Provincial Horticulturist R. M. Winslow, after a trip of inspection through orchards in all sections of the Okanagan Valley, from Penticton north, reports that no sign of damage to fruit trees was found. A record breaking crop is promised for both apples and soft fruits.

While in Calgary recently Mr. T. W. Macoun, Dominion Horticulturist, expressed surprise that so few people in southern Alberta were growing vegetables and fruit. Experiments conducted at the Experimental Farm at Lethbridge, show that fruit can be grown successfully. Vegetables may also be grown to advantage. "The farmer," said Mr. Macoun, "who will grow fruit and vegetables under the trees will make as large a fortune as the one who grows wheat, and wheat only."

have been arriving regularly in large quantities for some years, and are a fully established market.

"The value of the imports of dried apples and apple waste is given at 10,619,000 marks for a quantity of fourteen thousand seven hundred and forty-eight metric tons, almost the whole of which is credited to the United States. Canada's shipments to Germany are known to have been on a considerable scale in 1913, certainly not less than one thousand tons, and these are undoubtedly included in the receipts credited to the United States, the Canadian article being generally shipped through American ports. The German market for good qualities of this article is increasing."

Bird and Insect Life

Editor, The Canadian Horticulturist,—Will not you through the columns of The Canadian Horticulturist, call attention to the economic value of the birds, bees, and butterflies to tree and plant life? Even the despised British sparrow is the best "fly-swatter" we possess, frequenting, as it does, the manure heaps and garbage piles, just where the house fly loves to breed.

Could all your readers not place in their gardens a hollow pan of water for the birds, thus preventing them from attacking fruit, as it is thirst which drives them to the latter. If fruit growers, instead of killing robins and blackbirds (which, by the way, is against the law, except for fruit growers during the ripe fruit season), would plant mulberry trees in a corner of their orchard the birds will flock to them and leave other fruit alone.

R. BRIERLEY,
Manager, Elgin Humane Society,
St. Thomas, Ont.

Powdery Scab of Potatoes

Some time ago it was found that there existed in the eastern provinces of Canada, *viz.*, Prince Edward Island, Nova Scotia, New Brunswick, and Quebec, a disease of the potato tuber known as Corky or better, Powdery Scab, which had probably been present, at least in some localities, for a number of years, but not distinguished from the disease known as Common Scab.

While this disease, under Canadian conditions, has so far only in one instance given indications of being more destructive than Common Scab, it is nevertheless a very undesirable malady to have permanently established in potato growing land. As a result of the discovery of Powdery Scab, the United States authorities, through fear of introducing the disease, have enacted that potatoes shall not enter the United States except under a rigorous system of certification, which includes a certificate to the Potato Canker or Powdery Scab exists. If the export with the United States is to be regained in face of the existing regulations the methods directed towards the eradication of the disease must be followed intelligently and in a thorough spirit of cooperation.

In order to familiarize the farmers of Canada with this disease, Mr. J. W. Eastham, Chief Assistant Botanist of the Central Experimental Farm, has prepared a comprehensive circular entitled "Powdery Scab of Potatoes," which is Farmers' Circular No. 5 of the Division of Botany, and is available to all who make application for it to the Publications Branch of the Department of Agriculture, Ottawa. The nature, symptoms, and preventive methods are fully outlined, and the following sum-

mary of recommendations for control of Powdery Scab are given:

Use only "seed" from a crop free from the disease.

Disinfect such "seed" to destroy any stray disease germs.

Use land known to be free from the disease. In most areas this will have to be land not previously planted to potatoes.

Do not plant potatoes again in land which has shown the disease. If possible, seed such land down to grass.

Isolate the crop from any field showing the disease, and take all possible precautions to avoid the spores from this crop scattered where they infect other potatoes.

Pay special attention to the cleaning, and, if necessary, disinfection of implements which may carry the disease.

The Fruit Trade with South Africa

Reporting from South Africa to the Department of Trade and Commerce, Trade Commissioner W. J. Egan, stationed at Cape Town, writes as follows in regard to Canadian apples shipped to that market last fall:

Opinion among the various dealers varies in reference to Canadian apples received in South Africa this year. Durban dealers report grading and packing of Nova Scotia fruit to be all right in every particular. They complain, however, that Nova Scotian Kings and Wagners on the whole were a great disappointment, as they were poor in color and in keeping qualities. The Ontario fruit, such as Ben Davis, Kings, Russets, and Spies left nothing to be desired.

Port Elizabeth dealers were well satisfied with consignments to them, but state that they did not receive all they had arranged for, one large dealer claiming that although he booked space early last May, he failed to secure accommodation for his second shipment.

A SPLENDID MARKET

The apples which arrived in Cape Town were, with the exception of one lot of Golden Russets on the s.s Benguela, in very good condition, but were not graded in all cases as they should be for export. The difference in grading of apples received in Cape Town and other ports must be attributed to the fact that almost all the apples shipped to this port are purchased by local dealers, who visit Canada annually, while the fruit to other ports is consigned by Canadian producers or dealers.

The South African market during October, November, and December is a splendid one for good Canadian apples, and will command high prices. This office invites early correspondence this year with a view of consignments for next year and advise the securing of space in cold storage chambers early in the season.

Items of Interests

The 1914 fruit exporting season in Australia is now in full operation and will continue for over two months hence. The total shipments from Melbourne for Europe this season are approximately 183,634 cases of apples, pears, etc., against 240,529 cases for the coresponding portion of the 1913 season. From Hobart, total shipments to all ports outside of Australia are approximately equal to 156,145 cases, as compared with 298,360 cases during the same portion of last season. Adelaide shipments are equal to about 47,030 cases, against 24,980 cases last season.

FOR SALE AND WANTED

Advertisements in this department inserted at rate of 3 cents a word for each insertion, each figure, sign or single letter to count as one word, minimum cost, 30 cents, strictly cash in advance.

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

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

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

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

GOLDEN AND THREE-BANDED ITALIAN AND Carniolan Queens, ready to ship after April 1st. Tested, $1.00; 3 to 6, 95c each; 6 to 12 or more, 90c each. Untested, 75c each; 3 to 6, 70c each; 6 or more, 65c. Bees, per lb., $1.50. Nuclei, per frame, $1.50. — C. B. Bankston, Buffalo, Leon Co., Texas, U.S.A.

WANTED — Prime swarms; hives furnished. Address Box 18, The Canadian Horticulturist and Beekeeper, Peterboro, Ont.

BEZZO'S FAMOUS PRIZE ASTERS—Read particulars on page 168.

BARGAIN — Greenhouse, Residence and Stock; no competition; live village, 30 miles from Buffalo, excellent shipping facilities. Write Ellis Bros., Springville, N. Y.

WANTED—An experienced helper to assist in an apiary.—G. A. Deadman, Brussels, Ont.

FOR SALE—Foundation Mill, second hand, thin super, 2½ in. by 6 in. Root make in good order for immediate shipment. Price, $18.00. Samples of foundation from it on request.—F. W. Jones Bedford, Que.

FOR SALE—A bargain, one, two and half horse power Sprayer. Two seasons in use. Good state of repair. Complete, sixty dollars. — Lawrence Harvey, Wardsville, Ont.