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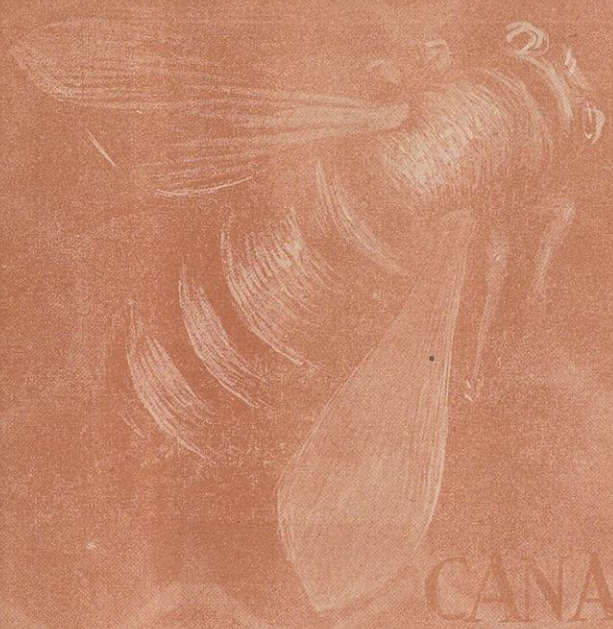
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PETERBORO, ONT.
JULY, 1914

VOLUME 37. No 7.
\$1.00 a Year

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The Canadian Horticulturist

Regular Edition

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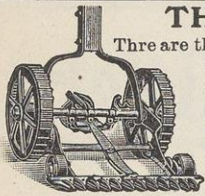
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The Canadian Horticulturist

Vol. XXXVII

JULY, 1914

No. 7

Cover Crops for the Orchard

By J. E. Smith, B. S. A.

A FEW years ago the idea of a cover crop in the orchard was comparatively new to most farmers. For a decade or more a good tough blue grass sod was considered about all that was necessary under the apple trees. One would get apples anyhow, whether the ground received any care or not. This may have been quite true in the earlier days when our soils were richer, and we had a greater rainfall, and the country was less windswept so that the orchard always held a good coating of snow during the winter.

But the day is past when farmers are persuaded that they can raise two good crops on the same piece of ground at the same time. The soil may be rich enough, but the smaller amount of moisture available must result in both crops being stunted. It is impossible to raise a good crop of apples, and a hay or grain crop on the same piece of ground except in cases where we have a wet summer season or the subsoil is particularly moist. Those who have kept close to the apple growing business will readily note the dry texture of the apple grown where the orchard is in sod or grain, and the luscious, juicy texture of the one grown under proper cultivation.

In the mixed farming districts of Ontario where practically no care is yet given to the orchard, the amount of growth of the trees per season is, in many cases, less than half of that in orchards that are well cultivated and pruned. This largely marks the difference between those stunted, thick, close-headed trees that are so common everywhere over Ontario, and those vigorous, clean-barked, big-foliaged orchards that are to be found in our apple districts. The one is the product of neglect—the other that of intelligent care.

The cover crop has a five-fold purpose in the orchard. The clean cultivation of April, May and June allows the tree to forge ahead at a rapid rate, but the growth of the cover crop a little later has the same effect as dry weather, for by drawing the moisture from the soil, and thus from the roots of the tree, it checks excessive or late growth, and in this manner the wood is more fully ripened. This is of supreme importance in

view of the severe winter killing of apple trees during the past few winters. This reduction of soil moisture is of much importance farther north in securing a better color in the fruit.

Again, the cover crop is one of the cheapest means of adding humus, one of the essentials both of our light and our heavy soils. On the light soils, especially the sands of Southern Ontario, this humus is absolutely necessary. On the clay soils, the plowing under of a cover crop is much the same as the application of manure, making the soil much more friable. At the same time the roots of a cover crop hold much plant food, which would otherwise leach away, while the roots of the trees lie dormant. On rolling land it prevents washing, and in exposed districts and in districts of light snowfall, it holds the covering much better than a clean sod, or soil on which there is no plant growth at all.

COVER CROPS PROTECT

Peach trees killed by root freezing during the past few years have largely been those with no cover crop or other protection to hold the snow about their roots. Moreover, the cover crop forms a clean mat in the orchard for the handling of the fruit in the fall.

Cover crops are of two kinds—the

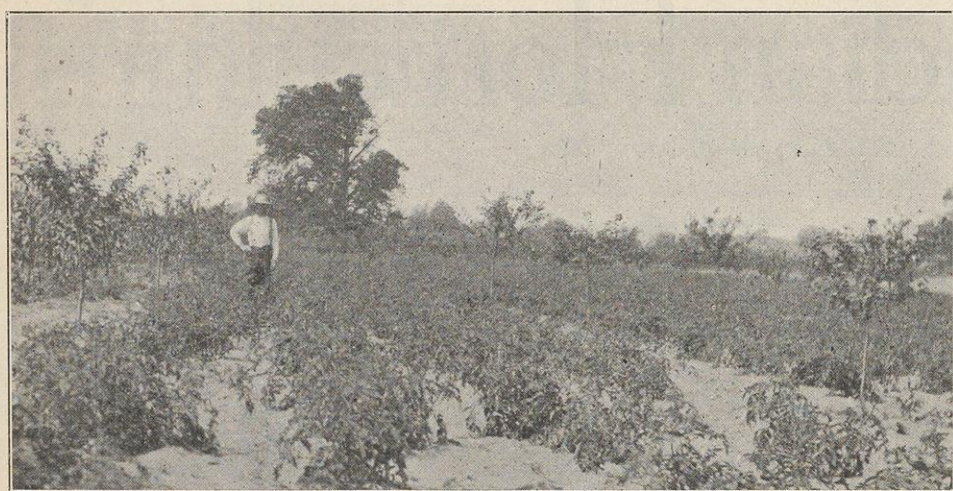
leguminous and non-leguminous. The former are those with the power of gathering nitrogen from the air, and storing it in the little knots on the roots. The leguminous crops used for this purpose are clovers (such as mammoth, red and crimson), cow peas, common field peas and hairy vetch. As nitrogen is the great energizer of plant life a legume should be used where trees lack vigor and vitality. Rye, buckwheat, rape, and oats are the chief non-leguminous ones used in the orchard.

CROP SELECTED

As to what cover crop one should sow depends upon a great many different conditions, such as the age of the trees, the nature of the soil, and the location in the province. Fruit growers who for the first time have broken up the sod under their old trees will find that one of the legumes will give them the best results in stimulating renewed youth in the old trees. In a richer soil where a heavy pruning has been given any of the other cover crops can be used to good advantage, the main point being that whatever is used, it should make a fairly rapid growth during the summer months to take up the excess of moisture, leave the orchard with a clean mat for handling the fruit in the fall, and at the same



Intercropping with Factory Beans in Young Orchard of S. Souden, Simcoe, Ont.



Intercropping with Tomatoes in Orchard of Frank Shearer, Vittoria, Ont.

time give protection by holding the snow in the winter. Where mature trees are clean and vigorous the use of too much of the legumes in the cover crop tends to give an over-production of wood growth. Old trees that have been heavily pruned will invariably throw a great number of suckers the same season. The use of a heavy cover crop will go a long way in checking the growth of these after the summer pruning is done at the end of June or in July.

USE OF CLOVER

In the younger orchards clovers are used to a great extent in shoving forward the young trees. By the use of a clean cultivation followed by an enriching cover crop, together with proper pruning at the right season, many fruit growers tell us they bring their trees into bearing several years earlier than otherwise. Jas. E. Johnson, manager of the Norfolk Fruit Growers' Association, has demonstrated that by skilful orcharding he can bring spy trees into bearing at ten or twelve years of age.

Of course many fruit growers are not satisfied to use cover crops in the young growing orchard. By liberal manuring and judicious inter-cropping many of the best fruit growers are securing large returns per acre, even while the young orchard was coming into maturity. Mr. Samuel Soudan, of Simcoe (a cut of whose young orchard appears herewith), secured a net return of sixty-six dollars per acre by intercropping with canning beans. Similar good results can be secured with strawberries, potatoes, tomatoes, or in fact any crop which will allow of much cultivation, and which does not pull heavily upon the soil moisture in the early part of the season. Many instances are known of where wideawake young fruit growers have paid for their land while the fruit trees were coming into bearing.

During the past few years the following cover crops or combination of cover crops were tried out in Norfolk county, and found to give good results:

First—Peas, one and one-half bushels per acre. This should be sown from the first to the twentieth of June to secure a good growth, as they freeze down with the first frost. They cannot be recommended for the northern part of the province.

Second—Buckwheat two pecks, and hairy vetch twenty-five to thirty pounds. This makes a good combination of a legume and a cereal. The buckwheat makes the rapid growth the first season, while the hairy vetch will make considerable growth in the spring, before being turned under. Some orchard growers object to the use of buckwheat, as the heavy growth in the fall is rather objectionable in harvesting the apple crop.

Third—Rye one-half bushel, and red clover twelve pounds.

Fourth—Rye one-half bushel, and hairy vetch twenty-five to thirty pounds.

Numbers three and four are probably the most popular cover crops in the province to-day, and form one of the best mats for the winter season, while at the same time combining both the legume and the cereal.

Fifth—Rye, one and one quarter bushels. As a single, separate cover crop it is used largely where the soil is not at all rich.

Sixth—Rape, three to five pounds. It is not considered a good cover crop, but many farmers sow it in the older orchards and hog it down later in the fall.

Seventh—Red clover, eighteen pounds.

Eighth—Peas and oats mixed, two bushels. This latter is not used to any extent as a cover crop, but should be a good one in that it gives a rapid growth

right after planting, and forms a good mat to hold the snow. One objection to it is that there is little or no growth from it in the spring. Many orchard growers like a cover crop that will start up again in the spring, and give considerable growth before being plowed down.

Cover crops for southern Ontario as a rule should be sown between July first and August first. For central Ontario the date of sowing should be a couple of weeks earlier. Later sowings give only short growth before winter.

Orchard growers in general should make it a point to have their orchard ground in the very best of condition previous to sowing the cover crop, in order that a good stand may be secured and a heavy growth made as early as possible. In a few orchards of which I know, mouse-eared chickweed grows so rapidly that it is only necessary to stop cultivation in order to have a good cover crop of this weed come on. In another orchard in Norfolk county the soil is so moist that it is kept in sod the whole year round, yet the fruit shows plenty of size, and takes on an excellent color. A few orchard growers in Ontario never make use of a cover crop at all, using clean cultivation the whole season through. About the end of June they heavily roll the land, which causes it to dry out in much the same way as a cover crop would suck away the moisture.

Of course the greatest good cannot be secured from any cover crop, unless the other care of the orchard, such as pruning and spraying receives every attention.

Marketing the Cherry Crop*

It is when the cherries are ripe for picking that the cherry grower's worries often begin. Poor marketing methods may result in the wiping out of the profits that should result from the work of a year or perhaps several years.

Care should be exercised in picking. The stem must be left on each cherry intended for shipment otherwise the juice would spoil the whole package. If picked for the canning factory or for immediate use, this precaution is not necessary.

PREPARING TO ATTRACT THE TRADE

Shipments are made in eleven quart and in six quart baskets, principally the former. The purchase of the baskets is a serious item of expense. We fill each basket full of carefully selected cherries, then the stems of the top layer are turned under—making a great improvement in the appearance of the package. A sprig of green leaves is also placed on the

*An article prepared some months ago for The Canadian Horticulturist by the late W. B. Leavens, Prince Edward Co., who had one of the largest cherry orchards in this province.

fruit; then the cover is put in place and kept there by use of six fasteners. These fasteners hold the baskets firmly together also. An attractive, oval-shaped, bright-red label is put on the end of each basket, announcing that these cherries are from the "Leavens Orchards," of Prince Edward Co. This label serves as a modest advertisement for our fruit, and a guarantee to the purchaser that the contents of the package are what he paid for.

After the orchardist has invested his money in trees and land, has cultivated, pruned and sprayed for a number of years without returns, and he at last has a crop which he thinks will reward him for his trouble, he comes face to face with the proposition which brings failure or success to his venture. His problem is to get sufficient of the consumer's dollars to have a margin of profit on his investment.

Profits from an Apple Orchard*

WHAT returns may be expected from an apple orchard? Whether a definite answer can be given is a debatable question, but a very close approach is the statement of ten years' profits from Auchter orchard near Rochester, N.Y. The experiment was conducted by the Geneva Experiment Station. In a ten-year period any unusual conditions which might arise in a single season would be lost sight of in the general average.

The trees are Baldwins, now thirty seven years old, just entering their prime. For the whole period the average yield per acre was 116 barrels, of which seventy-nine were barrelled stock and thirty-seven evaporator and cider stock. The latter was unusually high because of two heavy windstorms, yet these are to be expected. Reduced to a tree basis the average yield was 4.33 barrels total, 2.93 barrels barrelled stock, and 1.4 barrels evaporator.

INTEREST ON INVESTMENT

Interest on investment is a difficult factor to arrive at. In this case the orchard was valued at \$500 an acre, which at five per cent. is twenty-five dollars an acre or twenty-one cents a barrel for 116 barrels.

Taxes were rated at \$1.50 an acre or 1.2 cents a barrel.

No charge was made for depreciation of outfit, but the orchard was debited with cost of work and workmen which the Station hired. For the average orchard the items would probably be Team, \$400; spraying outfit, \$250; harness, \$50; waggon, \$75; other equipment, \$225; total, \$1,000. At twenty per cent. for depreciation and interest,

I cannot answer the question of direct shipment to the consumer satisfactorily. In a small way one can sell direct to the consumer but with any considerable quantity of perishable fruit, like the cherry, some other means of marketing must be employed. Consumers might help themselves sometimes by clubbing their orders and sending direct to the farm for supplies.

Edison says that it requires fully as much genius to make money out of an article after it is invented as it does to invent it. The same is applicable to fruit production. When we can sell direct to the retailer, in my opinion we are getting as close to the man who eats the fruit as we may reasonably expect, there being then only two bites out of the cherry between the orchard and the table, those of the express companies that convey, and the shop keeper who distributes.

seventeen cents a barrel would need to be added to the cost.

The annual cost of tillage was \$7.39, an acre, equal to 6.3 cents a barrel. The orchard was plowed each spring, rolled and then harrowed an average of seven times each season. Teaming was hired at \$4.50 a day. The cover crop was usually red clover, the seed of which cost \$2.74 an acre or 2.3 cents a barrel.

Pruning was done at a cost of \$3.56 a year per acre—equal to 13.1 cents a tree or three cents a barrel of apples. The wages paid for labor was two dollars a day of ten hours.

The Station paid three hundred dollars a year for superintendence of the work.

This is equal to thirty dollars an acre, \$1.10 a tree, and twenty-five cents a barrel.

The apples were sorted and packed in the field, then hauled one and one-half miles over a country road to the station. For these operations 24.4 cents a barrel was allowed. Barrels were purchased at an average price of thirty six cents.

COST OF BARREL OF APPLES

From the foregoing data the cost of a barrel of apples at the shipping point is compiled as follows:

Interest on investment	\$0.21
Taxes012
Tilling063
Pruning03
Spraying096
Cover crop023
Superintending orchard25
Picking, packing, hauling...	.244
Cost of barrel36

Total\$1.29

During the ten years the average price received for barrelled stock, which includes firsts and seconds, was \$2.60. For evaporator and cider stock seventy-two cents was received. Subtracting \$1.29, the cost of production, from \$2.60, the selling price, there remains a profit of \$1.31 a barrel for firsts and seconds. Multiplying by seventy-nine the number of barrels an acre, there was a net profit of \$103.49 an acre for barrelled stock. No barrels were required for the evaporator stock, which cost ninety-three cents a barrel. As these sold at seventy-two cents a barrel, there was a net loss of twenty one cents on each of the thirty-seven barrels, or \$7.89



Sorting and Packing Cherries at Hillcrest Orchards, Kentville, N. S.

*Summary of a bulletin by U. P. Hedrick, of the Geneva Experiment Station, N.Y.



Thinning in Nicholl Orchard, Welcome, Ont.

an acre. The average net profit then was \$95.60 an acre for ten years. Adding to this the twenty-five dollars an acre charge for interest on investment, the actual annual dividend has been \$120.60 an acre, or 24.12 per cent on \$500.

The author of the bulletin from which this summary is taken states as his opinion that the profit is greater than the average orchardist receives, but it is not abnormal for a well cared for orchard.

Cultivating the Young Orchard

B. H. C. Blanchard, Hants Co., N.S.

Too much stress cannot be laid upon the importance of cultivating the young, growing orchard. In most young orchards intercropping is practised. If the crop be a hoed crop or small fruits, the orchard trees probably get their share of cultivation, but if the intercrop be grain or hay such is not always the case.

Not many orchardists allow a crop of hay or grain to grow up close to the trees; a space of several feet is usually left clear on each side of the rows, but not a few neglect to cultivate this uncropped area. In our own orchard more than a year ago we were treated to an object lesson of the value of cultivation.

This orchard was planted three years ago. Each tree received a dressing of farmyard manure at planting time. In spite of a dry season the loss was less than three per cent. Between the trees were turnips and mangels; adjoining was a field of grain seeded down. The orchard received cultivation during the

summer, and in the fall we applied another dressing of manure.

The next year we intercropped with strawberries, potatoes and mangels and cultivated as before. The row next to the hay field was an exception. This row was cultivated on the side next to the root crop, but the hay was allowed to grow close up to the trees on the other side. As the season advanced it became evident that this particular row was not making the same growth that the others were. The leaves had less color and the trees as a lot had a less thrifty appearance.

Aside from cultivation all the trees received the same treatment. During the

summer they received an application of ammonium sulphate. To us the condition of these trees was ample proof that a growing orchard should not be expected to flourish when proper cultivation is lacking or when it is obliged to dispute with a crop of hay for its food supply.

Cultivation late in the season is not advisable, as the growth made may not mature early enough and injury result. But during the summer growing season cultivation is essential to place the plant food in the most available form and conserve soil moisture. It is false economy to give the young orchard anything but the very best attention.

The Why of Summer Pruning

F. W. Brady, Canning, N. S.

THE object of summer pruning is to increase the number of fruit spurs and fruit buds. A common fault with much of the pruning of young trees that is done is that all the suckers are cut off, leaving a long bare stem.

This is bad practice for two reasons. First, there are no fruit spurs on the lower parts of the limbs and consequently the area upon which the tree can bear fruit is limited to a portion of the outer end of the branches. Second, the leverage produced by the fruit being at the end of the branches is so great that they either lie on the ground and the fruit becomes soiled or else they break because of the load.

WINTER PRUNING AN AID

It is often possible to correct this fault by cutting back severely in the winter or early spring. This forces adventitious buds or causes those that have been dormant to grow. When a good growth of water sprouts, or suckers as they are sometimes called, has been obtained in this way they may be pinched back. Thus fruit spurs will be produced upon the limbs near the trunk, which is the proper place for them.

The time for summer pruning depends upon the climate and period of growth. Pruning in June will not be effective if there is a period of growth after the summer dry spell. Instead of fruit spurs many branches will be formed on the limbs. Under such conditions pruning must be done later. If, however, the season of growth ends in June, pruning in the latter part of that month is usually effective.

DEPENDS ON FOOD SUPPLY

The physiology of summer pruning is a matter of food supply. The food that is being prepared for the buds of next year would naturally pass on to the leaves. But as the terminal leaves of a pinched stem have been removed, the food is stored at the end of the stem.

Thus at this point a strong fruit bud is usually secured. As a fruit bud is only a better fed leaf bud the reason is at once apparent. I might state that four years' experience in British Columbia had convinced me that the western man is more keenly alive to this fact than is his eastern brother.

The method just outlined is intended for young trees. For old stock a simpler plan may be adopted—pinching back late in the growing season. The food will be stored in the remaining wood and the growth of fruit buds encouraged.

The larva of the Lesser Peach Borer looks like that of the ordinary Peach Borer and the adult also resembles it, but the female has not the orange band around the abdomen. The life history of both insects is very similar. The main difference is that the Lesser Peach Borer attacks chiefly above ground, including the larger branches as well as the trunk. It regularly enters only where there has been a wound. This suggests that the proper means of control is to dig out the larvae when present, and endeavor by careful pruning and orchard practice to have as few wounds on the trees as possible. Where wounds are made they should, so far as practicable, be cleaned out with a knife and painted with white paint diluted with linseed oil. This insect as a rule is not very common. It attacks cherry and plum trees, as well as peaches.—Prof. L. Caesar Provincial Entomologist, Ontario.

Many of our best varieties of strawberries have pistillate or imperfect flowers, and one must be careful to provide staminate or perfect-flowering varieties close to them. The beds of staminate and pistillate varieties could alternate; that is, five rows of one, then the path, and five rows of the other.—W. A. Dier, Ottawa, Ont.

Some Impressions of a St. Catharines Garden

ST. CATHARINES is a city that can boast of many fine gardens and lawns. Situated as it is in the heart of the best tender fruit district of Canada, one might expect to find, and does find, gardening brought to a high state of perfection.

Probably the most extensive and in many respects the finest garden in the city, is that of Dr. Merritt of Rodman Hall. Last summer a representative of The Canadian Horticulturist had an opportunity to visit and admire the Rodman Hall gardens. The training that Mr. S. Clark, the gardener, has received in the Old Land is evidenced in the careful cultivation and attention which the grounds receive at his hands. At the 1913 St. Catharines Fruit and Flower Show fourteen firsts were awarded to the products of the Rodman Hall gardens. These included a collection of ten foliage plants, six foreign ferns (among which was a fine bird's nest fern and also a stag's horn), adiantums, dracenas, begonias, and collections of annuals.

NATURAL ADVANTAGES

The grounds are admirably adapted for a residence and when originally laid out full opportunity was taken of the natural advantages. Extending to one side and back of the house are four acres of lawn and garden. From the flower garden one obtains a magnificent view overlooking the Twelve Mile Creek.

The lawn proper is about two acres in extent. Among the trees are some fine specimens of tulip tree, catalpa and paulonia. Directly behind the house is a smaller expanse of lawn. Extending beyond and to one side of the latter is the flower garden. From the house a walk winds among the beds which contain some of the finest examples of bedding to be found in the city—sub-tropical bedding, carpet bedding and the more general run of carpet schemes.

THE KITCHEN GARDEN

From the flower garden we passed through an archway in the neatly trimmed privet hedge, which surrounds the vegetable garden at the rear. This kitchen garden of one and a half acres, is laid out in English style. It is a splendid example of intensive cultivation as the ground is cropped twice each season. Extending through the centre of the garden is the main walk which is edged on either side by an herbaceous border. The other walks are edged with the old fashioned box hedge.

All the herbaceous plants are in the two borders mentioned which are one hundred and twenty-five yards long. A plant being tested out is the Montbretia. Its hardiness is being ascertained, and should it prove resistant the Montbretia

will be a valuable acquisition. At the corners of some of the beds pyramid trained pear trees effect a relief.

TOMATOES A SPECIALTY

A specialty is made of tomatoes, which are trained on trellises. About one hundred and fifty plants, giving half a ton of fruit, are grown each year. Onions are another specialty. This season an exceptionally good crop of peas was raised. Sutton's Excelsior proved the most satisfactory variety. Some fine English gooseberries also figure in the selection.

An interesting novelty was a tomato-potato combination. A tomato stem was grafted on a potato plant. The former bore several trusses of fine tomatoes, while the roots of the latter produced a number of fine tubers. We believe the practice is fairly common among French gardeners. The fact that both plants belong to the nightshade family accounts

for the readiness with which they may be grafted.

THE GREENHOUSES

In the kitchen garden are three greenhouses, each one hundred by twenty feet, which are devoted to the culture of ferns, foliage and flowering plants. Recently more attention has been paid to the growing of roses. Two smaller houses are utilized during early spring for the growing of bedding stock and in the summer for the production of English cucumbers. These houses produced the cucumbers that won first prize at Ottawa last year.

Grapes are grown under glass in two graperies, each thirty feet long. From these houses come the grapes which were so well commented upon at the Canadian National Exhibition last year, and which were judged by some to be the finest ever shown at Toronto. At the St. Catharines show fruit from these graperies was first in its class.—B.H.C.B.

Preparations for the Perennial Border

H. Gibson, Tuxedo Park

THE latter half of July is a suitable time to sow seeds of any plants that are required for planting to permanent quarters, the latter part of September. A shady corner containing good earth or a cold frame is the best place in which to sow the seed. The soil should be of a friable nature and worked up finely. Sowing in drills is preferable to broadcasting the seed, as the different varieties are less likely to get mixed.

Draw the drills an inch deep, and sow as evenly and thinly as possible. Thick sowing tends to overcrowding at an early stage. Cover the seed with fine earth, and then water with a fine rose on the watering can. Care should be taken to label each variety correctly so as to avoid future disappointment and delay.

During the hot, dry days some shade from the direct rays of the sun will be necessary to prevent too rapid evaporation.



The Residence and Lawn, Rodman Hall, St. Catharines, Ont.



Walk with Herbaceous Border through Vegetable Garden, Rodman Hall

ation. This can easily be accomplished where a cold frame has been used by making an awning of cheese cloth or mosquito netting. A similar arrangement may be devised where the seeds have been sown in an open border.

When the seedlings are large enough to handle they should be transplanted three or four inches apart into nursery beds. With good cultivation they will

grow into desirable specimens for permanent planting.

It is essential that grouping or massing of individual varieties be practised when planting into permanent quarters. A group of plants of definite form, habit and color are far more effective and pleasing to the eye than an indiscriminate planting of miscellaneous varieties.

Rochester, the City of Parks

THE recent trip of the St. Thomas horticulturists to Rochester, was one of much interest, the visitors seeing much, thanks to the courtesy of the Rochester officials.

On Sunday, May 24th, the party was taken in tow at Highland Park, alternately by A. B. Lamberton, superintendent of parks; J. Dunbar, assistant superintendent, and C. Sullivan, the manager of Highland Park. Standing on the brow of the hill one has a good view of the magnificent collection of lilacs, of which there are two hundred and eighty-six varieties, the name of each variety being painted on a sign at the foot of the plant.

Great beds of tulips proudly held blossoms up high as the visitors passed by. The party were informed that this had not been a good year for tulips as three-fourths of some varieties were "blind," the complaint being general over an area of hundreds of miles.

There were many beds of different kinds of azaleas, four hundred varieties of peonies, many varieties of rhododendrons, some of them very rare; magnolias by the hundred, some fine pansy beds, one of them sixty by fifteen feet. The conservatory contains hundreds of tropical and semi-tropical plants.

Highland Park also includes Hemlock reservoir, which furnishes the city water supply. In the centre of the reservoir can be seen a fountain throwing the crystal water to a height of about twenty feet.

A movement is now under consideration to find means to purchase a few of the most important shrubs seen at Highland Park, which will be the beginning of a scheme to make St. Thomas a miniature Rochester.

On Monday the local party were joined by sixty members of the St. Catharines Horticultural Society, marshalled by Ald. W. B. Burgoyne, proprietor of the St. Catharines Standard, and Thos. J. Holden, city editor of the same paper. They were eager to see everything pertaining to horticulture.

The Durand-Eastman Park of four hundred and eighty-four acres, is one of the latest of Rochester's breathing places. Deer and other wild animals have been placed in this park. It extends along the shore of Lake Ontario for nearly a mile. The next place of interest was Maplewood Park. In it there is a beautiful grove in which is a fully equipped playground and a handsome bandstand. Seneca Park of two hundred and eleven acres, was the next spot visited. This park has an extensive zoo, a children's

playground, a swimming hole, and a baseball diamond.

In addition to the parks mentioned here there are twenty small parks varying in size from a thousand square feet to fifteen acres. There was not enough time left at the disposal of the party to visit the beautiful Genesee Valley Park of five hundred and thirty-six acres, where the annual water carnival is held.

The city spends \$190,000 per annum on parks and \$11,000 a year on municipal music.

Rev. Father West, who was an interested visitor, remarked that living in such beautiful surroundings has a most pronounced influence over the morals of the people and that the effect of the horticultural splendor could be noted in those with whom they came in contact. Cities are measured to-day more than ever before by the happiness of the people, and that city is greatest which gives to its citizens the most in protection, education, recreation, amusement and beauty.

There will be an effort by the St. Thomas and St. Catharines Societies to have excursions organized next year at many points in Ontario, all to converge at Buffalo and to run by special train to Rochester, where the Chamber of Commerce will arrange a royal time for the combined parties.—St. Thomas Times.

Exhibiting Sweet Peas

Ernest Heggs, Hamilton, Ont.

If you are planning to exhibit some of your sweet peas and have to ship them, or if you would like to send some to a friend, a wooden box four to six inches deep and eighteen inches long will be found admirable to pack them in. Give the blooms at least one hour in water before packing them. Do not use any damp moss. Remember, they have the moisture in their stems.

Pack them dry, and place soft tissue paper over each layer. Do not be nervous about crushing the blooms, as the tighter you pack them, the fresher they will be when they have reached their destination. When they arrive put them in water, and place them in the darkest place you can find, for an hour; and they should be none the worse for their journey.

The setting of sweet peas is an art in itself, in connection with which there are one or two points to which I should like to refer. Always have something inside your vases to hold the stems where you want to place them. A good method is to get some coarse grasses and bind the stems with raffia or cotton so as to fit tightly inside the vase. Cut the ends with a sharp knife so as to leave them about an inch from the top of the vase.

By doing this you not only hold the stems in position, but you are able to give a more graceful effect.

The Beekeeper

With which has been Incorporated The Canadian Bee Journal

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Some Essentials in Queen Rearing

John A. McKinnon, St. Eugene, Ont.

WHEN I first started beekeeping I had black bees, but bought Italian queens of five different strains. The second year I got rid of two of those strains, as they were too cross. Like most beginners, I had a fancy for very yellow bees, but soon found out that they were not suited to my locality—they spring-dwindled badly and consumed the most of their surplus honey in raising bees after the close of the honey flow. The only way I could get a profit from these was to divide them about the first of August by giving them a new location, and giving a young queen at the old stand.

SECURING THE LARVAE

To secure suitable larvae, I first make a colony queenless, leaving them only sealed brood and a good force of workers. I then place a frame of old, dark worker comb in the centre of my breeding queen's hive. If no honey is coming in, I feed to induce her to lay in this comb. The second day after the first eggs are laid in this comb I give it to my queenless colony, which has only sealed brood. Having a large force of workers and hundreds hatching, they go to work at once, to feed these young larvae. Frequently I find cells three-quarters full of pap food before they have hardly started to convert them into queenless cells, and out of this comb I can get two or three hundred queen-fed larvae, or as many as I want to use at one time. I then transfer the larva and royal jelly to the cups at one operation, for which purpose I use a small hard wood stick polished smooth and slightly bent at one end. These cells are now given, over excluders, to strong colonies, queenless or supersedure colonies, depending on the season or what I have ready to accept them.

As I raise all my queens by the prepared cell method, I prefer Italians to blacks or hybrids for finishing the cells. I have found that the Italians are less apt to start other cells of their own over unsealed brood in the combs. In fact, they so seldom start other cells that it isn't worth my while examining the combs; they seem satisfied to attend to the cells given them, providing the cells are given within twenty-four hours of their brood being put over an excluder.

The blacks or hybrids will keep starting queen cells as long as they have brood young enough to do so, a lot of these cells being not much longer than capped drone brood; but if I should miss one of them, this virgin and the bees will destroy all my others. When a bar of cells is given a colony, the date is marked on the front of the hive. Ten days later these cells are ready to distribute to the queen mating nuclei.

REQUEENING WITH VIRGINS

In regard to virgin queens, I have experimented with them a good deal, and while at times they can be used to advantage, I much prefer having a surplus of cells. The whole trouble with virgins is that it is hard to get the bees to accept them after they are more than a day old. But if a nucleus is given a good smoking, when all the bees are in, and allowed to gorge themselves with honey, a virgin can very often be safely introduced. I have tried the plan of caging one virgin over a nucleus having a six-day-old virgin.* Ninety per cent. of virgins so caged died in the cages; those that were accepted, after the first virgin was mated and laying, were worth about ten cents. If buying wholesale, I wouldn't care to pay over five cents apiece for them. The trouble with them seems to be that they wear themselves out in the cages.

When requeening unprofitable or mated queens I have used to advantage virgins just hatched. If I am in a hurry and have plenty of virgins, I often run one in at the entrance of a colony where I want to supersede an old or failing queen, using a little smoke, and if some honey is coming in, about twenty-five per cent. of the virgins so introduced will supersede the old queens. If the old queen be stung by the virgin, her bodyguard will stay with her outside the entrance for a couple of days, while, if the virgin gets the worst of it, she will be kicked out and no more about it; but as I would kill these virgins anyway, it's a small loss.

BEEES BALLING VIRGINS

If a virgin, on returning from her flight, goes into the wrong mating box, she will be balled. When I find one so, I pick out the ball and pull the bees off by the wings, using a little smoke. If

she has a shiny or glazed look I usually kill her at once, but if she seems quite spry, I place her in her own hive, which is generally the nearest one. I can tell when one of these nuclei is queenless as soon as I pull off the quilt. If they have just lost their queen, they will be found gorged with honey, and chasing each other around like a flock of sheep (that is if they have no brood), and will not be clustered in a compact form as usual.

To make profitable nuclei I use two kinds of mating boxes, one the full depth nine-frame hive, with division board in centre, and inch auger flight holes at opposite ends. The most of my queens are mated from half-depth or divisible brood chamber hives, with two division boards making three apartments, each taking two or the half-depth frames. One flight hole for the centre division is made at the end and one at the centre of each side.

Very few queens make the mistake of entering the wrong apartment, as the entrances are far enough apart to be different, even though the virgins and bees should happen to take a play spell and flight at the same time. Virgins usually take their wedding flight on the afternoon of the fifth or sixth day, and are found laying about the tenth or the eleventh day, depending on weather, honey flow, and flight of drones.

WINTER'S SPECIAL COLONIES

I winter what bees I intend to use for queen rearing in divisible brood chamber hives. It does not pay to draw brood from honey gathering stocks to form nuclei in the spring, so I set aside a certain number for this purpose. Nine or ten days before I expect to need them, I take enough of these little combs of brood to fill a storey, and place it over an excluder, making sure that the queen is below. If the colony is a fairly strong one, a set of empty combs may be given under so when the top brood is removed the colony has still the same number of combs.

On the tenth day after starting the queen cells I take from these the nine frames of brood, with adhering bees, one frame for each time a ripe queen cell is pressed into the comb as close to the brood as I can get it, no protector being used, a frame of honey is also given.



At the Field Meet. Mr. Sibbald is Holding the Frame

The little entrances are plugged with grass, the covers put on, and set aside in the shade till evening; then they are placed on their permanent stand for the season, and the grass removed. By morning they will have settled down.

Should one only of these apartments have unsealed brood, at the first it may draw most of the bees from the other divisions so that in forming these nuclei I see that they all have the same. I more often take brood and bees from different colonies so they are less apt to unite and leave one division beeless. One of these small frames, three-quarters filled with sealed brood, and adhering Italian bees, with a comb of honey will last out the season, providing every second queen that has mated is allowed to lay four or five days so that some of the eggs have time to hatch into larvae.

If she is removed before any of the eggs have hatched, the bees will destroy all but a few of the eggs over which they will begin queen cells. As a rule those nuclei will accept a ripe queen cell a few hours after their laying queen has been removed. I generally leave them queenless about a day. If it should happen that I have to distribute a batch of queen cells on the same day that the queen is removed, I use a wire cell protector, but I don't like them for use in those small nuclei, as the cells frequently chill and are late in hatching and in cool nights they may die outright. I always use the protectors when cells are used to re-queen strong colonies. It saves trouble in hunting up the virgin, as these strong colonies will nearly always destroy cells after virgins have hatched.

At any time when honey is not coming in, bees, if they are not fed, will destroy queen cells. At such times the only safe

place for a surplus of queen cells is in a strong colony, made queenless and broodless. Drones can be kept as late in the season as bees can fly, that is, in a queenless colony. I allow this colony to raise a queen and remove her as soon as hatched, and give a frame of eggs and young larvae.

If left without unsealed brood, laying workers are pretty sure to show up, if

the bees are Italians. The blacks are not so bad in this respect. If a virgin should be left in this drone colony till mated, the bees will begin to ill-treat their drones either by chasing them out or keeping them away from the unsealed honey. This colony should be fed every second day, so as to cause the bees and drones to have a vigorous flight on such days as virgins can fly.

Wood Splints in Foundation

IN the June issue of *The Beekeeper* there appeared a short description of the splint method of strengthening comb foundation, a sample of which was exhibited by J. Alpaugh, of Innerkip, at the National Field Day Meet. A more extended account of this method may be of interest.

The splints are made of good pine, about one-thirty-second of an inch square and five to six inches long. Mr. Alpaugh rips these out with a small circular saw, first sawing the wood into thin sheets. These sheets are then glued together at the ends and sawed into splints. The glue holds the splints together, otherwise they would fly in all directions from the saw. The splints are boiled in wax before being used.

The foundation is fastened by means of hot wax to the frame head, and about three-quarters ways down each end. The balance of the ends is left free to allow for expansion. For the same reason a space of three-eighths inch is left between the bottom bar and the foundation. The frame is placed over a mould or guide which keeps the foundation at the proper position in the frame and facilitates the operation.

The splints are next inserted. Three cuts are made in the foundation, extending from the frame head to about six inches down. A sharp, thin-bladed knife is used, the knife being held as nearly horizontal to the foundation as is possible. The result is that when the knife is withdrawn there are two bevelled surfaces lying against each other. A splint is then placed in each cut, the upper end against the top bar. The foundation is pressed against the splint which is practically covered on both sides. A little hot wax is then brushed over the cuts.

For ten years Mr. Alpaugh has been experimenting with this method. At one time he bored holes in the top bar and inserted the splints in these, but now he does not consider this necessary. He is satisfied that he has a system that gives the finest kind of comb and which will not buckle. When the splints are inserted in the manner outlined the bees will draw out the foundation without having any blanks. Heretofore the chief trouble experienced with this method has

been in this respect. The drawn out comb exhibited by Mr. Alpaugh at the Field Meet was as even and straight as one could desire to see.

Comb Honey Production

I. Langstroth, Forest, Ont.

All who go into the comb honey business should make every effort to produce nothing but the very finest quality. Use the best section full sheets of foundation and above all, in all cases, use separators so that the section will be uniform in weight, and perfectly straight. They can then be crated without the combs touching one another.

By the Alexander plan one can get honey from the old stand as follows: Get the colony very strong early. At the point of swarming, take the queen and one frame of open brood, place in a new hive an old stand, and fill up with foundation. Place the old hive with the balance of brood above with queen excluder between, and leave it there five to eight days. Then remove the upper story and shake all adhering bees in front of the old hive. Use brood to strengthen other colonies that may not be up to high water mark.

If increase is wanted, don't shake the bees off, but remove the top storey to a new stand and start a new colony for extracting. Give a ripe cell, if there is no queen to spare. A few sections with comb in will attract them into the supers if any honey is coming in. I have found the above plan to suit me, as it does away with swarming.

I have been experimenting with sweet clover. Bees work on it fine. Cattle and horses especially graze it very satisfactorily once they get the taste. I cut some for hay and fed it to milk cows. They did so well that my wife said she could tell when I stopped feeding it for a couple of days. It grew two to three feet high where red clover grew six to eight inches. It does well on our shallow clay soil. I find it very hard to start. I tried sanfoin. It seemed hardy as al-sike in the trying spring of 1909, but bees did not work on it very well, and it did not blossom quite as early as al-sike.—W. Moore, Little Crescent, Ont.

Some Features of Apicultural Education*

Morley Pettit, Provincial Apiarist, Guelph, Ont.

EDUCATION helps the workers by enabling them to better understand and thus take more pleasure in their work. It increases their efficiency, reduces the cost of production, and improves the quality of the product. Business education helps the business man to reduce the cost of distribution and by advertising to increase consumption. These help both producer and distributor. Education provided at public expense should help also the consumer by reducing the ultimate cost of the product to him.

Apicultural education provided at public expense must consider all three classes. It must take into account the right to keep bees of a sufficient number of persons to collect the nectar which nature places in the flowers from year to year, the right of a sufficient number of distributors to get this to the consumer, and the right of all men to satisfy their craving for sweets with this most delicious of nature's products.

Apicultural education should include both production and distribution. It should and must go hand in hand with investigation. In fact, the latter must come first, because it provides the material, the ideas with which our work has to do.

True education consists in answering questions and begins with the child at birth. Long before the question can be framed in words, the inquiring senses of the infant reach out for information, and happy the child whose parents and friends intelligently and honestly answer all its questions. It is true these questions require directing and stimulating, but there can be no true education where there is no inquiring mind. Education then consists in stimulating, directing, and informing the inquiring mind. That is the first half of it. The other half leads the mind into ethical and logical habits of thought, trains the eye to see, the ear to hear, the hand and foot to perform accurately and quickly the duties assigned them.

Now as to methods of apicultural education. It begins with inquiry and enthusiasm.

First, the beekeeper talks bees to his friends. Some of them get bees and start to investigate and observe.

Second, two or three beekeepers exchange experiences and ideas.

Third, they call a meeting where a dozen or more discuss bees in an organized way.

Fourth, books and papers on the subject are written and read.

Fifth, qualified speakers are secured to address conventions.

Sixth, trouble comes in ways of winter loss and disease, causing more earnest investigation and inquiry.

Seventh, experts or inspectors are sent by the association or the Government to give individual instructions.

Eighth, the Government appoints a man to devote his whole time to the subject and his work is almost wholly educational. He starts by getting a knowledge of the field, collects a list of the beekeepers, visits them, writes to them, replies to their inquiries, helps them to organize for mutual benefit, directs their investigations by suggesting experiments for them to try. Courses of lectures are given on the subject at agricultural colleges and at agricultural classes throughout the country. Bee institutes and bee demonstrations follow in the well-known order.

The result is an awakened interest in the subject of bees and honey over the whole territory. Many people who have a few bees are increasing their apiaries by leaps and bounds. The price of bees goes up and the production of honey is increased. This, of course, has a tendency to weaken prices. It does weaken and for the time lower them.

So far we have spoken of education centred on the producer helping him to produce more. Indirectly the consumption of the product is increased because of the public interest aroused; but some sections soon produce a surplus—others, such as cities and localities where the crop has failed, are under-supplied. Where the surplus is the price is lowered and much more is consumed. Where there is a scarcity the price advances to a certain point, and consumption is

greatly reduced. Because of the scarcity people learn to substitute other things for honey, and the market in that locality is permanently injured. Education must here step in to assist distribution; teaching the beekeepers how to discover the areas of surplus and of scarcity, and to even up the supply. This, of course, must be accompanied by the cooperation of the beekeepers at large.

That word "cooperation," by which so many are attempting to conjure, at present opens a whole field for investigation and education. Suffice it to say that my present belief is that cooperation of beekeepers will progress slowly in this generation. If its principles were taught to all children we might hope for a widespread organization by the time they became men and women.

How about the education of the consumer? I will place first in importance a house to house canvass by the beekeeper himself. He can talk of his goods and inspire confidence by his knowledge of the production, care and use of honey. Next the mail order business where the beekeeper sells by letter direct to the consumer. Next the display of honey in grocery stores either direct from the beekeeper or through wholesale channels. Here the grocer needs to be educated and interested to induce him to bring honey to the notice of his customers. Exhibits and bee demonstrations at fairs, popular lectures and articles in the press, newspaper and magazine advertising, all play an important part.

In conclusion, let me summarize: Apicultural education must take into account the producer, the distributor, and the consumer. As far as possible the producer should be his own distributor and should take his part in educating the consumer. An increased interest on the part of producers increases the distribution and the consumption.



Apiary of W. B. Anderson, Peterboro, Ont. Note Vegetable Garden in Foreground

Chemical Properties of Honey and Beeswax*

Prof. R. Harcourt

HONEY may be described as a viscous liquid varying from almost colorless to almost black, according to character of flowers and season in which it is gathered and the length of time of storage. Chemically speaking it belongs to a large class of substances known as carbohydrates. These substances are noted for their heat-producing properties, and other examples of carbohydrates are cane sugar and starch. Honey differs considerably from these two substances, however. Carbohydrates are divided into two classes—1st, Amyloses: Starch, dextum, gums, etc., belong to this class; and 2nd, Sugars.

The sugars are again sub-divided into three classes, examples of which are glucose, cane sugar, and raffinose respectively, but the relation of the sugars is comparatively close, since cane sugar when boiled in the presence of an acid produces what is known as "inverted" sugar, or chemically speaking, fructose and glucose. To understand this relation is to understand the relation of cane sugar to honey, as honey is chemically "inverted" sugar.

The chemical proportions of honey are about as follow:

15 to 25 per cent.—Water.

74 to 75 per cent.—Dextrose and loullose.

5.02 per cent.—Cane sugar, protein and ash.

By this table you will see that the water content of honey varies considerably. This may be due to two causes, viz., weather conditions existing when honey is being made, and the stage at which the honey is extracted. The amount of water in good honey very rarely goes below 15 per cent., or over 20 per cent. If it is very dry weather there will be a smaller percentage of water in well capped honey than there would be in well capped honey produced during damp weather. On the other hand, honey which has been extracted before it has been thoroughly ripened, will contain more water than it should, and when too much water is present in honey it is quickly fermented. Before leaving this feature it would be well to show the necessity for good, dry storage of honey. Experiments have been conducted by placing well ripened honey in comparatively dry and moist atmosphere and, to quote Prof. Shuttleworth, the following results were obtained:

Ripe honey, with an original water content of 15.88 per cent., placed in a dry atmosphere, lost 1.64 per cent. in one month. The same honey placed in a moist atmosphere the water content rose to 31.46 per cent. in the same time, an increase of 15.58, almost double the original moisture content! This experiment shows conclusively the folly of using a damp cellar as the storage room for honey. Even dry cellars are not the best. An upstairs room gives the best results.

Grape sugar and fruit sugar are the two sugars which make up the sugar content of the honey and it has been found that the proportions of these sugars in the nectar of the flowers, is about the same as they would occur in inverted cane sugar. Cane sugar is sometimes present in pure honey, and as much as eight to ten per cent. has been found, but when the percentage of cane sugar rises to eight per cent. there is ground for suspicion of adulteration.

A certain amount of dust and other foreign matter is usually present in honey, and this forms the ash content, 15.02 per cent.

In regard to the adulteration of honey, several forms of adulteration can be practiced, but all are open to detection usually. The addition of glucose is detected by what is known as the polarization test. Suspicious samples which have been sent to the Inland Revenue Department, are put through this test. The addition of invert sugar is much harder to detect but the ash content

will be higher and of course the flavor affected. The extra ash content is due to the necessity of using an acid to invert the sugar. The addition of cane sugar is comparatively easy to detect as where much of this is used the proportion is much over eight per cent.

Upon the subject of beeswax, we find that this is distantly related to the fats and the only practical work has been to detect the presence of paraffin in foundation used for bees to work on. The Professor Shuttleworth mentioned before has conducted analysis of foundation and reports that as much as 25 to 29 per cent. of paraffin present in some beeswax examined.

Beekeeping in Thunder Bay District

James M. Munroe, Slate River Valley, Ont.

FOURTEEN years ago I came to the Thunder Bay district. I brought ten colonies of bees with me and presumed that the same winter treatment I gave in eastern Ontario would do here. To my disappointment all were dead when spring arrived. I purchased more and began to experiment, but I had not much time to spend on what was not a proved success.

Until the past five years my apiary did not cause much stir, although it gave me valuable experience. That season from twelve colonies (spring count) I obtained one and one-half tons, and left abundant stores for winter. Last year from one hundred and nine colonies (spring count) I got six and one-half tons of surplus honey.

FORTY MILLION POUNDS WASTED

If Thunder Bay district is all as well supplied with natural bloom as my locality, and I have no reason to doubt it, and if it contains approximately 50,000 square miles of land, it means that 40,000,000 pounds of honey went to waste last year for lack of bees to gather it, and apiarists to harvest it.

When my honey was first put on the Fort William market, some contended it was not produced in the district, but was shipped in. That it was fine quality no one denied, and the demand has grown steadily—not alone locally—for my custom extends from Montreal to Vancouver, and this year some of it has gone to England.

It has appeared on the tables of all classes, from the laboring man's to that of His Royal Highness the Duke of Connaught. Mr. J. L. Byer, president of the Ontario Beekeepers' Association, testified at the Canadian National Exhibition that "It is indeed a splendid article in the way of clover honey, and is, I think, about as white as any I ever sampled."

The sources of supply for nectar are constant from May until the fall frosts, honey being mainly gathered from the respberry, clover, and willow herb. It will be a long time before apple blossom honey is gathered, or the apples themselves enjoyed, so long as that pest of the horticulturist, commonly known as the rabbit, is protected by law.

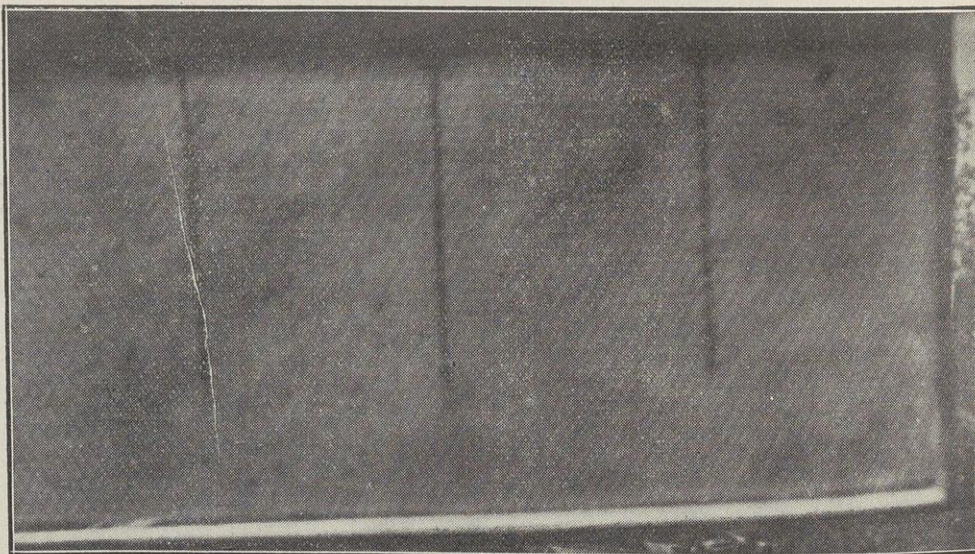
The pessimist may say the season is too short, but there are as many hours' sunshine in New Ontario as at the Equator, and the bee does not strike for an eight hour day, but works while there is work to be done, saves like a Scotsman, and then retires to enjoy a well-earned rest.

In a Small Way

Ma'am: "Well, James, I'm going to start beekeeping."

James: Bees is nasty, troublesome things, ma'am."

Ma'am: "Oh, but I shall start in a very small way—just a pair to begin with."—London Sketch.



An Illustration of the Splint Method of Strengthening Comb Foundation

This is a frame of full drawn comb. The position of the splints was visible only when holding the comb to the light. The splints are really smaller than the shadows indicate, but their length and position may be judged.

*Notes on a lecture given before the O. A. C. Apiculture Short Course Class.

Advertising Campaign Needed

An acute problem facing the beekeeper of to-day is the development of the market for honey products. The question is not one of area—the field is large—but rather to increase the actual number of honey consumers. There are thousands of people in this country who hardly know what the taste of honey is. The thousands of tons of nectar which nature furnishes so lavishly every year are surely a proof that honey is a heaven-sent gift intended for all. But these thousands of prospective consumers must first learn that honey is good for them—that it is one of nature's foods. Here lies the problem.

One step in the right direction is the local advertising done by the individual beekeepers. The county associations can do the same on a larger scale. But the question of reaching the consumers where there are few beekeepers presents more difficulties.

The first necessity is a country-wide scheme of advertising. Such a campaign can only be successfully conducted by an organization like the O.B.A.; it is beyond the resources of the individual beekeeper. The question naturally arises, How is such a scheme to be financed? A similar difficulty was faced a year or so ago by the Apple Shippers' Association of the United States. An ingenious plan was devised—briefly, to sell to the members grade labels which would be placed on the packages of fruit sold. Two cents is charged for a barrel label and one cent for a box.

This system could be modified to meet the requirements of the beekeepers. The suggestion has been made on various occasions that the O.B.A. set a standard for honey products and these be sold with an association label. If these labels were sold to honey producers at an advance on cost, the proceeds could be pooled and devoted to financing a country-wide advertising campaign.

Advertising is the watchword of the business world to-day. Marketing honey is a business that requires modern business methods. What do you think of the suggestion? The Beekeeper would be glad to hear from you.

Root's Florida Shipment of Bees

At the O.B.A. convention last November those present were much interested in the experiment outlined by Mr. E. R. Root, Medina, Ohio. Mr. Root's idea was to ship a carload of bees to Florida for the winter and endeavor to get an increase of three to one. For the benefit of our readers who are interested in the result of the experiment, we publish the following extract from Gleanings:

The car of 300 colonies left Medina last November. Due to very unfavorable weather conditions, the loss on the car was twenty-five colonies; so the increase was made from practically 275. Only a few of the entire number were fair colonies. Practically a majority of them were four and five frame nuclei. When the cold weather of February and March came on, it seemed very improbable that much of an increase could be made. But a good flow from black tupelo and better weather conditions helped much. Mr. Marchant succeeded in making 275 weak colonies into 800 fair colonies and 500 three-frame nuclei. This would make an equivalent of nearly 1,000 colonies all told. He actually made an increase of four carloads and secured enough



Part of the Crowd at the National Field Day Meet, Forks-of-Credit, May 25

This view is in one of Mr. Sibbold's out opiaries. At the foot of the hill to the left is a stream. To the right, but not seen in the photo, is another hill. The location is ideal.

honey to pay the freight down and back on the bees. He did not, however, rear any queens. These were furnished him by his father.

The first car started north on the 8th of May, and arrived in Medina on the 13th in splendid condition. There were only about five combs broken down, and they were old ones. All the new combs had been extracted down until there was very little honey left in them, or just about enough to carry the bees through to Medina. The loss of bees was almost insignificant, or about two pounds out of twenty colonies.

The second car arrived May 25th in splendid condition, notwithstanding it had been very hot for a couple of days back, and that at the hour of arrival the mercury hovered close to ninety in the shade. A platform had been built up at one corner of the home yard, close to a siding where the bees were to be unloaded. All hands had been notified to be ready. The automobile truck and our big team were to be on hand in due time. The weather became hotter and more sultry, and the robbers were as mean as we had ever known them in Medina.

Our Mr. Calvert suggested, "Why not unload the bees in the basement of the big warehouse?" We immediately got in touch with our local railroad agent and told him we wanted that car switched down to the warehouse. The basement is cool, and even on the hottest day it maintains a temperature not above sixty-five degrees. Soon the train came thundering in. The car was put in place, and then a gang of men began work, for not a minute was to be lost. In the space of an hour we had the car unloaded in a cool basement, secure from robbers, and two loads of bees on the way to the outyards. A third load was sent off before dark; and by nightfall we had nearly one hundred colonies located.

The weather was so extremely warm on this trip that our Mr. Jack Deyell actually gave the bees five barrels of water, and not a colony has been lost so far, and the average bottom screen does not have a hundred bees on it—sometimes not more than a dozen. The most that any has had is a double handful from two or three colonies. Where such loss occurred at all, it was evident there were too many bees to the hive. We feel now that the next two cars

can not come through under worse conditions. There is not a single comb, so far as we know, that was broken down on this trip.

The secret of moving bees successfully is in having strong staging so as to provide plenty of air space at the top and bottom screens of the hive, not too many bees to the hive, and plenty of water en route. Our first car load of bees came when the weather was cool, and required only two barrels of water. The second car came when the weather was extremely warm, and took five barrels of water.

Bees for the West

The West is catching the "bee fever." Early in the summer a whole car load was shipped in from Sear, Michigan. The authorities of the Grand Trunk say the bees arrived in good condition. Mr. P. H. Orth, Clover Bar, Alberta, who imported the bees, believes that the prairie provinces offer special inducements to the beekeeper, the rich vegetation making success practically certain.

European Foul Brood

Editor, The Beekeeper.—I should like to see opinions expressed by some of our old war horses in regard to Mr. Scott's article on Foul Brood in the June number. After forty years of hard study and steady practice I am inclined to believe that Mr. Scott has the American Foul Brood. If beginners are led to mistake these diseases, much loss and time is spent in curing.—Chas. Mitchell, Molesworth, Ont.

Selling Honey.—During the past twelve months I have obtained so many new customers just by explaining the food value of honey as compared with other sweets, that the increase in amount of honey disposed of at retail has surprised me. Then I have got the old customers buying more honey, so that instead of one can, they are now buying from forty to one hundred pounds yearly, and a lot of them get forty to seventy-five pounds at one time every fall. It seems to me we ought to educate some of our producers along the line of stimulating the sale of their own honey and there would be no trouble of overproduction.—J. F. Dunn, Ridgeway, Ont.

Notes from National Beekeepers' Convention at St. Louis

Morley Pettit, Provincial Apiarist, Guelph, Ont.

(Concluded from last issue)

MR. DAVIS of Tennessee, is a bright, young Southerner, engaged in the queen rearing business on a large scale. He and his father raised something over six thousand queens for the trade last year, and they are increasing their business this year.

Frank C. Pellett, State Apiary Inspector for Iowa, is what some easterners would call a western boomster. His own people call him a live wire, and he is certainly getting there with the goods, securing improved legislation for beekeeping, attention to apiculture in the agricultural colleges, and a remarkable development generally. His principal method seems to be publicity, at which he is an expert. I told him that if I followed his tactics in Ontario some of the specialist beekeepers would have my scalp in no time. He claims that the result of publicity of this kind is an increased consumption of honey, more than an increased production.

INTERESTING COMPARISONS.

To me the most valuable part of the convention was a conference of apiary inspectors, at which the following States were represented: Colorado, New Jersey, Ohio, Tennessee, Indiana, Iowa, Idaho, Massachusetts, and the province of Ontario. The conference took the form of an informal conversation, discussing apiary inspection methods and policies. I found that in Massachusetts they have an expenditure of two thousand dollars a year for apiary inspection, in Idaho five hundred dollars, in Iowa about one thousand dollars. In Indiana fifteen thousand dollars is voted for Horticulture and Apiculture combined; about three thousand dollars is used for the advancement of beekeeping in apiary inspection and demonstrations of educational work of one kind and another. In Tennessee one thousand dollars is spent for apiary inspection, and five hundred dollars for educational work. Ohio spends two thousand dollars for inspection and educational work and New Jersey two thousand dollars.

INSPECTION IN COLORADO.

In Colorado they have a rather interesting system of local inspection. The State Entomologist is the State Apiary Inspector. He has a deputy inspector, who practically has charge of the work, in the person of Mr. Wesley Foster. Then the different counties vote annual grants for apiary inspection, and county inspectors are appointed on the recommendation of the county beekeepers' association, the requirement being that the county inspector must pass an examination held by the state entomologist before he can be appointed an inspector. The county commissioners, who correspond to our county councils, then vote a certain amount of money to pay the wages and expenses of these inspectors. The inspectors go ahead inspecting and if they find their funds running low before they have been able to cover their ground they come back to the county council and ask for more money. In some cases, one county council will vote as high as one thousand dollars for apiary inspection, but it usually runs from two to three hundred dollars. In all about fifty-five hundred dollars is voted by the county councils and fifteen

hundred dollars comes from the State for the services and expenses of the state deputy inspector while he is on the state work.

From St. Louis a small party of us went to Hamilton, Illinois, on the kind invitation of Mr. C. P. Dadant, to visit his home and bee supply factory. We were met at the train on Friday morning by one of Mr. Dadant's sons in his auto. He took us over to Mr. Dadant's home, where we had refreshments, and visited the home apiary and foundation factory.

The Dadant foundation is made by the Weed process, and they turn out the remarkable quantity of two hundred thousand pounds of comb foundation annually. The wax comes in all sorts of cakes from different parts of the country, and from other countries. It is first sorted carefully as to color, the lighter colored wax being used for section foundation, and the darker wax for the brood foundation. It is liquified and allowed to stand in a large tank which is covered by special material so as to cool very slowly. The slow cooling gives any foreign matter time to settle out, and thus the wax is clarified usually without the use of any acid. It is then run into moulds ready for the sheeting. The sheets are rolled in large rolls that look like belting. These coils are stacked in the store-room for at least two weeks before being made into foundation.

OUT SIGHTSEEING.

After dinner Mr. Dadant took us over to visit the large dam across the Mississippi. In the evening we went on to Chicago, then the next day to Cleveland. The first thing Monday morning the electric car took us out to Medina, where we spent the afternoon going over the factory and offices of the A. I. Root Company.

In conclusion, I feel like stating that what impressed me most with these extensive honey producers and business bee men of the States was the business-like air with which they would go about their work; the extent to which cooperation has been developed in some localities, also the status of apicultural education and apiary inspection in many of the states; also the fact that Ontario does not need to take a back seat with any of them, unless it be Colorado, in the matter of expenditure on inspection. That state spends more than we do, and the area covered is of course much less.

Cooperation Among Beekeepers

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

Ever since the first necessity was felt by a few and these started in to remedy matters, or to use the term correctly cooperate, the Beekeepers' Association work has developed until now we have in Ontario one of the largest organizations of beekeepers in the world, with a roll-call of nearly fifteen hundred members. The beekeepers in themselves by their cooperative exchange of ideas have brought about conventions in counties and at Toronto; demonstrations in beekeeping and treatment of diseases; the publication of a journal which is distinctly their own; the arrangement of exhibits, competitions, and so forth, and the collection of data relative to beekeeping interests.

So far our cooperative activities have

been confined to the exchange of ideas; the giving of advice and such like, but we are now being faced with new problems. We must prepare to meet these with the same resolution that the "old guard," if I may speak of them thus, met the questions of twenty years ago.

The price of honey in the French market varies slightly according to the quantity and quality of the season's crop, though the quotations rarely fluctuate to a degree exceeding \$1 per 100 pounds. The wholesale price for honey at the beginning of January, 1914, in barrels or tin pails containing 25, 50, 100, or 150 kilos (55.11, 110.23, 220.46, or 330.69 pounds) is 110 to 120 francs (\$21.23 to \$23.16) per 100 kilos. Honey at this price, and sold in bulk, is not of a very delicate flavor, nor does it possess that taste which is characteristic of the product of the hive. A considerably better grade, however, can be obtained at 150 francs (28.95) per 220.46 pounds. The finest quality is sold in tin boxes or cans containing 5 kilos (11.02 pounds) at 1.90 francs (0.37) per kilo (2.2 pounds). This honey is of greyish color, opaque, and thick in consistency. Transparent, or clarified honey is sold in glass jars containing half a kilo. Its color is similar to golden syrup, but its flavor is inferior to the semi-solidified, or opaque, honey, which is usually sold as "Honey of the Alps."

Beekeepers' Supplies

Editor, The Beekeeper.—In the May number of The Beekeeper Mr. Bisbee has an article on beekeepers' supplies. We do not propose to enter into a discussion of the relative merits of American versus Canadian goods. Nevertheless, Mr. Bisbee has made a serious mistatement regarding the hives made by the A. I. Root Co. We desire to correct him and other readers as well in the matter.

The A. I. Root Co., whom we represent in Canada, do not make their hives of cypress as stated. The bottom boards and part of the metal-roofed cover are made of cypress, it is true, but the bodies are made of clear, straight-grained, white pine lumber, grown in the north. The frames are likewise pine of the best quality.

We have hundreds of these hives in our own apiaries, and believe the bottom boards made of cypress to be the best material for the purpose. It is inconceivable that the Root people, with over forty years of experience in hivemaking, should send out a hive that would not fill the requirements of a good hive.—The Chas. E. Hopper Co., Toronto.

Prospects in Quebec

Inside wintering with me has been a success. The splendid and unusual weather we had in May filled the hives with bees and stores. I opened the season with 175 colonies in excellent condition. The past season was very poor for honey production, and 1912 gave us only half a crop. We are looking for a good crop this year. Alsike clover is abundant and the hives full of workers. With good weather it should be a successful season.—J. Verret, Charlesbourg, P.Q.

Perth County Crop Report

We are having a very dry summer. The clover flow will be light, as most of the clover was killed during the winter—Charles Mitchell, Molesworth, Ont.

St. Lawrence Growers will Exhibit

Editor, The Canadian Horticulturist,—In the May issue of your paper there appeared an article stating that the St. Lawrence Valley Fruit Growers' Association have decided to discontinue exhibiting at the Horticultural Exhibition unless a rule be made prohibiting Government men who act, assist, or advise as packers, from officiating as judges.

I wish to correct the misunderstanding that the article in question may cause. While a few of the members warmly discussed the injustice of the above practice, and were supported by the meeting, yet there was no mention made of discontinuing exhibiting at the fair for that reason. The majority of the members have confidence enough in the judges appointed, to feel that the fruit would be judged fairly and that the final placing of awards would be done conscientiously, and they feel that this was the case in this instance. The point that they did raise, as was mentioned in the article, was the chance of a judge who knew all the fruit in the boxes of one exhibit and not in that of another being somewhat biased in his final sizing up of the two exhibits and placing the awards.

Again, we did not feel that the Baldwin apple was rated as a better apple than the McIntosh, simply because it was placed first, because we know that no judge of fruit would consider it such, other things being equal. We take it that it was chiefly the fault of our pack which had gone somewhat slack with the long shipment that caused us to lose some points and intend to make every effort to overcome that difficulty when exhibiting again. The St. Lawrence Valley Fruit Growers' Association ap-

preciates the encouragement and assistance that was given them by the executive of the Horticultural Exhibition and intend to give the exhibition every support in future years.—E. P. Bradt, Secy., St. Lawrence Valley F.G.A.

Cooperative Fruit Experiments

An interesting line of experimental work has been commenced this spring by Prof. Crow's department of the O.A.C. This work is being undertaken at the request of the Board of Control of the Ontario Experiment Stations. It is cooperative in its nature in that the experiments are to be conducted in the orchards of men who have the facilities to offer and are interested in the work. The actual experiments are under the charge of G. J. Culham, B.S.A., who last year did orchard survey work in Northern Ontario. The expenses will be covered by a portion of the Dominion agricultural grant.

A wide range of experiments will be conducted and as much work covered as it will be possible to keep in touch with. The intention is to confine the experiments mostly to apples and the harder fruits. A start has been made in Oshawa. Mr. Culham this spring top grafted some Ben Davis with McIntosh, Snow and Spy. All three varieties are grafted on every tree. It is hoped in this way to ascertain which of these varieties will do best for top working the Ben Davis. Other work contemplated is the study of the effect of various kinds and amounts of fertilizers, summer pruning for fruit buds, winter injury and methods of prevention, budding and grafting, and the question of unproductiveness in fruit trees. A special study

Douglas Gardens

OAKVILLE, ONT.

IRIS

(GERMANICA)

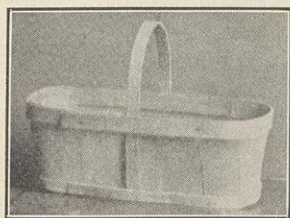
The best time to transplant these Irises is directly after the blooming season, when they are dormant. We are booking orders now for immediate delivery.

2. I. FLORENTINA ALBA (S and F) white, faintly suffused with pale grayish lavender, each 20c; 3. 50c; 10, \$1.50.
7. I. VARIEGATA, IRIS KOENIG (King of Iris) (S), lemon yellow (F), maroon and yellow, each 50c.
13. I. HYBRIDA, RHEIN NIXE, (S) pure white (F) violet blue with white edge, each 50c.
15. I. HYBRIDA, MRS. G. DARWIN, white reticulated gold and violet, each 25c; 3, 60c; 10, \$2.00.
18. I. HYBRIDS, WYOMISSING, (1909) (S) creamery white, (F) deep rose. Deliciously fragrant, each \$1.00.
25. I. PALLIDA, JUNIATA (1909) (S and F) clean blue, very tall, each 75c.
26. I. PALLIDA, MANDRALISCAE (S and F) rich lavender purple, 40 in., each 25c; 3, 60c; 10, \$2.00.
29. I. PLICATA, MME. CHEREAU (S and F) white frilled with blue, 32 in., each 15c; 3, 40c; 10, \$1.25.
33. I. SQUALENS, Jacquesiana (S) coppery crimson (F) maroon, 30 in., each 25c; 3, 60c; 10, \$2.00.

Carriage prepaid—cash with order, please.

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Peerless Climax Fruit Baskets



Heaviest, Strongest and Best

In the market. Especially suitable for long distance shipping. Last year the demand exceeded the supply

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Here is the ideal practical canning apparatus for home canning surplus Fruit and Vegetables. It is simple, easy to operate and inexpensive. Enables you to get top prices for products, saves early ripenings and wind-falls, and protects you against the price-lowering effects of an overloaded market. The

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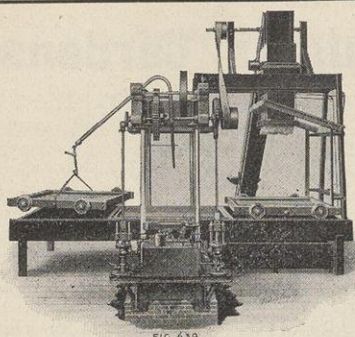


FIG. 639

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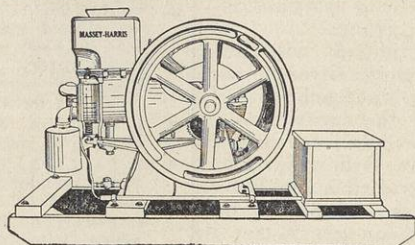


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Skids can be moved around to any place where
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You will be surprised to find the many uses to which
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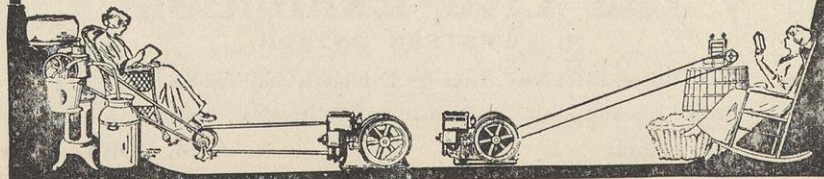
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of this last problem will be made to as-
certain if unproductiveness is a matter of
bud formation or due to some other reason.

These cooperative experiments are not
intended to duplicate the demonstration
work conducted by the Department. Any
fruit growers who have the right material
to work upon and are interested in this
work should get in touch with Prof. J.
W. Crow, O.A.C., Guelph.

Welcome Improvements

Fruit shippers at Niagara-on-the-Lake
and St. Catharines will be pleased to learn
that the Transportation Committee of the
Ontario Fruit Growers' Association have
the assurance that facilities for handling
express shipments will be greatly improved
at these points.

At Niagara-on-the-Lake the shippers
were compelled to deliver their fruit on the
dock, exposed to the weather until loaded
on the boat, and in case of rain they were
liable to heavy loss, as was experienced
last season. At that time an effort was
made to have the Richelieu and Ontario
Company provide a suitable shelter, but
without result. Early this spring the com-
plaint of the shippers was again presented
to the officials of the company by the asso-
ciation's transportation officer, G. E. Mc-
Intosh, of Forest. Mr. Paton, the assistant
operating superintendent, said his company
was anxious to meet the wishes of the ship-
pers, and after a careful consideration of
the conditions, advises the Transportation
Committee, under date of May 30, that a
shelter similar to the one at Queenston will
be erected at Niagara-on-the-Lake.

The steamer Macassa will also make reg-
ular trips twice daily between June 17 and
September 5, from Toronto to Grimsby
Beach and will accept fruit shipments for
each sailing.

At St. Catharines express accommodation
has also been unsatisfactory for several
seasons, and has remained so because of
contemplated improvements by the G.T.R.
being delayed until the decision of the city
is given in regard to the proposed high
level bridge over the ravine, towards which
the railway company has offered to con-
tribute \$20,000. The indications are, how-
ever, that the bylaw to be submitted in the
near future will carry, in which event work
will start at once on a new passenger depot,
with platforms and shelters to fully take
care of the express shipments, also a freight
shed six hundred feet long, and ten addi-
tional tracks to be laid north of the pre-
sent yard.

Niagara Peninsula

Indications are that there will be a record
crop of cherries. Growers are hoping to
receive from sixty to eighty cents for sour
cherries en bloc. Sweet cherries are not
expected to be any higher than in previous
years.

The peach crop is practically a failure.
Peach leaf curl is appearing in nearly every
locality, and shows in abundance in or-
chards that were not carefully sprayed.
There is more curl than there has been in
two seasons, but if warm, dry weather pre-
vails for the next few weeks the damage
will not be so great. Growers have gone
in more extensively for tomatoes to offset
the peach shortage.

The strawberry crop will be below aver-
age and prices will run high. In British
Columbia a fair crop of berries is expected.

SELECT ITALIAN QUEENS

We will both be disappointed if you do not order a half dozen of our select untested Italian Queens at six for \$4.00. 1 lb. Bees with Queens, \$2.50. We have a number of satisfied Canadian customers. We want you too. Circular Free, write

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QUEENS QUEENS

Three Banded and Golden Italians. Vigorous queens, from clean, healthy colonies. Safe delivery at your Post Office guaranteed. See our catalogue.

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Roots, Dadants, Ham & Nott's goods. Honey, Wax, Poultry Supplies, Seeds, etc.

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THE CHAS. E. HOPPER COMPANY
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PRICE LIST

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Three Banded Red Clover Italian Queens

Bred from Tested Stock

Untested Queens, \$1 each, \$5 for six
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Tested Selected Guaranteed Queens, \$2 each

Cash With Order

W. R. STIRLING

Box 214 Ridgetown, Ont.

**QUEENS AND BEES**

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

	1	6	12
Untested	\$1.00	\$5.50	\$10.50
Tested	1.50	8.50	16.00
Select tested	2.00	11.25	22.50

For prices on larger quantities please write us.

We offer bees in pound packages from the same stock as above as follows after July 1st:

1 lb.	2 lb.	3 lb.
\$1.50	\$2.50	\$3.50

These prices do not include a queen. Add price of queen you may select to price of package when ordering. Safe delivery guaranteed. Full directions for handling sent with each shipment.

A full stock of bee-keepers' supplies always on hand for prompt shipment. Catalogue on request.

We Want More Beeswax.

F. W. JONES - BEDFORD, QUE.

3-BAND LONG-TONGUED RED-CLOVER ITALIAN QUEENS

For Sale, — My long-tongued Golden are proving themselves to be the bee to clean Foul Brood. This is why I have such a large trade in Canada. Mr. E. L. Cox, of Jesup, Iowa, introduced 50 of my 3-band queens in Foul-Broody colonies in 1912; and he said the disease was cleaned up where each of those queens was put. They gathered such a

large crop of honey in 1912 that he bought 50 more in 1913.

One Untested, 75c; 6, \$4.00; 12, \$7.50; 25, \$13.50; 50, \$25.00.

Double the above for tested queens. Bees by the pound: One lb., \$2.00; 2 lbs., \$4.00. One-frame nucleus, \$2.00; 2 frame, \$3.00; 3 frame, \$4.00. To all the above packages add the price of queen. I will begin to send out queens in April.

Positively no checks will be accepted. Send money by P. O. Money Orders. All queens arriving dead will be replaced if cage is returned by return mail.

J. B. ALEXANDER, CATO, ARK.



Well-Bred
Italian Bees and Queens
Standard
Bee-Keepers' Supplies
Illustrated Price
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**SELECT UNTESTED QUEENS, 75c. EACH**

One lb. package of Bees, no queen, \$1.25.

Two lb. package of Bees, no queen, \$2.25.

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The Review and Gleanings one year, \$1.50.
The Review and American Bee Journal one year, \$1.50.

All three for one year only \$2.00.
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BEES AND QUEENS

Queens bred from Doolittle's best stock, untested, 60 cts. each; \$6.60 per dozen; \$50 per 100. Same stock of year-old queens removed from our colonies to prevent swarming, 50 cts. each; \$5.40 per dozen; \$40 per 100. Delivery guaranteed. Nuclei, two-frame, \$1.50; three-frame, \$2.00. Add price of above queens wanted. We have a rare bargain of apiary of several hundred colonies of bees for sale on easy terms. Particulars on request.

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By return mail after June 5th to 10th, or money refunded; bred from best red-clover strains in United States, in full colonies; from my Superior Breeders, northern bred, for business, long tongued, leather color or three banded, gentle, winter well, hustlers. Not inclined to swarm, roll honey in.

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A specialist of 17 years' experience.

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SUPERIOR ITALIAN**QUEENS**

July and August is the best time to requeen. Have your colonies go into winter with vigorous, young queens.

Send your order now.

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Tested, \$1.00 each; 3 to 6, 90c. each.

Untested, 75c. each; 3 to 6, 70c. each.

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Nuclei per frame, no Queens, \$1.50.

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Untested Queens, \$1 each, \$10 doz., or 75c. each in lots of 25 or more. Warranted purely mated Queens, \$1 each, \$12 doz. Tested Queens, \$1.50 each. Breeding Queens, \$5 each.

I can fill your order for one queen or by the hundred and guarantee you a square deal.

JOHN A. MCKINNON, ST. EUGENE, ONT.

QUEENS

by return mail or your money back. Guaranteed purely mated. J. E. Hand strain of three-banded Italians. Write for price list and free booklet, "How to Transfer, Get Honey and Increase."

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

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Carniolans are excellent winterers, build up rapidly in the spring, enter supers rapidly, are gentle and the best of honey gatherers. Ask for our free paper, "Superiority of the Carniolan Bee."

Untested, \$1.00 each; dozen, \$9.00.

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Carniolan Queen Breeder - Clinton, N.J., U.S.A.

Am now shipping untested Queens from my

Celebrated Pedigreed Strain

My Bees are the product of many years of breeding by Swarthmore and Henry Alley. Both names stand out like beacon lights among our past and present breeders for the best queens ever produced in the United States.

Never had foul brood.

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Famous Queens Direct from Italy

Bees more beautiful, more gentle, more industrious, the best honey gatherers. PRIZES—VI. Swiss Agricultural Exposition, Berne, 1895.

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Beekeeping Exhibition, Liege, Belgium, 1896

Beekeeping Exhibition, Frankfurt, O. M. (Germany), 1907.

Universal Exposition, St. Louis, Mo., U.S.A., 1904.

The highest award.

Extra Breeding Queens, \$3.00; Selected, \$2.00; Fertilized, \$1.50. Lower prices per dozen or more Queens. Safe arrival guaranteed.

Dominion of Canada

Department of Agriculture,

Central Experimental Farm,

Ottawa, 5th Sept., 1914.

I am pleased to inform you that the three queens were received in good condition, and have been safely introduced.

I have the honor to be, Sir,

Your obedient servant.

(Signed) C. GORDON HEWITT.

Dominion Entomologist.

ANTHONY BIAGGI

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This country, politically, Switzerland Republic, lies geographically in Italy and possesses the best kind of Bees known.

Mention in writing—The Canadian Horticulturist and Beekeeper

SOCIETY NOTES

Hamilton

The Society held a most enjoyable outing, June 16th, at the home of Mr. W. D. Flatt, Lakehurst Villa, Port Nelson. Mr. and Mrs. Flatt had a cordial welcome for the two hundred ladies and gentlemen who were present.

The party spent some time admiring the grounds and the fine view of the lake, which nearly touches the back of the lawn. There are several terraces from the back of the house, the last one being a short distance from the lake beach. Along the side and across the front is an artistic cobble stone wall, with large iron gates attached to tall stone pillars. All around this wall is a continuous flower bed, three yards wide, which was a mass of bloom, from the lovely old flowers, many of which are seldom seen now—giant poppies, fleur de lis, sweet william, larkspur, cosmos, pinks in great variety and many other kinds of old flowers. In the corner where the front and side walls join, is a fine large rockery, filled with ferns and flowers that bloom in the shade, as it is under some large trees. At the back of the house is a large star-shaped bed, each point of the star being a solid mass of a different color of pansies, the effect of which is charming. A pedestal stands in the centre, upon which a sun dial will be placed later. Mr. and Mrs. Flatt had afternoon tea served on the lawn, chairs being placed under the trees for the guests. The outing was voted by all as a most enjoyable one.

Ten Million Egg Masses Destroyed

From last November to the first of June a campaign was waged by the schools of Connecticut against the tent caterpillar. The State Agricultural College organized a contest and suitable prizes were offered to schools and pupils. As nearly as can be estimated over 10,000,000 egg-masses have been collected through the efforts of the pupils of the state.

While there seems to be more tent-caterpillars than ever throughout the state and the collection of over ten million masses does not seem to have materially lessened the tent caterpillars, such is not the case. In the localities where the children have collected large numbers of egg-masses there is a marked difference in the number of defoliated trees and a large amount of damage has been averted. Also by the efforts of the children many roadside trees have been kept free from the ugly nests and defoliated branches. While collecting egg-masses of the tent-caterpillar the egg-masses of other insects have been found and sent to the Connecticut Agricultural College for identification. One of the most effective methods of controlling many insects has been brought to the attention of the children of the state.

School Gardens Increasing

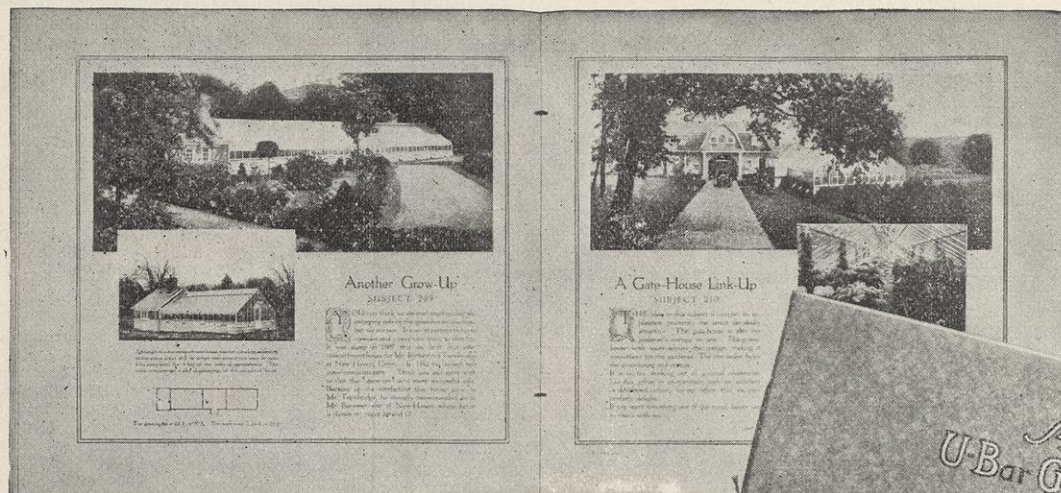
A gratifying sign of the times is the increased interest that is being shown in connection with school gardening. A representative of Prof. McCready's department at Guelph recently called at the office of The Canadian Horticulturist and gave an optimistic report of conditions as he found them while doing inspection

work. Last year the number of rural schools in Ontario conducting a regular system of school gardening was one hundred and seventy-seven. This season the number has increased to two hundred and ninety-three. About five hundred more get seeds from the department, but have not a specially prepared garden at the school for the use of all the pupils. In addition each district representative—there is one in nearly every county—has on an average twenty schools which hold school fairs and have the children conduct plot experiments at home.

Eight inspectors travel throughout the province in the summer, inspecting the gardens and also giving instructions and holding meetings wherever necessary. The inspectors confine themselves mostly to rural schools, but occasionally visit the city schools. These men are also available for lecture work, and on several occasions addresses on school gardening have been delivered before horticultural societies. A number of societies have set excellent examples by cooperating with the schools and aiding by such means as donating prizes and distributing seeds.

Item of Interest

Mr. Marshall, a business orchardist of Fitchburg, Mass., who last year picked 4,000 boxes of choice apples, has had for years a standing offer, posted on the walls of his packing house, of one dollar to any man, visitor or laborer, who found a wormy apple on any tree or under a tree. The dollar is there yet, and the wormy apple has not been found. This speaks volumes for the thoroughness of Mr. Marshall's spraying.



Send for this Unusual Greenhouse Catalog

JUST from the glimpse you get of these two pages, you can see how charming the general treatment must be, and how complete is the showing of each subject considered.

One thing that we think is decidedly in its favor, is that by far the greater number of subjects shown, are of modest size—say, from 33 feet long up to 100 feet. There are just enough of the larger subjects to give you an idea of the scope of our work.

The text is free from any technical description, and reads along just like you and I would chat about it, if we were comfortably seated together talking things over.

If you are interested in having a greenhouse, or adding to the one you already have, you are welcome to this catalog.

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Change in Pooling System

A number of important changes have been made by the Central Selling Agency of British Columbia in regard to the rules and regulations covering the grading, packing, and standardizing of fruit. The most important change is perhaps in the method of pooling which has been one of the most difficult problems with which the management have had to deal, and a careful consideration of the new method would indicate that much of the unwieldiness of the former method has been disposed of.

Up to now it has been the practice to open a separate pool for each variety of fruit, and last season for apples alone there were more than 140 pools. This year there will probably be less than fifty pools for apples, thus greatly reducing the expenses of operating and bookkeeping.

This will be brought about by the adoption of a list of standard varieties, which will be known as the "Main Crop List." The other hundred or more varieties will be handled as an orchard run pack, graded as "No. 2 Special." This same plan is to be followed in the handling of other fruits as well as apples.

The "Main Crop List" of apples, which is divided into three general classes—summer, early fall, and fall and winter—will be graded into numbers one and two, and include the following varieties:

Summer: Red, White and Striped Astrachan, Yellow Transparent, Early Harvest, Early Colton, Sweet Bough, Tetofsky, and Liveland Raspberry.

Early Fall: Duchess, Wealthy, Gravenstein, Jeffries, and Maiden Blush.

Fall and Winter: Arkansas Black, Baldwin, Canada Baldwin, Canada Red, Cox's Orange, Delicious, Fameuse, Gano, Grimes Golden, Hubbardson's Nonsuch, Jonathan, Kaihn of Spitz, King David, Mackintosh Red, New York Wine, Northern Spy, Ontario, Rawls Jennette, Ribston Pippin, Rome Beauty, Snow, Seek-No-Further, Spitzenburg, Stamen Winesap, Sutton Beauty, Wagener, Winesap, Winter Banana, W. W. Permain, and Yellow Newtown.

Plums, which will be graded into numbers one and two and standardized, will be: Black Diamond, Bradshaw, Burbank, Columbia, Coe's Golden Drop, Damson, Greengage, Imperial Gage, Lombard, Peach, Pond's Seedling, Sugar, Tragedy, and Yellow Egg. Other plums will be treated as orchard run packs, not pooled according to variety, but will be graded numbers one and two.

Several of the most popular varieties of peaches will be pooled in crops according to season. Hale's Early, Brigg's Ren May, and the Alexanders will be pooled together, as will the Dewey and Triumph. A third pool will include Fitzgerald, Foster, and Early Crawfords. Late Crawfords, Elbertas, Yellow St. Johns, and yellow free stones will each have separate pools, while all of the peaches will be graded number one and number two.

Another important ruling relates to the weight of the packages of the different fruits all of which have varied, some not a great deal, others considerably. As an instance the minimum gross weight of a box of apples must be forty-nine pounds. If a package does not come up to this weight it will be regraded number two.

Bissell Steel Stone Boat

Used extensively by gardeners and fruit growers.

Steel Railing around edges. Steel Runners, Bevel Corners. 7 ft. by 2, 2½ or 3 ft. Write Dept. N. for Folder and Prices.

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	\$1.00	\$5.50	\$9.00

Tested, the same price.

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than what you already have in the Queen and Bee line, try one of the Atchley Dollar Queens. I make a specialty of Dollar Queens, or \$10.00 per doz. Good, strong two-frame nuclei with Untested Queen, \$2.50 each; three-frame, \$3.00. Safe arrival and satisfaction guaranteed.

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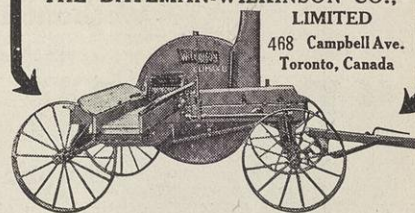
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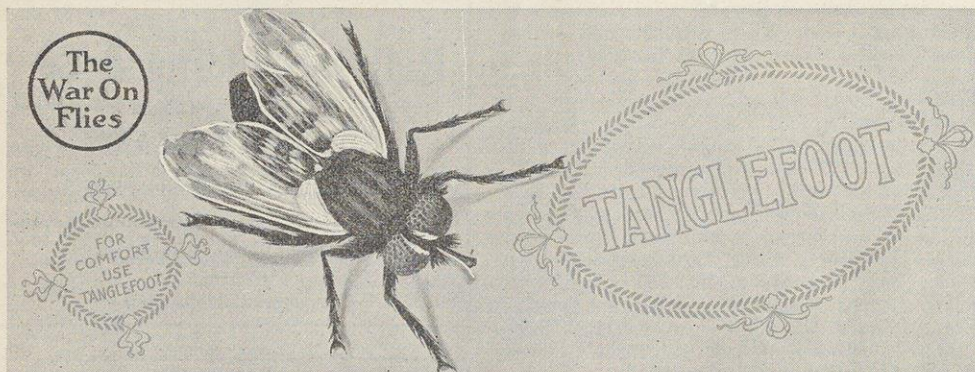




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For 30 years Tanglefoot has been America's surest, safest, most sanitary fly-destroyer. It is non-poisonous, easy to use, and costs but a trifle. Each sheet is capable of killing 1,000 flies. And Tanglefoot not only kills the fly, but seals it over with a varnish that *destroys the germs* as well. In buying, ask for the genuine "TANGLEFOOT"—it costs you no more and lasts twice as long as the no-name kinds sold merely as fly-paper, or sticky fly-paper.

Made only by The O. & W. Thum Co., Grand Rapids, Mich.

Gasoline will quickly remove Tanglefoot from clothes or furniture.

How to Use

Open *Tanglefoot* slowly. In cool weather warm slightly. For best results place *Tanglefoot* on chair near window at night. Lower all shades, leaving one at the *Tanglefoot* window raised about a foot. The early morning light attracts the flies to the *Tanglefoot*, where they are caught. (31)



TO DESTROY APHIS, THRIPS, ETC.

Without Injury to Foliage

SPRAY WITH

"BLACK LEAF 40"

Sulphate of Nicotine

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

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

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

PACKING:

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

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

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

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

IN CANADA, Dealers usually charge about 25% to 30% over the above prices because of the Canadian duty, etc. Consult your dealer about this.

THE KENTUCKY TOBACCO PRODUCT CO.

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LOUISVILLE - KENTUCKY

Fruit Crop Report

From Ontario there have been no adverse weather reports. In parts of the Maritime Provinces frosts were experienced on June 3 and 4. In British Columbia the weather has been admirable, the season being two and three weeks earlier.

APPLES

The season for apples will be a very satisfactory one. In Nova Scotia the later reports are very pessimistic. In Ontario there are certain sections where the ravages of tent caterpillar have reduced the crop. Spies are reported short in Brant and in Middlesex late varieties have not set well. In Quebec there has been much damage from caterpillars in unsprayed orchards, particularly in Huntingdon Co.

The general report from British Columbia is that a crop well above average will be harvested, particularly of the early varieties.

PEARS

The pear crop in Ontario will be a light one. In the southern counties the crop is reported fair, with Kieffers particularly abundant, but in eastern Ontario the crop will be an entire failure. In Nova Scotia over fifty per cent. of a full crop is expected. An excellent crop is reported in British Columbia.

PLUMS

The set in southern Ontario was very light and the crop will be below average. In the county of Lincoln, Japanese varieties are almost a failure and European sorts are light. Farther east in Ontario the plum crop is a total failure. In Quebec the native American varieties are good. Nova Scotia reports a heavy blossom. In British Columbia a greater crop than last year is expected.

PEACHES

So far as Ontario is concerned the reports remain practically the same as those which were published a month ago. With the exception of the Essex Peninsula and a slight scattering in Lambton county, the peach crop in Ontario is a total failure. In the Okanagan Valley of British Columbia reports on early varieties are still quite promising, and for the later varieties the general report appears to be that slightly over half a crop will be harvested. In the Kootenay Valley the peach crop is a failure.

TOMATOES

In Western Ontario, the acreage under tomatoes is the largest for many years. As a direct consequence of the peach crop failure, a number of growers planted tomatoes. There is danger that the supply of tomatoes will be much greater than the demand and that prices will be low. There has been a heavy planting of tomatoes in the Okanagan Valley in British Columbia.

CHERRIES

An abundant crop of all varieties of cherries is reported from the Niagara district and from the southern and western counties of Ontario. In Norfolk, Peel and Wentworth sweet varieties will yield only a light crop, but the report is extremely good for all other varieties. In eastern Ontario there will be a very light yield. Practically a full crop is reported from Nova Scotia. In the Okanagan district the set was not a particularly good one; in the Kootenay Valley the prospects are excellent.

GRAPES

Reports from the Niagara district indicate a crop between medium and large, and in many instances fully twenty-five per cent. larger than was harvested a year ago. —June Report of Fruit Branch, Ottawa.



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EXTENSION
LADDER**

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It is
**LIGHT, STRONG
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**THE
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Makers of Ladders for every conceivable purpose

Latest Crop News

In Lake Ontario counties, apple crop double that of last season; cherries and plums a failure; caterpillars plentiful. Essex county—Peaches promise a full crop, with no leaf curl. Lambton county—An abundant crop of all fruits, except peaches. Annapolis Valley—A light crop between Bridgetown and Kentville; other districts better. Okanagan Valley—Apples, 25 per cent. increase; pears, 20 per cent. increase; plums, 15 to 20 per cent. increase; cherries and peaches, no increase over 1913. Pacific Coast—Strawberry crop badly injured by drought and softened by recent rains; raspberries good. Quebec—Prospects better than for several years past; strawberries came through the winter well, but drought is shortening the crop; slight winter killing of raspberries.

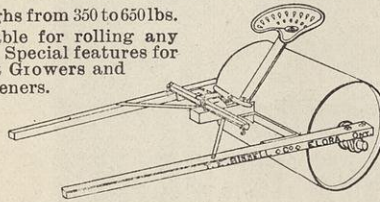
London, England, June 12.—All fruits damaged by frost in May. June weather unfavorable. Trade predicts 50 per cent. crop of apples and black cherries. Late varieties of cooking apples badly damaged. Pears and plums estimated at 75 per cent. Present season regarded as most unfortunate ever experienced.

D. Johnson, Fruit Commissioner.

British Columbia

The Hatzic Fruit Growers' Association has petitioned the B.C.F.G.A. to take some action in regard to fruit packages. The Canadian grower is compelled to ship in two-fifths and four-fifths quart baskets, while the foreign shipper can use any size he wishes. If American fruit is allowed to come on our market in smaller packages

Weights from 350 to 650 lbs.
Suitable for rolling any
soil. Special features for
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sizes for the Spring
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NOW and receive
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Mazzard Cherry Mahaleb
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Forest tree seedling and transplanted. Evergreens, Ornamental Shrubs, Manetti, Multiflore
Roses in great quantities.

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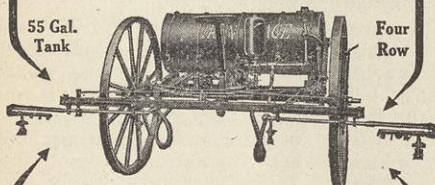
Not only for protection from bugs and blight but to increase the yield. Practical farmers and experiment stations have clearly proven that the yield is increased enough with every spraying to pay for solutions, time and labor many times over.

IRON AGE Traction Sprayers

Have capacity, power and adjustment to suit every need and pumps with the least slippage of any in use on any sprayer.

They are made with single or double acting pumps, 55 or 100 gallon wood tanks, wood or steel wheels regular or wide spray bars, combination pole and thills, or either separate.

There are special spray bars for many different crops, potatoes, tomatoes, pickles, cantaloupe, grain, cotton, tobacco, etc. This list includes a new one with drop nozzles that cover the underside of the



leaves as well as the top. A six-row bar enables potato growers to cover large acreages thoroughly and in less time.

An orchard attachment increases the value of these machines to the man who also owns an orchard.

See them at your dealers and write for "spray" booklet, showing full line of Hand, Knapsack, Bucket, Barrel, Traction and Power Sprayers.

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Pat. No. 104,535

If you pack apples in boxes, this machine will be a great convenience to you and will save you time and money. Write for prices to

J. J. ROBLIN & SON
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If you will send us 8 new yearly subscriptions to The Canadian Horticulturist at 60c. each, or 5 new two year subscriptions at \$1.00 each, we will send you one of these sets at once.

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it should be so stamped by the inspectors that the consumer will realize that there is a difference in size. The Hatzic growers complain bitterly against this unfair competition. Were allowance made for the difference in size of package, they would be willing to stand by the merits of their fruit.

It is estimated that 175,000 tomato plants were set out in the Summerland district. If these yield as expected, they should total seventy-five car loads. Last season, total shipments were less than ten car loads. Strawberries are a heavy crop.

Growers in Mission City, Fraser Valley, are elated over the success of their co-operated association. A steady market is assured, and the members are being paid cash f.o.b.

Eastern Annapolis Valley

Ennice Buchanan

On May 29 there were masses of fresh blossoms and orchardists were very jubilant over the exceptional promise of the orchards, especially old trees. Some young trees and old Kings, also those which were not sprayed much last year, did not promise so well, probably due to weakness caused by last season's aphid attacks. On June 4 there was a heavy frost. On June 3 there was one not so apparent just here, but two miles distant it browned the apple blossoms. Until the fruit sets it is difficult to estimate the amount of damage caused by these frosts, but in orchards near rivers and on low-lying lands there is no doubt that the loss is very heavy, as the blossoms and seeds were blackened. The suddenness with which the flowers went made one feel that we had lost something. On "Blossom Sunday" everything had gone, with the exception of late varieties which had not opened.

An optimistic forecast of the apple crop for 1914-15 is about one million two hundred and fifty thousand barrels for Nova Scotia, but it is likely that this estimate will be cut down to one million barrels. After the frost in 1910 an old gentleman remarked that nature's thinning made good fruit and good prices, and he hoped that the next year he would have another frost to "help him out."

Raspberries were badly winter-killed, also roses and other perennials. The strawberry blossoms have suffered after the June frosts. Tomato plants which were frosted soon began to send out new leaves in cases where the larger frozen leaves were cut off. Cherries have set well, and currants have had an abundance of blossom. A new and big demand has arisen at nurseries for currant and gooseberry bushes.

In spite of the dry time, garden seeds sown on May 15 have come up splendidly. Fortunately we covered up the tender things before the frost, but even then some of the beans were frozen through the sacks. It is better not to let the covering touch the plants when trying to protect them from frost. An orchard meeting is to be held at Mr. R. S. Eaton's, Kentville, on June 26 to demonstrate the control of the bud moth. Prof. Brittain, Prof. Blair, and Mr. George Sanders will address the meeting, for which the railway will run special trains.

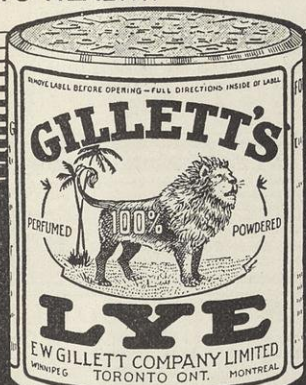
As potatoes are now allowed to be exported to Bermuda, if accompanied by a "certificate of health" from the Nova Scotia Government, the officials, owing to the expense of inspection, have decided to charge three cents per bushel, but would like to hear the opinions of farmers interested.

So far we find no trace of black spot.

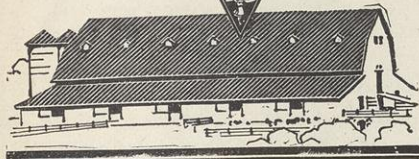
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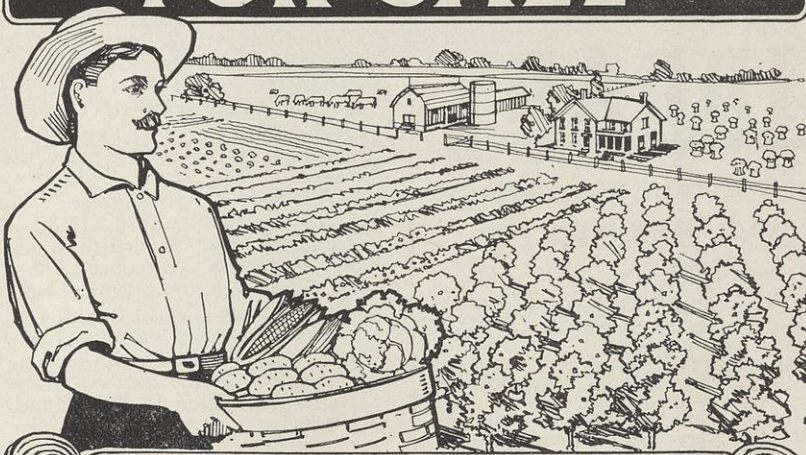
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Recent Bulletins

"Cucumber Rot" is the title of Bulletin 121, issued by the Florida Agricultural Station.

Maine Agricultural Experiment Station, Orono, Maine, issued Bulletin 225, entitled "Currant and Gooseberry Aphids in Maine. The University of Nebraska, Lin-

coln, Neb., has published Bulletin No. 142, entitled "Vegetable Gardens on Irrigated Farms in Western Nebraska."

The Ontario Department of Agriculture is distributing the annual reports for 1913 of the Ontario Fruit Growers' Association, and of the Horticultural Societies of Ontario. The annual report for 1914 of The Fruit Growers' Association of Nova Scotia is being distributed. Copies may be obtained from the Secretary, Manning Ells, Port Williams, N.S.

The Division of Horticulture of the Department of Agriculture, Ottawa, has published Bulletin No. 77, by W. T. Macoun, Dominion Horticulturist, and the Superintendent of the Branch Experimental Farms and Stations. It is entitled "Summary of Results of Horticulture, 1913."

The Manitoba Horticultural and Forestry Association has commenced the publication of a monthly bulletin which will be known as The Manitoba Horticulturist. It is to be devoted to the better growing of trees, fruits, vegetables and flowers in Manitoba. Membership in the association will include a free subscription to The Manitoba Horticulturist.

Lambton District

This was to have been a red letter year among peach growers. The large plantings of peach trees made three years ago are now bearing the first crop. The heavy winter-killing has blighted hopes for a record yield, but the crop will be fair. The drop was heavier than expected.

In Thedford, Arkona, and Forest a big crop of apples is expected. Strawberry and raspberry acreage has increased by forty acres. Currants and gooseberries are being introduced so the local association may be able to ship cars of mixed fruits. Heavy fall planting of small fruits is expected. At Arkona the crop is estimated at 20,000 baskets of plums, 3,000 baskets of peaches, and 40,000 barrels of apples.

The Lambton County Council is cooperating with the District Representative to stamp out San Jose Scale, which has made its appearance in the south of the county. A sum of money has been voted for the work.

New Books on Orcharding

A splendid book that deals with all the phases of apple orcharding, has just been issued by the Lippincotts. This new book is one of the series of Lippincotts' Farm Manuals. It is compiled in an attractive style, on good paper and is profusely illustrated. The matter is so arranged that any particular line of information can easily be found. Each chapter is reviewed in a series of questions which makes the book suitable as a student's text. The author, Prof. F. C. Sears, of the Massachusetts Agricultural College, is a thorough expert in orcharding, and anything that comes from his hand is of the best.

We are not half careful enough in the handling of our fruit. It is often marked and bruised before it goes into the barrel.—W. F. Kydd, Simcoe, Ont.

The successful fruit grower must first have a liking for his work, he must understand something about the laws of nature, he will study his soil, he will have a knowledge of insects and fungus growths, he will know what varieties are suited to his soil, climate, and market, and he will be honest in his dealings.—C. Young, Richard's Landing, Ont.

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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.

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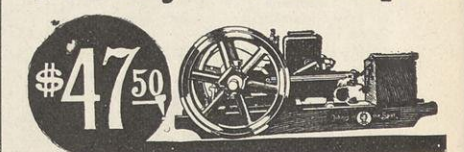
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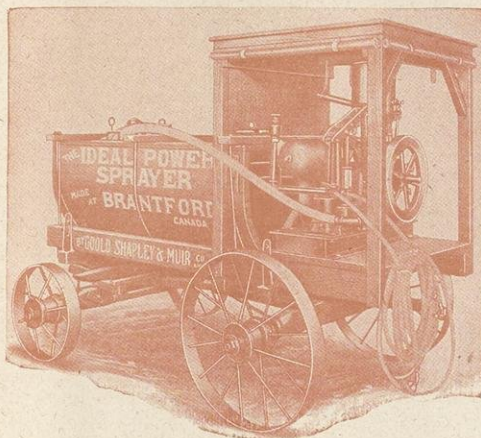
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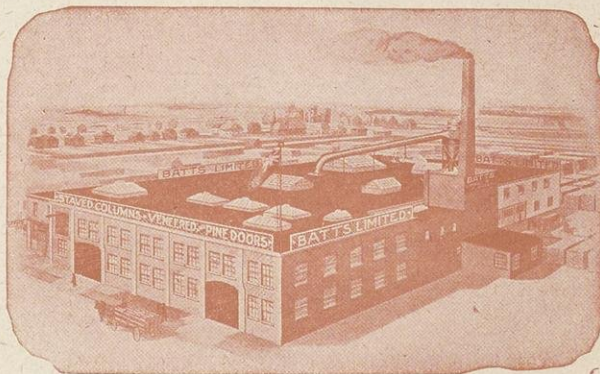
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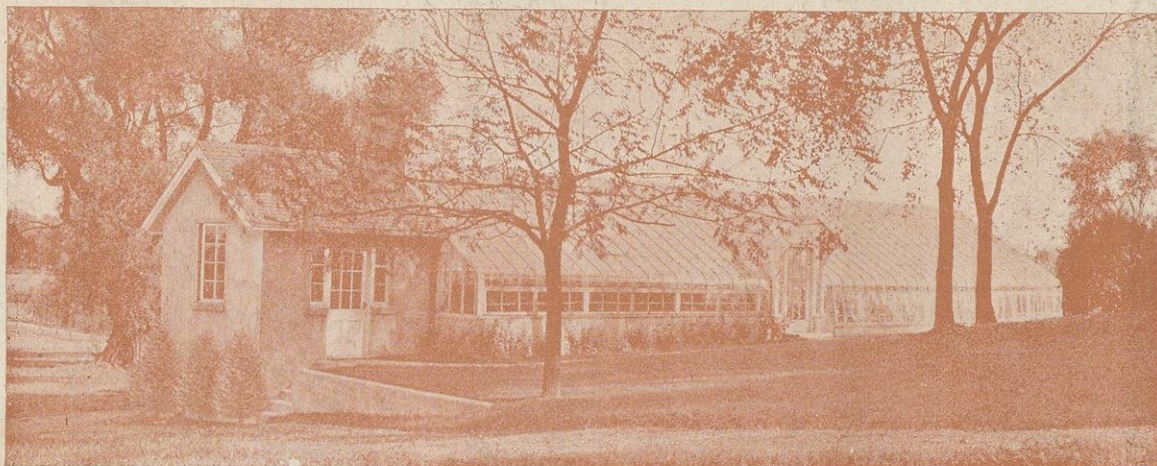
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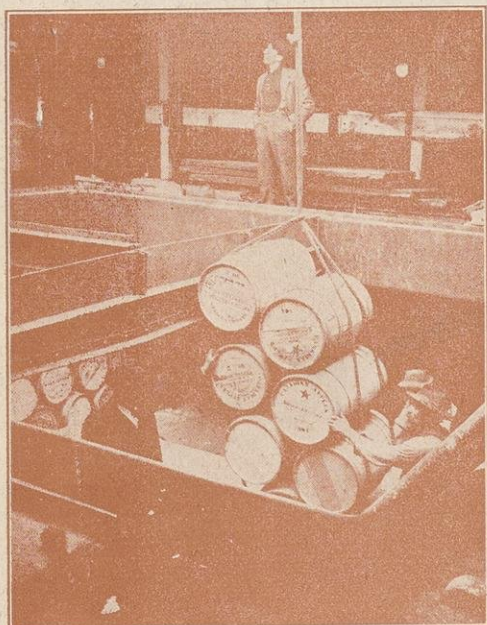
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